biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes"

Ludtke at col. 4, line 66 through col. 5, line 1, states "Alternately, authentication may be achieved by using more sophisticated technologies such as a biometric solution (e.g. fingerprint recognition)". This generally corresponds to "*receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor*". Ludtke at col. 14, lines 33-36 recite: "The user authentication block 777 preferably includes a biometric solution of validating that the user interacting with the device is an authorized user. This can be achieved, for example, by using a fingerprint recognition pad." Ludtke at col. 14, lines 40-46 further recite: "At various times during interaction, the user is prompted to supply a fingerprint recognition sample. This block captures the sample, and carries out a recognition algorithm against the authorized samples that are stored in the user identity block described above. If a match is found, the user is authorized to access the data and functionality of the device." These features generally correspond to "*comparing the scan data to the biometric data to determine whether the scan data matches the biometric data*". Ludtke at FIG 31 illustrates the financial transaction process where steps 3104, 3106 and 3110 involve processing of the user's fingerprint. A match of the user's fingerprint at step 3106 then subsequently leads to a selection of codes at step 3108. In FIG 32 at step 3256, the code input is verified to grant access to the dialing of a telephone call. Ludtke at col. 15, lines 7-12 indicate that data input functions can be performed wirelessly. This generally corresponds to "*wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes*"

Independent claim 9 recites:

"*a validation module, coupled to communicate with the persistent storage media, that receives scan data from a biometric scan for comparison against the biometric data, and that sends the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority*"

Ludtke at FIG 7C teaches a user authentication module 777 which is integrated with persistent memory storage, as illustrated by the memory/info stick of FIG 9B. This generally corresponds to "*a validation module, coupled to communicate with the persistent storage media*". Ludtke at col. 14, lines 33-36 recite: "The user authentication block 777 preferably includes a biometric solution of validating that the user interacting with the device is an authorized user. This can be achieved, for example, by using a fingerprint recognition pad." Ludtke at col. 14, lines 40-46 further recite: "At various times during interaction, the user is prompted to supply a fingerprint recognition sample. This block captures the sample, and carries out a recognition algorithm against the authorized samples that are stored in the user identity block described above. If a match is found, the user is authorized to access the data and functionality of the device." These features generally correspond to "*receives scan data from a biometric scan for comparison against the biometric data*". Ludtke at FIG 31 illustrates the financial transaction process where steps 3104, 3106 and 3110 involve processing of the user's fingerprint. A match of the user's fingerprint at step 3106 then subsequently leads to a selection of codes at step 3108. In FIG 32 at step 3256, the code input is verified externally to grant access to the dialing of a telephone call. This generally corresponds to *sends the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority*".

Independent claim 13 recites:

"*an integrated hardware device that persistently stores biometric data of a legitimate user and an ID code in the integrated hardware device, and that wirelessly sends the—ID code; an authentication circuit that receives the ED code and sends the ID code to a third-party trusted authority for authentication, and that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code*".

Ludtke at FIG 7C teaches hardware component 777 which is integrated with persistent memory storage, as illustrated by the memory/info stick of FIG 9B. This generally corresponds to "*an integrated hardware device that persistently stores biometric data of a legitimate user*". Ludtke at FIG 7B also teaches a smart chip interface, which generally correspond to "*an ID code in the integrated hardware device*". Ludtke at col. 15, lines 7-12 indicate that data input functions can be performed wirelessly. This generally corresponds to "*wirelessly sending the ID code*".

Ludtke at col. 14, lines 40-46 further recite: "At various times during interaction, the user is prompted to supply a fingerprint recognition sample. This block captures the sample, and carries out a recognition algorithm against the authorized samples that are stored in the user identity block described above. If a match is found, the user is authorized to access the data and functionality of the device." These features generally correspond to "*an authentication circuit that receives the ED code*".

Ludtke at FIG 31 illustrates the financial transaction process where steps 3104, 3106 and 3110 involve processing of the user's fingerprint. A match of the user's fingerprint at step 3106 then subsequently leads to a selection of codes at step 3108. In FIG 32 at step 3256, the code input is verified externally. The dial tone provided to the user becomes an access message so as to to grant access to the dialing of a telephone call. This generally corresponds to "*sends the ID code to*

a third-party trusted authority for authentication, and that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code".

There is a substantial likelihood that a reasonable examiner would consider these teachings of Ludtke important in deciding the patentability of independent claims 1, 9, and 13. The reference to Ludtke is not cumulative to the prior art of record in the original file and the claim was not subject to a final holding of invalidity by a federal court. Accordingly, Ludtke raises a substantial new question of patentability with respect to claims 1, 9 and 13.

Since dependent claims 3-8, 10, 12 and 14-18 would incorporate the language of the independent claims by reference, the reference to Ludtke would equally raise a substantial new question of patentability with respect to the dependent claims 3-8, 10, 12 and 14-18.

A combination of prior art including the Ludtke reference, such as Ludtke and Okereke would further raise a substantial new question of patentability with respect to claims 1, 3-10 and 12-18, since the combination would at least include the teachings of Ludtke.

Issue #2

Requester proposes that Ludtke in view of Okereke and Robinson raise a substantial new question of patentability (SNQ) with respect to dependent claims 2 and 11.

Ludtke was established in Issue #1 as raising an SNQ with respect to all of the independent claims 1, 9 and 13. Since dependent claims 2 and 11 would incorporate the language of the independent claims by reference, the reference to Ludtke would equally raise a substantial new question of patentability with respect to the dependent claims 2 and 11.

A combination of prior art including the Ludtke reference, such as Ludtke in view of Okereke and Robinson, would further raise a substantial new question of patentability with respect to claims 2 and 11, since the combination would at least include the teachings of Ludtke.

Issue #3

Requester proposes that Ludtke in view of Scott raise a substantial new question of patentability (SNQ) with respect to claims 1, 3-10 and 12-18.

Ludtke was established in Issue #1 as raising an SNQ with respect to all of the independent claims 1, 9 and 13. Since dependent claims 3-8, 10, 12 and 14-18 would incorporate the language of the independent claims by reference, the reference to Ludtke would equally raise a substantial new question of patentability with respect to the dependent claims 3-8, 10, 12 and 14-18.

A combination of prior art including the Ludtke reference, such as Ludtke in view of Scott, would further raise a substantial new question of patentability with respect to claims1 , 3-10 and 12-18 since the combination would at least include the teachings of Ludtke.

Issue #4

Requester proposes that Ludtke in view of Scott and Robinson raise a substantial new question of patentability (SNQ) with respect to dependent claims 2 and 11.

Ludtke was established in Issue #1 as raising an SNQ with respect to all of the independent claims 1, 9 and 13. Since dependent claims 2 and 11 would incorporate the language of the independent claims by reference, the reference to Ludtke would equally raise a substantial new question of patentability with respect to the dependent claims 2 and 11.

A combination of prior art including the Ludtke reference, such as Ludtke in view of Scott and Robinson, would further raise a substantial new question of patentability with respect to claims 2 and 11, since the combination would at least include the teachings of Ludtke.

Summary of Findings

Issues	References	Substantial New Question of Patentability with respect to claims of US Patent 6,212,662
#1	Ludtke, Okereke	Claims 1, 3-10, 12-18: Yes
#2	Ludtke, Okereke, Robinson	Claims 2, 11: Yes
#3	Ludtke, Scott	Claims 1, 3-10, 12-18 : Yes
#4	Ludtke, Scott, Robinson	Claim 2, 11: Yes

35 USC 325(d)

A review of the post grant history for the '905 Patent indicates that a single AIA post grant challenge has been filed. On August 26, 2021, SAMSUNG ELECTRONICS AMERICA, INC. filed a petition for *inter partes* review (IPR2021-01447) asserting a reasonable likelihood in prevailing (RLP) in showing the unpatentability of claims 1-12 of the '905 Patent. The petition asserted that claims 1-9 were unpatentable under 103(a) over Scott and Lapsley (Ground #1), unpatentable under 103(a) over Scott, Lapsley and Robinson (Ground #2) and unpatentable under 103(a) over Berardi, Shreve and Kinoshita (Ground #3). On February, 28, 2022, the Board issued a decision denying the petition as not raising an RLP to any of the challenged claims.

In the Board's decision refusion to institute *inter partes* review, regarding Grounds #1 and #2, the Board held that "Petitioner does not show persuasively that either Scott or Lapsley teaches a "third-party trusted authority," as recited in claim 1… or that (IPR2021-01447, pages 25 and 26). Regarding Ground #3, the Board held that "we cannot discern Petitioner's allegations of obviousness based on Berardi, Shreve, and Kinoshita, nor can we say Patent Owner is on

notice of those allegations (IPR202-10447 pages 30). Thus, the Board that the petition failed to raise an RLP for any of three asserted grounds in the petition.

A review of the AIA petition as compared to the instant request for *ex parte* reexamination indicates both the Scott and Robinson prior art references that were presented in the prior AIA petition are also being presented in the instant reexamination request also filed by Samsung (See SNQs #2, #3 and #4). However even though Scott was used in the prior AIA petition, they are now being used as a part of a different grounds of rejection as secondary references with the newly presented Luedtke as a primary reference (See proposed SNQ #2 #3 and #4). Further, the request specifically presents newly cited Ludtke to address the omission identified as the basis for the Board's refusal to institute in IPR2021-01447. As pointed out by third party requester, Ludtke specifically discloses a transaction processing [or privacy] clearing house (TCPH) which is a third-party trusted authority, and further discloses that the TPCH "may access relevant account information to authorize transactions." See Col. 3:40-45. Thus, the teachings cited to in Lutke and arguments related to Lutke presented in the instant reexamination request were not present in the prior AIA petition and relate to limitations the Board held was not present in Scott. Accordingly, the prior art and arguments provided in the request are not the same or substantially the same as those presented IPR2021-01447.

Accordingly, in view of the above facts, particularly the fact that the request is not based on substantially the same prior art or arguments, a discretionary denial of reexamination pursuant to 35 USC 325(d) is not implicated and reexamination will be Ordered for the reasons set forth above.

Service of Papers

After filing of a request for ex parte reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requester proceedings are merged) in the reexamination proceeding in the manner provided in 37 CFR 1.248. The document must reflect service or the document may be refused consideration by the Office. See 37 CFR 1.550(f).

Extensions of Time

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Litigation Reminder

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving US Patent 9,298,905 throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

All correspondence relating to this *ex parte* reexamination proceeding should be directed as follows:

By **U.S. Postal Service Mail** to:

Mail Stop *Ex Parte* Reexam
ATTN: Central Reexamination Unit
Commissioner for Patents

P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand to: Customer Service Window
Randolph Building
401 Dulany St.
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the Reexamination Legal Advisor or Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

/SAMUEL G RIMELL/
Primary Examiner, Art Unit 3992

Conferees:

/JDC/ Jeff Carlson
Primary Examiner, Art Unit 3992

/MICHAEL FUELLING/
Supervisory Patent Examiner, Art Unit 3992

CORRECTED Certificate of Service

The undersigned hereby certifies that on August 5, 2022, a copy of Samsung's **RESPONSE TO PETITION UNDER 1.183 TO SUSPEND AND/OR WAIVE RULES 37 C.F.R. § 1.530(A) AND (C)** was served via FedEx Overnight Mail (and courtesy copies via email) to the addresses listed below:

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By: */s/ Marissa Ducca*
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UNITED STATES
PATENT AND TRADEMARK OFFICE

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
90/015,053	**08/05/2022 05:09:15 PM ET**	**2090-0002-REX**

Title of Invention

Biometric personal data key (PDK) authentication

Application Information

APPLICATION TYPE	Utility / ex parte reexam	PATENT #	9298905
CONFIRMATION #	7424	FILED BY	James Glass
PATENT CENTER #	60848798	FILING DATE	06/08/2022
CUSTOMER #	142179	FIRST NAMED INVENTOR	- 9298905
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	-

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
Samsung's Corrected COS__.pdf	1	Reexam Certificate of Service	105 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
Samsung's Corrected COS__.pdf	4F5C0A29324442ED9210B7876579BB8228B1BC3B3B7798AE9B5ED9925794DB3B0B40AD5E27319722BD857877516BE8BD33567A4F129B51A9CE8A7D8C7FA954D3

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as

described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES
PATENT AND TRADEMARK OFFICE

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
90/015,053	**08/05/2022 01:45:42 PM ET**	**2090-0002-REX**

Title of Invention

Biometric personal data key (PDK) authentication

Application Information

APPLICATION TYPE	Utility / ex parte reexam	PATENT #	9298905
CONFIRMATION #	7424	FILED BY	James Glass
PATENT CENTER #	60847476	FILING DATE	06/08/2022
CUSTOMER #	142179	FIRST NAMED INVENTOR	- 9298905
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	-

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
___905 EPR - Response to Petition.pdf	13	Reexam - Opposition filed in response to petition	303 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
___905 EPR - Response to Petition.pdf	A749030C61BB8BB7F136EAB077A9C25B11EBA336738B9009D F4F0E39DAA75C4254530000F4F934D8BE16D78C77A8F97D5C 39125792D35C4F9F33DCAF9266E86E

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New International Application Filed with the USPTO as a Receiving Office

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Giobbi	
U.S. Patent No.: 9,298,905	Examiner: Rimell, Samuel G.
Issued: March 29, 2016	Art Unit: 3992
Application No.: 14/521,982	
Filed: October 23, 2014	
Title: BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION	**RESPONSE TO PETITION UNDER 1.183 TO SUSPEND AND/OR WAIVE RULES 37 C.F.R. § 1.530(A) AND (C)**

Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Samsung Electronics America, Inc. ("Samsung" or "Requestor") hereby responds to Patent Owner's petition under 37 C.F.R. § 1.183 requesting suspension/waiver of 37 C.F.R. § 1.530(a) and (c), and further requesting leave to file a second petition under 37 C.F.R. § 1.181 seeking denial of Samsung's request for *ex parte* reexamination of claims 1-18 (the "Challenged Claims") of U.S. Patent No. 9,298,905 ("the '905 patent"). For the reasons described herein, Patent Owner's

request should be denied. To the extent Patent Owner is given leave to submit a second petition, Samsung intends to file a response consistent with § 1.181.

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I. INTRODUCTION

As the Central Reexamination Unit ("CRU") has already correctly found, "discretionary denial…pursuant to 35 U.S.C 325(d) is not implicated" here, because the instant reexamination request is not based on substantially the same prior art or arguments and is not a serial filing. Order at 12.[1] The CRU has also correctly determined that each of the grounds included in Samsung's request presents a substantial new question of patentability ("SNQ") not cumulative of art or arguments previously presented before the PTO. *Id.*

Patent Owner does not deny that Samsung's request for *ex parte* reexamination of the '905 patent presents new prior art references and arguments not previously presented before the PTO. *See* Pet. at 4. Nor does Patent Owner dispute that the request raises substantial new questions of patentability. *See generally* Pet. Thus, there can be no dispute that the CRU correctly granted Samsung's request for *ex parte* reexamination.

Nevertheless, Patent Owner incorrectly argues that § 325(d) and the Federal Circuit holding *In re Vivint* preclude Samsung from filing an *ex parte* reexamination request based on a prior IPR petition filed by Samsung. This is not the law, and, as discussed below, Patent Owner's petition should be rejected.

---

[1] CRU Order Granting Request For Reexamination (August 2, 2022) (hereinafter, "Order").

Patent Owner's petition also includes a request to file additional argument regarding § 325(d). This request should be rejected as well. Patent Owner has already submitted its arguments related to § 325(d). The rules do not authorize Patent Owner to file a second submission, effectively a reply brief, to address Samsung's response. *See* 37 C.F.R. § 1.181. Patent Owner cites no precedent to support its request to file a second petition. This is especially true, where, as here, *ex parte* reexamination has already begun. To the extent Patent Owner wishes to address the substance of the *ex parte* reexamination request before the First Office Action, it may file a patent owner's statement under 35 U.S.C. § 302.

II. *IN RE VIVINT* DOES NOT PRECLUDE SAMSUNG'S REQUEST FOR *EX PARTE* REEXAMINATION

Contrary to Patent Owner's characterizations, *In re Vivint* does not stand for the proposition that a requestor is precluded from filing an *ex parte* reexamination request if a single IPR petition was filed earlier. Instead, *In re Vivint* addressed an egregious case wherein a requestor had already filed three "undesirable, incremental" petitions challenging the claims of the patent-at-issue (all of which were denied). *See In re Vivint, Inc.* 14 F.4th 1342 at 1346 (Fed. Cir. 2021). In that case, the Federal Circuit noted that the Board had effectively relied upon its discretionary authority under § 325(d) to deny the last of the serial IPR petitions. *Id.* at 1353 (finding that while the Board applied § 314(a) to deny institution, "it actually

relied on § 325(d) considerations for its core analysis" to deny institution based on petitioner's abusive filing practices). *Id.* at 1353.

Despite the Board's admonishment, petitioner "repackaged the arguments raised in the [undesirable petition]" and filed an *ex parte* reexamination request. *Id.* But "[t]wo of [the substantial new questions of patentability] came ***directly*** from the [third rejected] petition. In fact, vast swaths of the *ex parte* reexamination request ***copied***, almost word for word" from the third rejected petition. *Id.* at 1347 (emphasis added). Further, the only allegedly "new" reference in the *ex parte* reexamination had already been considered by the Board in related IPRs. *Id.* at 1347. Thus, the Federal Circuit denied the *ex parte* reexamination request under § 325(d) in view of requestor's "continuation of its abusive serial filing" practices. *Id.* at 1354.

The facts of *In re Vivint* stand in stark contrast to this proceeding. As the CRU has correctly determined, Samsung's request is not a serial filing. *See* Order at 12. Here, Samsung filed only one IPR petition. Unlike *In re Vivint*, the Board made no findings related to § 325(d) against Samsung. Further, there is no dispute that all four grounds in Samsung's request include substantial new questions of patentability, relying on new prior art and arguments never presented before the PTO. Patent Owner fails to acknowledge these differences. Accordingly, *In re Vivint* does not preclude Samsung's request for *ex parte* reexamination.

III. DENIAL OF INSTITUTION BASED ON § 325(d) IS NOT WARRANTED

The CRU has already correctly concluded that a § 325(d) rejection is not appropriate here. The CRU held that Samsung's request sets forth substantial new questions of patentability not considered by the PTO. Order at 12. The CRU further held that Samsung's SNQs are not cumulative of art and arguments previously presented to the PTO. *Id.* Finally, the CRU held that Samsung's request is not a serial filing. *Id.* Accordingly, the CRU correctly granted Samsung's request.

A. § 325(d) Cannot Be Used To Vacate An Institution Decision

In any case, § 325(d) is not a tool that can be used to vacate an *ex parte* reexamination proceeding once it has been instituted. The language of the statute makes clear that "[i]n determining ***whether to institute*** or order a proceeding" a director may analyze the request under § 325(d). *See* 35 U.S.C. § 325(d) (emphasis added). The statute does not provide authority to vacate an *ex parte* reexamination proceeding that is already begun. *See also, e.g., In re Haller*, Control No. 90/014,330, Decision on Petitions, p. 6 (Sept. 23, 2019) ("[O]nce an order granting reexamination has issued, the Office is required to conduct reexamination."). Thus, § 325(d) does not permit the CRU to vacate an institution decision once it has been made.

B. *Advanced Bionics'* Two-Prong Inquiry Supports Institution

Even if § 325(d) were applicable here, Samsung's request for *ex parte* reexamination should be granted. The PTAB follows its precedential *Advanced Bionics* decision in assessing whether to deny a petition under § 325(d). According to *Advanced Bionics*, "§ 325(d) identifies two separate issues for the Director to consider in exercising discretion to deny institution of review: [1] whether the petition presents to the Office the same or substantially the same art previously presented to the Office, or [2] whether the petition presents to the Office the same or substantially the same arguments previously presented to the Office." *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 (Feb. 13, 2020) (designated: March 24, 2020).

Here, the answer to both questions is "no," because Samsung's request includes substantial new questions of patentability, relying on both new prior art combinations and new arguments never considered by the PTO. *See* Order at 12. Patent Owner does not dispute this, instead arguing, without any supporting precedent or evidence, that the prior art in Samsung's SNQs was "readily available" and should have been included in the IPR petition. Pet. at 4. This assertion is not only incorrect but also irrelevant, because, even if Samsung were aware of this new art, it was under no obligation to include all "available" prior art

in its IPR petition (nor could it, given the word count restrictions for IPR petitions). Accordingly, an analysis under *Advanced Bionics* supports institution.

C. The *Becton, Dickinson* Factors Support Institution

The Board also considers the *Becton, Dickinson* factors in determining whether to deny institution under § 325(d). Here, the *Becton, Dickinson* factors also weigh in favor of institution.

1. Factor 1: the similarities and material differences between the asserted art and the prior art involved during examination;

As noted in Samsung's request, in the previous IPR the PTAB construed the term "third party trusted authority" as "an entity or party separate from the principal parties to a transaction." IPR2021-01447, Paper 12 at 20-26. The PTAB concluded that none of the prior art disclosed this limitation.[2] *Id.*

The SNQs in Samsung's request, based on Ludtke, are materially different from the grounds presented in its IPR petition, at least because Ludtke teaches a "third party trusted authority" as construed by the Board. Thus, Samsung's SNQ's based on Ludtke are materially different than the grounds considered in the prior IPR petition. *See* Order at 12 ("Thus, the teachings cited to in Lutke [sic] and

[2] The Board also rejected institution of Samsung's third IPR ground based on Berardi, Shreve and Kinoshita—a ground that also differs from the SNQs presented in Samsung's Request. Order at 11-12; IPR2021-01447, Paper 12 at 27-30.

arguments related to Lutke [sic] presented in the instant reexamination request were not present in the prior AIA petition and relate to limitations the Board held was not present…Accordingly, the prior art and arguments provided in the request are not the same or substantially the same as those presented [in the IPR].”). Thus, this factor weighs in favor of institution.

2. Factor 2: the cumulative nature of the asserted art and the prior art evaluated during examination;

As discussed above, Ludtke is materially different than the prior art rejected in Samsung’s IPR petition because it teaches a “third party trusted authority.” For the same reasons, the prior art in Samsung’s *ex parte* reexamination request is not cumulative of the art presented in the prior IPR. *See* Order at 9 (finding the SNQs “not cumulative”).

3. Factor 3: the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;

The Ludtke reference included in Samsung’s request was not presented during examination or in the prior IPR petition. *See* Order at 9 (noting the Ludtke is “not cumulative to the prior art of record”). Thus, this factor weighs in favor of institution.

4. Factor 4: the extent of the overlap between the arguments made during examination and the manner in which petitioner relies on the prior art;

As discussed in detail in Samsung's request, there is a considerable difference in the arguments made in the *ex parte* reexamination request from those set forth in Samsung's prior IPR petition: Samsung's request presents substantial new questions of patentability based on new art and arguments addressing the Board's new construction of "third party trusted authority." Thus, this factor weighs in favor of institution. *See* Order at 9 (finding the SNQs "not cumulative").

5. Factor 5: whether petitioner has pointed out sufficiently how the examiner erred in its evaluation of the asserted prior art;

Because the examiner and the Board never considered the SNQs in Samsung's request (including prior art reference Ludtke), this factor is not applicable. *See* Order at 9 (noting the Ludtke is "not cumulative to the prior art of record").

6. Factor 6: the extent to which additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments.

As with Factor 5, Factor 6 is also not applicable in this instance because neither the Board nor the examiner considered the SNQs, art or arguments in Samsung's request.

IV. CONCLUSION

For the foregoing reasons, the CRU should reject Patent Owner's petition and proceed with *ex parte* reexamination.

DATED: August 5, 2022

Respectfully submitted,

By */s/ James M. Glass*
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Attorneys for Third-Party Requestor Samsung Electronics America, Inc.

Certificate of Service

The undersigned hereby certifies that on August 5, 2022, a copy of the foregoing was served via FedEx Standard Overnight Mail (and courtesy copies via email) to the addresses listed below:

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Dated: August 5, 2022

By: */s/ Marissa Ducca*
Marissa Ducca
Reg. No. 59,807

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/015,053	9298905
	Examiner	Art Unit
	SAM RIMELL	3992

CPC - Searched*		
Symbol	Date	Examiner

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Reviewed US Patent 9,298,905 and prosecution history	07/29/2022	SR
Reviewed PTAB E2E system for any IP proceedings related to US 9,298,905. Found one: IPR 2021-01447 (institution denied)	07/29/2022	SR

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

Reexamination	**Application/Control No.**	**Applicant(s)/Patent Under Reexamination**
	90/015,053	9298905
	Certificate Date	**Certificate Number**

Requester Correspondence Address: ☐ **Patent Owner** ☑ **Third Party**
Marissa Ducca Quinn Emanuel Urquhart & Sullivan 1300 I Street NW Suite 900 Washington, DC 20005

LITIGATION REVIEW ☐	SR (examiner initials)	29 July 2022 (date)
Case Name		Director Initials
None		

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	**NUMBER**

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/015,053	06/08/2022	9298905	2090-0002-REX	7424

142179 7590 08/02/2022

Hard IP LLC (General)
10 Notch Hill Drive
Livingston, NJ 07039

EXAMINER	
RIMELL, SAMUEL G	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
08/02/2022	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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Alexandria, VA 22313-1450
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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

Marissa Ducca
Quinn Emanuel Urquhart & Sullivan
1300 I Street, Suite 900
Washington, DC 20005

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/015,053* .

PATENT UNDER REEXAMINATION *9298905* .

ART UNIT *3992* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

PTOL-465 (Rev.07-04)

Order Granting Request For Ex Parte Reexamination	Control No. 90/015,053	Patent Under Reexamination 9298905	
	Examiner SAM RIMELL	Art Unit 3992	AIA (FITF) Status No

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The request for *ex parte* reexamination filed 06/08/2022 has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☐ PTO-892, b)☑ PTO/SB/08, c)☐ Other: ____

1. ☑ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

cc:Requester (if third party requester)

DECISION GRANTING EX PARTE REEXAMINATION

The Request filed June 8, 2022 alleges that substantial questions of patentability (SNQ) affecting claims 1-18 of the U.S. Patent Number 9,298,905 are raised by the following prior art references:

Prior Art

Ex. 1005	U.S. Patent No. 7,188,110 ("Ludtke")
Ex. 1006	U.S. Patent Publication No. 2003/0196084 ("Okereke")
Ex. 1007	U.S. Patent Publication No. 2003/0177102 ("Robinson")
Ex. 1008	International Publication Number WO 99/56429 ("Scott")

Brief Overview of US Patent 9,298,905

The invention pertains to systems and methods verifying a user during authentication of an integrated device. In one embodiment, the system includes an integrated device and an authentication unit. The integrated device stores biometric data of a user and a plurality of codes and other data values comprising a device ID code uniquely identifying the integrated device and a secret decryption value in a tamper proof format, and when scan data is verified by comparing the scan data to the biometric data, wirelessly sends one or more codes and other data values including the device ID code. The authentication unit receives and sends the one or more codes and the other data values to an agent for authentication, and receives an access message from the agent indicating that the agent successfully authenticated the one or more codes and other data values and allows the user to access an application.

Prosecution History of US Patent 9,298,905

US Patent 9,298,905 resulted from the filing of US application 14/521,982 filed October 23, 2014, with a priority claim extending to provisional application 60/637,538 filed December 20, 2004.

The USPTO mailed a non-final office action on June 12, 2015. Claims 11 and 15 were rejected under the provisions of non-statutory double patenting. Claims 2-10 were rejected under 35 USC §101. Claims 2-10 were rejected under 35 USC §103 in view of Hsu et al (US Patent 6,041,410) and Stanko (US provisional application 2005/0074126). Claims 3 and 13 were rejected under 35 USC §103 in view of Hsu et al (US Patent 6,041,410) and Stanko (US provisional application 2005/0074126) and Schlotterbeck (US Pre-Grant Publication 2004/0128162). Claims 11-12 and 14-18 were rejected under 35 USC §103 in view of Hsu et al (US Patent 6,041,410) and Stanko (US provisional application 2005/0074126) and Lake (US Pre-Grant publication 2002/0091646).

On September 14, 2015, applicant submitted aa reply with amendments and remarks.

On December 16, 2015, the USPTO issued a Notice of Allowance with claims 2-7 and 9-20 allowed and claims 1 and 8 cancelled. These were subsequently re-numbered as claims 1-18.

The reasons for patentability read as follows:

"The closest prior arts cited are generally directed to various aspects of authenticating users using biometric information. However, none of the cited arts found alone or in combination suggests or teaches all the elements of the independent claims. For instance, no parts of the cited arts teach or suggest limitations such as persistently storing biometric data of a legitimate user and an ID code on an integrated device; responsive to receiving a request for a biometric verification of a user, receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor; comparing the scan data to the biometric data to determine whether the scan data matches the biometric data; responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third- party

trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and responsive to receiving an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the user as the legitimate user based on the comparison of the ID code, allowing the user to complete a financial transaction. Therefore, the claims are allowable for the above reason."

Inter Partes Review before Patent Trial and Appeal Board

The records of the Patent Trial and Appeal Board contain the following *Inter Partes* Review Proceedings involving claims of US Patent 9,298,905:

AIA Review #	Filing Date	Institution Decision Date	Petitioner App #	Petitioner Patent #	Petitioner Tech Center	Petitioner	PO/Respondent App #	PO/Respondent Patent #	PO/Respondent Tech Center	PO/Respondent	Status
IPR2021-01447	08/26/2021	02/28/2022				SAMSUNG ELECTRONICS AMERICA, INC	14521982	9298905	2400	Proxense, LLC	Institution Denied

Final Decisions in the Federal Circuit

There are no known final decisions in the Federal Circuit involving US Patent 9,298,905.

Applicability of "Old Art" in Reexamination Proceedings

In the examining stage of a reexamination proceeding, the examiner will consider whether the claims are subject to rejection based on art. Before making such a rejection, the examiner should check the patent's file history to ascertain whether the art that will provide the basis for the rejection was previously cited/considered in an earlier concluded Office examination of the patent (e.g., in the examination of the application for the patent). For the sake of expediency, such art is referred to as "old art" throughout, since the term "old art" was coined by the Federal Circuit in its decision of *In re Hiniker*, 150 F.3d 1362, 1365-66, 47 USPQ2d 1523, 1526 (Fed. Cir. 1998).

If the rejection to be made by the examiner will be based on a combination of "old art" and art newly cited during the reexamination proceeding, the rejection is proper, and should be made.

See *In re Hiniker*, 150 F.3d at 1367, 47 USPQ2d at 1527. (Court held the reexamination proceeding was supported by a substantial new question of patentability where the rejection before the court was based on a combination of art that had been before the examiner during the original prosecution, and art newly cited during the reexamination proceeding.)

For a reexamination that was ordered on or after November 2, 2002 (the date of enactment of Public Law 107-273; see Section 13105, of the Patent and Trademark Office Authorization Act of 2002), reliance solely on old art (as the basis for a rejection) does not necessarily preclude the existence of a substantial new question of patentability (SNQ) that is based exclusively on that old art. Determinations on whether a SNQ exists in such an instance shall be based upon a fact-specific inquiry done on a case-by-case basis. For example, a SNQ may be based solely on old art where the old art is being presented/viewed in a new light, or in a different way, as compared with its use in the earlier concluded examination(s), in view of a material new argument or interpretation presented in the request.

Discussion of SNQs

Issue #1

Requester proposes that Ludtke in view of Okereke raise a substantial new question of patentability (SNQ) with respect to claims 1, 3-10 and 12-18. From this claim set, claims 1, 9, and 13 are the independent claims.

Independent claim 1 recites:

"*receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor; comparing the scan data to the biometric data to determine whether the scan data matches the biometric data; responsive to a determination that the scan data matches the*

biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes"

Ludtke at col. 4, line 66 through col. 5, line 1, states "Alternately, authentication may be achieved by using more sophisticated technologies such as a biometric solution (e.g. fingerprint recognition)". This generally corresponds to "*receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor*". Ludtke at col. 14, lines 33-36 recite: "The user authentication block 777 preferably includes a biometric solution of validating that the user interacting with the device is an authorized user. This can be achieved, for example, by using a fingerprint recognition pad." Ludtke at col. 14, lines 40-46 further recite: "At various times during interaction, the user is prompted to supply a fingerprint recognition sample. This block captures the sample, and carries out a recognition algorithm against the authorized samples that are stored in the user identity block described above. If a match is found, the user is authorized to access the data and functionality of the device." These features generally correspond to "*comparing the scan data to the biometric data to determine whether the scan data matches the biometric data*". Ludtke at FIG 31 illustrates the financial transaction process where steps 3104, 3106 and 3110 involve processing of the user's fingerprint. A match of the user's fingerprint at step 3106 then subsequently leads to a selection of codes at step 3108. In FIG 32 at step 3256, the code input is verified to grant access to the dialing of a telephone call. Ludtke at col. 15, lines 7-12 indicate that data input functions can be performed wirelessly. This generally corresponds to "*wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes*"

Independent claim 9 recites:

"*a validation module, coupled to communicate with the persistent storage media, that receives scan data from a biometric scan for comparison against the biometric data, and that sends the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority*"

Ludtke at FIG 7C teaches a user authentication module 777 which is integrated with persistent memory storage, as illustrated by the memory/info stick of FIG 9B. This generally corresponds to "*a validation module, coupled to communicate with the persistent storage media*". Ludtke at col. 14, lines 33-36 recite: "The user authentication block 777 preferably includes a biometric solution of validating that the user interacting with the device is an authorized user. This can be achieved, for example, by using a fingerprint recognition pad." Ludtke at col. 14, lines 40-46 further recite: "At various times during interaction, the user is prompted to supply a fingerprint recognition sample. This block captures the sample, and carries out a recognition algorithm against the authorized samples that are stored in the user identity block described above. If a match is found, the user is authorized to access the data and functionality of the device." These features generally correspond to "*receives scan data from a biometric scan for comparison against the biometric data*". Ludtke at FIG 31 illustrates the financial transaction process where steps 3104, 3106 and 3110 involve processing of the user's fingerprint. A match of the user's fingerprint at step 3106 then subsequently leads to a selection of codes at step 3108. In FIG 32 at step 3256, the code input is verified externally to grant access to the dialing of a telephone call. This generally corresponds to *sends the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority*".

Independent claim 13 recites:

"*an integrated hardware device that persistently stores biometric data of a legitimate user and an ID code in the integrated hardware device, and that wirelessly sends the—ID code; an authentication circuit that receives the ED code and sends the ID code to a third-party trusted authority for authentication, and that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code*".

Ludtke at FIG 7C teaches hardware component 777 which is integrated with persistent memory storage, as illustrated by the memory/info stick of FIG 9B. This generally corresponds to "*an integrated hardware device that persistently stores biometric data of a legitimate user*". Ludtke at FIG 7B also teaches a smart chip interface, which generally correspond to "*an ID code in the integrated hardware device*". Ludtke at col. 15, lines 7-12 indicate that data input functions can be performed wirelessly. This generally corresponds to "*wirelessly sending the ID code*".

Ludtke at col. 14, lines 40-46 further recite: "At various times during interaction, the user is prompted to supply a fingerprint recognition sample. This block captures the sample, and carries out a recognition algorithm against the authorized samples that are stored in the user identity block described above. If a match is found, the user is authorized to access the data and functionality of the device." These features generally correspond to "*an authentication circuit that receives the ED code*".

Ludtke at FIG 31 illustrates the financial transaction process where steps 3104, 3106 and 3110 involve processing of the user's fingerprint. A match of the user's fingerprint at step 3106 then subsequently leads to a selection of codes at step 3108. In FIG 32 at step 3256, the code input is verified externally. The dial tone provided to the user becomes an access message so as to to grant access to the dialing of a telephone call. This generally corresponds to "*sends the ID code to*

a third-party trusted authority for authentication, and that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code".

There is a substantial likelihood that a reasonable examiner would consider these teachings of Ludtke important in deciding the patentability of independent claims 1, 9, and 13. The reference to Ludtke is not cumulative to the prior art of record in the original file and the claim was not subject to a final holding of invalidity by a federal court. Accordingly, Ludtke raises a substantial new question of patentability with respect to claims 1, 9 and 13.

Since dependent claims 3-8, 10, 12 and 14-18 would incorporate the language of the independent claims by reference, the reference to Ludtke would equally raise a substantial new question of patentability with respect to the dependent claims 3-8, 10, 12 and 14-18.

A combination of prior art including the Ludtke reference, such as Ludtke and Okereke would further raise a substantial new question of patentability with respect to claims 1, 3-10 and 12-18, since the combination would at least include the teachings of Ludtke.

Issue #2

Requester proposes that Ludtke in view of Okereke and Robinson raise a substantial new question of patentability (SNQ) with respect to dependent claims 2 and 11.

Ludtke was established in Issue #1 as raising an SNQ with respect to all of the independent claims 1, 9 and 13. Since dependent claims 2 and 11 would incorporate the language of the independent claims by reference, the reference to Ludtke would equally raise a substantial new question of patentability with respect to the dependent claims 2 and 11.

A combination of prior art including the Ludtke reference, such as Ludtke in view of Okereke and Robinson, would further raise a substantial new question of patentability with respect to claims 2 and 11, since the combination would at least include the teachings of Ludtke.

Issue #3

Requester proposes that Ludtke in view of Scott raise a substantial new question of patentability (SNQ) with respect to claims 1, 3-10 and 12-18.

Ludtke was established in Issue #1 as raising an SNQ with respect to all of the independent claims 1, 9 and 13. Since dependent claims 3-8, 10, 12 and 14-18 would incorporate the language of the independent claims by reference, the reference to Ludtke would equally raise a substantial new question of patentability with respect to the dependent claims 3-8, 10, 12 and 14-18.

A combination of prior art including the Ludtke reference, such as Ludtke in view of Scott, would further raise a substantial new question of patentability with respect to claims1 , 3-10 and 12-18 since the combination would at least include the teachings of Ludtke.

Issue #4

Requester proposes that Ludtke in view of Scott and Robinson raise a substantial new question of patentability (SNQ) with respect to dependent claims 2 and 11.

Ludtke was established in Issue #1 as raising an SNQ with respect to all of the independent claims 1, 9 and 13. Since dependent claims 2 and 11 would incorporate the language of the independent claims by reference, the reference to Ludtke would equally raise a substantial new question of patentability with respect to the dependent claims 2 and 11.

A combination of prior art including the Ludtke reference, such as Ludtke in view of Scott and Robinson, would further raise a substantial new question of patentability with respect to claims 2 and 11, since the combination would at least include the teachings of Ludtke.

Summary of Findings

Issues	References	Substantial New Question of Patentability with respect to claims of US Patent 6,212,662
#1	Ludtke, Okereke	Claims 1, 3-10, 12-18: Yes
#2	Ludtke, Okereke, Robinson	Claims 2, 11: Yes
#3	Ludtke, Scott	Claims 1, 3-10, 12-18 : Yes
#4	Ludtke, Scott, Robinson	Claim 2, 11: Yes

35 USC 325(d)

A review of the post grant history for the '905 Patent indicates that a single AIA post grant challenge has been filed. On August 26, 2021, SAMSUNG ELECTRONICS AMERICA, INC. filed a petition for *inter partes* review (IPR2021-01447) asserting a reasonable likelihood in prevailing (RLP) in showing the unpatentability of claims 1-12 of the '905 Patent. The petition asserted that claims 1-9 were unpatentable under 103(a) over Scott and Lapsley (Ground #1), unpatentable under 103(a) over Scott, Lapsley and Robinson (Ground #2) and unpatentable under 103(a) over Berardi, Shreve and Kinoshita (Ground #3). On February, 28, 2022, the Board issued a decision denying the petition as not raising an RLP to any of the challenged claims.

In the Board's decision refusion to institute *inter partes* review, regarding Grounds #1 and #2, the Board held that "Petitioner does not show persuasively that either Scott or Lapsley teaches a "third-party trusted authority," as recited in claim 1… or that (IPR2021-01447, pages 25 and 26). Regarding Ground #3, the Board held that "we cannot discern Petitioner's allegations of obviousness based on Berardi, Shreve, and Kinoshita, nor can we say Patent Owner is on

notice of those allegations (IPR202-10447 pages 30). Thus, the Board that the petition failed to raise an RLP for any of three asserted grounds in the petition.

A review of the AIA petition as compared to the instant request for *ex parte* reexamination indicates both the Scott and Robinson prior art references that were presented in the prior AIA petition are also being presented in the instant reexamination request also filed by Samsung (See SNQs #2, #3 and #4). However even though Scott was used in the prior AIA petition, they are now being used as a part of a different grounds of rejection as secondary references with the newly presented Luedtke as a primary reference (See proposed SNQ #2 #3 and #4). Further, the request specifically presents newly cited Ludtke to address the omission identified as the basis for the Board's refusal to institute in IPR2021-01447. As pointed out by third party requester, Ludtke specifically discloses a transaction processing [or privacy] clearing house (TCPH) which is a third-party trusted authority, and further discloses that the TPCH "may access relevant account information to authorize transactions." See Col. 3:40-45. Thus, the teachings cited to in Lutke and arguments related to Lutke presented in the instant reexamination request were not present in the prior AIA petition and relate to limitations the Board held was not present in Scott. Accordingly, the prior art and arguments provided in the request are not the same or substantially the same as those presented IPR2021-01447.

Accordingly, in view of the above facts, particularly the fact that the request is not based on substantially the same prior art or arguments, a discretionary denial of reexamination pursuant to 35 USC 325(d) is not implicated and reexamination will be Ordered for the reasons set forth above.

Service of Papers

After filing of a request for ex parte reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requester proceedings are merged) in the reexamination proceeding in the manner provided in 37 CFR 1.248. The document must reflect service or the document may be refused consideration by the Office. See 37 CFR 1.550(f).

Extensions of Time

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Litigation Reminder

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving US Patent 9,298,905 throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

All correspondence relating to this *ex parte* reexamination proceeding should be directed as follows:

By **U.S. Postal Service Mail** to:

Mail Stop *Ex Parte* Reexam
ATTN: Central Reexamination Unit
Commissioner for Patents

P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand to: Customer Service Window
Randolph Building
401 Dulany St.
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the Reexamination Legal Advisor or Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

/SAMUEL G RIMELL/
Primary Examiner, Art Unit 3992

Conferees:

/JDC/ Jeff Carlson
Primary Examiner, Art Unit 3992

/MICHAEL FUELLING/
Supervisory Patent Examiner, Art Unit 3992

PTO/SB/08a (07-09)
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	14/521,982
Filing Date	October 23, 2014
First Named Inventor	John J. Giobbi
Art Unit	
Examiner Name	
Attorney Docket Number	

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number / Number-Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/S.G.R/		US- 7,188,110 B1	03-06-2007	Ludtke	
/S.G.R/		US- 2003/0196084 A1	10-16-2003	Okereke	
/S.G.R/		US- 2003/0177102 A1	09-18-2003	Robinson	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document / Country Code[3]-Number[4]-Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
/S.G.R/		WO 1999/056429 A1	11-04-1999	Scott		

Examiner Signature	/SAMUEL G RIMELL/	Date Considered	07/29/2022

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

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If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/015,053	06/08/2022	9298905	2090-0002-REX	7424

142179 7590 08/01/2022

Hard IP LLC (General)
10 Notch Hill Drive
Livingston, NJ 07039

EXAMINER	
RIMELL, SAMUEL G	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
08/01/2022	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
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P.O.Box 1450
Alexandria, VA 22313-1450
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THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS

August 1, 2022

MARISSA R. DUCCA
QUINN EMANUEL URQUHART & SULLIVAN. LLP
1300 I STREET, NW SUITE 900
WASHINGTON, DC 20005

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90015053
PATENT NO. : 9298905
ART UNIT : 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above-identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Hard IP LLC (General)
10 Notch Hill Drive
Livingston, NJ 07039

(For Patent Owner)

Marissa R. Ducca
Quinn Emanuel Urquhart and Sullivan, LLP
1300 I Street, NW
Suite 900
Washington, DC 20005

(For Third Party Requester)

In re Giobbi
U.S. Patent No.: 9,298,905 B1
Ex Parte Reexamination Proceeding
Control No.: 90/015,053
Filed: June 8, 2022

: **DECISION**
: **ON 37 CFR 1.183**
: **PETITION**

This decision addresses patent owner's July 22, 2022 petition entitled "Petition Under 1.183 to Suspend and/or Waive Rules 37 C.F.R. § 1.530(a) and (c)". Patent owner's July 22, 2022 petition is before the Office of Patent Legal Administration for consideration.

PERTINENT BACKGROUND

- On March 29, 2016, U.S. Patent Number 9,298,905 (the '905 patent) issued to John J. Giobbi with claims 1-18. The '905 patent is currently assigned to Proxense, LLC ("patent owner").

- On June 8, 2022, Samsung Electronics America, Inc. ("requester") deposited a request for *ex parte* reexamination of claims 1-18 of the '905 patent. The reexamination proceeding was assigned control number 90/015,053 ("the present reexamination proceeding") and was accorded a filing date of June 8, 2022.

- On July 22, 2022, patent owner filed a petition entitled "Petition Under 1.183 to Suspend and/or Waive Rules 37 C.F.R. § 1.530(a) and (c)" ("petition").

DECISION

Patent owner's July 22, 2022 petition under 37 CFR 1.183 requests waiver of 37 C.F.R. 1.530(a) and (c) to the extent necessary for patent owner to file an additional petition under 37 CFR 1.181 requesting the Office to reject the request in the present reexamination proceeding pursuant to 35 U.S.C. 325(d).[1] In support of its request for waiver of 37 CFR 1.530(a) and (c), patent owner asserts that in "the absence of such a request, the Examiner will not initially consider §325(d) (*i.e.*, under 37 C.F.R. § 1.515(a)) when determining whether to grant Samsung's Request for Reexamination. The rules only permit an examiner to 'consider the request and determine whether or not a substantial new

[1] Petition at pages 4-5.

question of patentability affecting any claim of the patent is raised by the request and the prior art cited therein'. C.F.R. § 1.515(a)."[2] Accordingly, patent owner requests waiver of 37 CFR 1.530(a) and 1.540 to permit the Office to consider a future petition requesting that the Office exercise its discretion under 35 U.S.C. 325(d) "to terminate all proceedings relating to the Request for Reexamination filed by Samsung, prior to any determination under § 1.515 on the Request."[3]

37 CFR 1.183, in pertinent part, provides:

> In an extraordinary situation, when justice requires, any requirement of the regulations in this part which is not a requirement of the statutes may be suspended or waived by the Director or the Director's designee, *sua sponte*, or on petition of the interested party, subject to such other requirements as may be imposed.

37 CFR 1.530(a), in pertinent part, provides:

> Except as provided in § 1.510(e), no statement or other response by the patent owner in an *ex parte* reexamination proceeding shall be filed prior to the determinations made in accordance with § 1.515 or § 1.520. If a premature statement or other response is filed by the patent owner, it will not be acknowledged or considered in making the determination, and it will be returned or discarded (at the Office's option).

37 CFR 1.530(c) provides, in pertinent part:

> Any statement filed by the patent owner shall clearly point out why the subject matter as claimed is not anticipated or rendered obvious by the prior art patents or printed publications, either alone or in any reasonable combinations.

Patent owner's assertion that the Examiner will not initially consider § 325(d) when determining whether to grant requester's Request for Reexamination and that the rules only permit an examiner to determine whether there is a substantial new question of patentability is incorrect. Office guidance emphasizes the importance of evaluating issues involving § 325(d) when making a determination on a request for *ex parte* reexamination. *See*, *e.g.*, MPEP § 2242, subsection II ("[a]ny issues involving 35 U.S.C. 325(d) raised in the request must be referred to the examiner's SPRS or the director of the CRU."). The Office considers information regarding § 325(d) issues when determining whether to order reexamination.

Permitting patent owner to call attention to potential issues involving § 325(d) prior to the Office making its determination on a request for reexamination serves an important purpose when promptly filed in sufficient time for entry and consideration by the Office. Therefore, patent owner's July 22, 2022 petition under 37 CFR 1.183 to waive 37 CFR 1.530(a) and 37 CFR 1.530(c) is **granted** for entry and consideration of any information regarding § 325(d) issues set forth in the instant petition under 37 CFR 1.183[4] to the extent sufficient time remains for the Central Reexamination Unit (CRU) to consider the information in making its determination on whether to order reexamination in the present reexamination proceeding. In the event that the patent owner's petition includes arguments regarding patentability of the claims at issue in the present reexamination proceeding, these arguments will not

[2] Petition at pages 4-5.
[3] Petition at pages 4-5.
[4] Petition at pages 1-4.

be entered or considered by the CRU. Patent owner's request for waiver of the rules to permit the Office to enter and consider a future petition directed to issues under § 325(d) is **premature**.[5]

Inquiries concerning this decision should be directed to Nicole D. Haines, Senior Legal Advisor, Office of Patent Legal Administration, at (571) 272-7717, or in her absence, Andrea Grossman, Patent Examination Policy Advisor, Office of Patent Legal Administration, at (571) 270-3314.

/Pinchus M. Laufer/

Pinchus M. Laufer
Senior Patent Attorney
Office of Patent Legal Administration July 28, 2022

[5] Any future petition addressing 35 U.S.C. 325(d) should also include a request under 37 CFR 1.183 for waiver of the applicable rules to allow entry and consideration of the petition.

Electronic Patent Application Fee Transmittal

Application Number:	90015053
Filing Date:	08-Jun-2022
Title of Invention:	Biometric personal data key (PDK) authentication
First Named Inventor/Applicant Name:	9298905
Filer:	Kinza Hecht
Attorney Docket Number:	

Filed as Large Entity

Filing Fees for ex parte reexam

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
PETITION IN REEXAM PROCEEDING	1824	1	2040	2040
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**2040**

Electronic Acknowledgement Receipt	
EFS ID:	46248223
Application Number:	90015053
International Application Number:	
Confirmation Number:	7424
Title of Invention:	Biometric personal data key (PDK) authentication
First Named Inventor/Applicant Name:	9298905
Customer Number:	142179
Filer:	Kinza Hecht
Filer Authorized By:	
Attorney Docket Number:	
Receipt Date:	22-JUL-2022
Filing Date:	08-JUN-2022
Time Stamp:	08:36:37
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$2040
RAM confirmation Number	E20227L937042340
Deposit Account	600366
Authorized User	Kinza Hecht
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (SB06)	fee-info.pdf	37876 30389e164f1aeec1c67c03cab633a608cf817c87	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	37876		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent No.:	9,298,905	Examiner:	To be Assigned
Issued:	March 29, 2016	Art Unit:	CRU
Control No.	90/015,053	Application No.:	14/521,982
Filed:	October 23, 2014	Conf. No.	7424
Title:	BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION		

PETITION UNDER 1.183 TO SUSPEND AND/OR WAIVE RULES 37 C.F.R. § 1.530(a) AND (c)

Mail Stop Petitions
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

Dear Commissioner:

Proxense, the owner of U.S. Patent 9,298,905 (hereafter the 905 Patent) respectfully petitions that the Director suspend and/or waive 37 C.F.R. §§ 1.530(a) and (c) as to permit Proxense to file, and the Office to consider a petition under 37 C.F.R. § 1.181 requesting the Director exercise her discretion under 35 U.S.C. § 325(d) to terminate all proceedings relating to the Request for Reexamination filed by Samsung Electronics America, Inc. ("Samsung") on June 8, 2022, prior to a determination under 37 C.F.R. § 1.515.

I. Legal Background Regarding 35 U.S.C. § 325(d)

"In determining whether to institute or order a proceeding under this chapter, chapter 30, or chapter 31, the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior arguments previously were presented to the

Office." 35 U.S.C. § 325(d). "Section 325(d) applies to both IPR petitions and requests for *ex parte* reexamination". *In re Vivint,* 14 F.4th 1342, 1354 (Fed.Cir. 2021).

Similar serial patent challenges by the same petitioner to harass the patent owner should not be allowed as they result in both harassment of patent owners and frustration of Congress's intent with regards to the America Invents Act ("AIA"). *General Plastics Co., Ltd. V. Canon Kabushiki Kaisha,* IPR2016-01357, FN 14 (PTAB Sept 6, 2017) (Paper 19) (precedential). In fact, even if a request for reexamination under chapter 30 raises a substantially new question of patentability, the Office may reject the request under § 325(d) "because the same or substantially the same prior art or arguments previously were presented to [it]". *Id.,* at 1350 (citing 35 U.S.C. § 325(d)). Accordingly, a request for reexamination following a failed petition for IPR, as is the case here, should be evaluated under § 325(d) regardless of whether a purported substantial new question of patentability is raised. Furthermore, the request for reexamination must be evaluated in the same manner a subsequent petition for IPR would be evaluated. *In re Vivint,* 14 F.4th at 1354 ("[T]he Patent Office, when applying § 325(d), cannot deny institution of IPR based on abusive filing practices then grant a nearly identical reexamination request that is even more abusive. We see no difference between the IPR and *ex parte* reexamination processes that would justify such conduct and nothing short of termination of the reexamination would be appropriate.").

II. Samsung's Similar IPR Challenge

Samsung has filed similar serial challenges against the 905 Patent. On August 26, 2021, Samsung filed a Petition for IPR challenging claims 1-11 of the 905 Patent. Samsung's Petition for IPR was denied on February 28, 2022. The present Request for Reexamination, filed by Samsung on June 8, 2022, is therefore Samsung's *second* attempt to raise challenges against the

claims of the 905 Patent. It is notable that the Board issued its decision denying institution five days before the 1-year statutory window for Samsung to file an IPR petition expired under 35 U.S.C. § 315(b). Samsung is now continuing its harassing incremental challenge to the 905 Patent with the present Request for Reexamination.

III. Applicability of § 325(d)

As set forth above, this petition for the Director to suspend and/or waive 37 C.F.R. § 1.530(a) is submitted for purposes of requesting permission to file a formal petition under 37 C.F.R. § 1.181 which would allow the Director to exercise her discretion under 35 U.S.C. § 325(d).[1]

The proposed petition under 35 U.S.C. § 325 (d) has a high likelihood of success. The Director has discretion under § 325(d) with respect to reexaminations filed under 35 U.S.C. § 302 (*i.e.*, chapter 30). *See* 35 U.S.C. § 325(d) ("In determining whether to institute or order a proceeding under this chapter, chapter 30, or chapter 31, the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior arguments previously were presented to the Office."). Accordingly, the Federal Circuit has held as follows:

> Section 325(d) applies to both IPR petitions and requests for *ex parte* reexamination. Thus, the Patent Office, when applying § 325(d), cannot deny institution of IPR based on abusive filing practices then grant a nearly identical reexamination request that is even more abusive. **We see no difference between the IPR and *ex parte* reexamination processes that would justify such conduct** and nothing short of termination of the reexamination would be appropriate.

In re Vivint, 14 F.4th at 1354 (emphasis added).

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[1] Should the Director find that such a formal petition is unnecessary considering the strength of the arguments previewed herein, Proxense requests that this submission is treated as its 37 C.F.R. § 1.181 petition and deny Samsung's Request for Reexamination.

Samsung should not be permitted to use its failed IPR as a roadmap to a serial *ex parte* examination request. Samsung has previously filed a petition directed to the same claims of the same patent.[2] The prior art asserted by Samsung in the instant Request includes *one* newly cited issued U.S. patent and one newly cited published U.S. patent application. Both citations were a matter of public record and thus readily available to Samsung at the time of its previous petition for IPR. *Twice* in its Request, Samsung openly admits to using its failed *inter partes* review, including Patent Owner's arguments and the Board's previous decision, as a roadmap to prepare the current Request. Patent Owner's arguments included presenting to the Board the claim construction arguments, and evidenced provided by Samsung in support thereof, Samsung presented to the District Court in a concurrent litigation involving the patent. The Board substantially adopted the claim construction Samsung advanced before the District Court. Samsung now justifies its Request by claiming that it "did not foresee" the Board finding merit in the claim construction arguments and evidence Samsung presented in the concurrent litigation involving the patent. Tasking the CRU with examining a patent *already presented to the Board* is an inefficient and abusive use of the CRU's limited resources. These factors clearly disfavor granting Samsung's Request and should be fully considered.

Proxense petitions that the Director suspend and/or waive 37 C.F.R. § 1.530(a) such that Proxense can further petition for the Director's discretion to apply § 325(d). In the absence of such a request, the Examiner will not initially consider § 325(d) (*i.e.*, under 37 C.F.R. § 1.515(a)) when determining whether to grant Samsung's Request for Reexamination. The rules only permit an examiner to "consider the request and determine whether or not a substantial new

[2] Moreover, Samsung is presently challenging the validity of the same patent in District Court, where it has had a fulsome opportunity to raise the same arguments it now bases its Request.

question of patentability affecting any claim of the patent is raised by the request and the prior art cited therein". 37 C.F.R. § 1.515(a). Proxense would otherwise be forced to defend its patent against a harassing series of challenge by Samsung. This would be unduly burdensome and would frustrate the intent of the AIA. *See General Plastics Co., Ltd. V. Canon Kabushiki Kaisha,* IPR2016-01357, FN 14 (PTAB Sept 6, 2017) (Paper 19) (precedential) ("Allowing similar, serial challenges to the same patent, by the same petitioner, **risks harassment of patent owners and frustration of Congress's intention** in enacting the Leahy-Smith America Invents Act.") (emphasis added).

In view of the foregoing, the Director should waive and/or suspend Rules §§ 1.530(a) and (c). Proxense should be permitted to file, and the Office permitted to consider, a petition under 37 C.F.R. § 1.181 requesting that the Director exercise her discretion under 35 U.S.C. § 325(d) to terminate all proceedings relating to the Request for Reexamination filed by Samsung, prior to any determination under § 1.515 on the Request.

Respectfully submitted,

Hard IP LLC

Dated: July 21, 2022

/Kinza Hecht/
Kinza Hecht
Patent Agent
Reg. No. 62,325
Phone: (212) 321-0598
Email: kinza@hard-ip.net

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. PATENT NO.:	9,298,905	ART UNIT:	CRU
CONTROL NUMBER:	90/015,053	CONF. NO.:	7424
FILING DATE:	October 23, 2014	EXAMINER:	To be Assigned
TITLE:	**BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION**		

FILED ELECTRONICALLY

Mail Stop *Ex Parte* Reexam
ATTN: Central Reexamination Unit
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF SERVICE ON THIRD-PARTY REQUESTOR

Dear Commissioner:

The undersigned, on behalf of the Patent Owner, hereby certifies that a copy of the following document is being served on the Third-Party Requestor by first class mail on July 21, 2022:

1. Petition under 1.183 to Suspend and/or Waive Rules 37 C.F.R. § 1530(a) and (c)

The name and addresses of the parties being served are as follows:

Marissa Ducca
Quinn Emanuel Urquhart & Sullivan, LLP
1300 I Street NW, Suite 900
Washington, DC 20005

Attorneys for Third-Party Requestor, Samsung Electronics America, Inc.

Respectfully submitted,

Hard IP LLC

Dated: July 21, 2022

/Kinza Hecht/
Kinza Hecht
Patent Agent
Reg. No. 62,325
Phone: (212) 321-0598
Email: kinza@hard-ip.net

Electronic Acknowledgement Receipt

EFS ID:	46241289
Application Number:	90015053
International Application Number:	
Confirmation Number:	7424
Title of Invention:	Biometric personal data key (PDK) authentication
First Named Inventor/Applicant Name:	9298905
Customer Number:	142179
Filer:	Kinza Hecht/Eddie Rowell
Filer Authorized By:	Kinza Hecht
Attorney Docket Number:	
Receipt Date:	22-JUL-2022
Filing Date:	08-JUN-2022
Time Stamp:	00:35:23
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition for review by the Office of Petitions	1-183_Petition_to_Suspend_Rules_905_Patent.pdf	48626 ceb169ac41e814ec5990b05df7692993b1e0ccbe	no	5

Warnings:

Information:					
2	Reexam Certificate of Service	1-183_Certificate_of_Service_of_Petition_905.pdf	26076 4dfb3aafc6049ce29fc4cae38853719e8fd2e528	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	74702	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
90/015,053	06/08/2022	9298905	

CONFIRMATION NO. 7424

89194
Patent Law Works/Proxense
Greg Sueoka
310 East 4500 South, Suite 400
Salt Lake City, UT 84107

POWER OF ATTORNEY NOTICE

OC000000134916132

Date Mailed: 07/05/2022

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/29/2022.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/pflewis/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
90/015,053	06/08/2022	9298905	

CONFIRMATION NO. 7424

142179
Hard IP LLC (General)
10 Notch Hill Drive
Livingston, NJ 07039

POA ACCEPTANCE LETTER

OC000000134916161

Date Mailed: 07/05/2022

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/29/2022.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/pflewis/

PTO/AIA/81B (07-13)
Approved for use through 03/31/2021. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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REEXAMINATION OR SUPPLEMENTAL EXAMINATION – PATENT OWNER POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS FOR REEXAMINATION OR SUPPLEMENTAL EXAMINATION AND PATENT

Control Number(s)	90/015,053
Filing Date(s)	06-08-2022
First Named Inventor	John J. Giobbi
Title	Biometric personal data key (PDK) authentication
Patent Number	9,298,905
Examiner Name	RIMELL, SAMUEL G
Attorney Docket No(s)	2090-0002-REX

I. Power of Attorney. This form may be used to change the Power of Attorney in a reexamination or supplemental examination proceeding (or multiple proceedings where merged). This form may also be used to change the Power of Attorney in the patent file; in such a case, a copy of this form will be placed in both the patent file and the reexamination or supplemental examination proceeding.

A. Revocation of Previous Power of Attorney. I hereby revoke all previous patent owner powers of attorney, if any, given:

☒ in the above-identified reexamination or supplemental examination proceeding control number(s) (more than one may be changed only if the proceedings are merged).

☐ in the file of the above-identified patent.

(check BOTH boxes if change in BOTH the patent file and the reexamination or supplemental examination proceeding is requested).

B. Designation of Power of Attorney.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s) to prosecute the proceeding(s)/patent identified above and selected in section I(A), and to transact all business in the United States Patent and Trademark Office connected therewith:

142179

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the proceeding(s) identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Authorization for the Power of Attorney is provided by the signature on page 2 of this form.

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 15 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/838 (07-13)
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II. Change of Correspondence Address

Please recognize or change the correspondence address for the above-identified reexamination or supplemental examination proceeding control number(s) (more than one may be changed **only** if they are merged proceedings) **and for the file of the above-identified patent** to be:

☐ The address associated with the above-identified Customer Number.

OR

☒ The address associated with the Customer Number identified in the box at right: 142179

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

NOTE: THE CORRESPONDENCE ADDRESS FOR THE REEXAMINATION OR SUPPLEMENTAL EXAMINATION PROCEEDING CONTROL NUMBER(S) MUST BE THE SAME AS THAT FOR THE PATENT. SEE 37 CFR 1.33.

III. Authorization for Power of Attorney and (if selected) Change of Correspondence Address

I am the:

☐ Inventor, having ownership of the patent being reexamined.

OR

☒ Patent owner.

Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) submitted herewith or filed on _____.

Signature of Inventor or Patent Owner		Date	
Name	John J. Giobbi	Telephone	
Title and Company	Chief Executive Officer, Proxense, LLC		

NOTE: Signatures of all the inventors or patent owners of the entire interest or their representative(s) are required. If more than one signature is required, submit multiple forms, check the box below, and identify the total number of forms submitted in the blank below.

☒ A total of 1 forms are submitted. *If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: PROXENSE, LLC

Application No./Patent No.: 9,298,905 Filed/Issue Date: 03-29-2016

Titled: Biometric Personal Data Key (PDK) Authentication

PROXENSE, LLC, a Limited Liability Company

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 034843, Frame 0145, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

   1. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

   2. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Kinza Hecht/	2022-06-28
Signature	Date
Kinza Hecht	62325
Printed or Typed Name	Title or Registration Number

[Page 2 of 2]

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt	
EFS ID:	46081297
Application Number:	90015053
International Application Number:	
Confirmation Number:	7424
Title of Invention:	Biometric personal data key (PDK) authentication
First Named Inventor/Applicant Name:	9298905
Customer Number:	89194
Filer:	Kinza Hecht/Eddie Rowell
Filer Authorized By:	Kinza Hecht
Attorney Docket Number:	
Receipt Date:	29-JUN-2022
Filing Date:	08-JUN-2022
Time Stamp:	20:59:48
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	2090-0002-REX_POA.pdf	1489335 7cbcb90db097ac6c02370696e01eca88879fd4aa	no	3
Warnings:					

Information:					
2	Assignee showing of ownership per 37 CFR 3.73	2090-0002-REX_373c.pdf	122985 f544a7829da634533a12ccc6237a1f5e04651bae	no	3
Warnings:					
Information:					
			Total Files Size (in bytes):	1612320	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/015,053	06/08/2022	9298905		7424

89194 7590 06/28/2022

Patent Law Works/Proxense
Greg Sueoka
310 East 4500 South, Suite 400
Salt Lake City, UT 84107

EXAMINER	
RIMELL, SAMUEL G	

ART UNIT	PAPER NUMBER
3992	

MAIL DATE	DELIVERY MODE
06/28/2022	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

DO NOT USE IN PALM PRINTER

(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

QUINN EMANUEL URQUHART AND SULLIVAN, LLP
1300 I STREET, NW
SUITE 900
WASHINGTON, DC 20005

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/015,053* .

PATENT UNDER REEXAMINATION *9,298,905* .

ART UNIT *3992* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

PTOL-465 (Rev.07-04)

Ex Parte Reexamination Interview Summary – Pilot Program for Waiver of Patent Owner's Statement	**Control No.** 90/015,053	**Patent Under Reexamination is Requested** 9,298,905	
	Examiner Rimell, Samuel	**Art Unit** 3992	**AIA (FITF) Status** No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

All participants (USPTO official and patent owner):

(1) Greg Sueoka, #33,800 (3) _____

(2) Renee Preston CRU Paralegal (4) _____

Date of Telephonic Interview: 22 June 2022.

A. The USPTO official requested waiver of the patent owner's statement pursuant to the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The patent owner **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

☑ The patent owner **did not agree** to waive its right to file a patent owner's statement under 35 U.S.C. 304 at this time.

☐ USPTO personnel were unable to reach the patent owner.**

B. The Patent Owner of record telephoned the Office and indicated they would like to participate in the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The Patent owner of record telephoned the Office and **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

The patent owner is not required to file a written statement of this telephone communication under 37 CFR 1.560(b) or otherwise. However, any disagreement as to this interview summary must be brought to the immediate attention of the USPTO, and no later than one month from the mailing date of this interview summary. Extensions of time are governed by 37 CFR 1.550(c).

*For more information regarding this pilot program, see *Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings, 75 Fed. Reg.* 47269 (August 5, 2010), available on the USPTO Web site at http://www.uspto.gov/patents/law/notices/2010.jsp.

**The patent owner may contact the USPTO personnel at (571) 272-7705 or at the telephone number provided below if the patent owner decides to waive the right to file a patent owner's statement under 35 U.S.C. 304.

/RENEE M PRESTON/
Primary Examiner, OCRU (571) 272-1607
Signature and telephone number of the USPTO official, who contacted, was contacted by, or attempted to contact the patent owner.

cc: Requester (if third party requester)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/015,053	06/08/2022	9298905

CONFIRMATION NO. 7424

REEXAMINATION REQUEST NOTICE

Marissa Ducca
Quinn Emanuel Urquhart & Sullivan, LLP
1300 I Street NW, Suite 900
Washington, DC 20005

OC000000134510052

Date Mailed: 06/14/2022

NOTICE OF REEXAMINATION REQUEST FILING DATE

(Third Party Requester)

Requester is hereby notified that the filing date of the request for reexamination is 06/08/2022, the date that the filing requirements of 37 CFR § 1.510 were received.

A decision on the request for reexamination will be mailed within three months from the filing date of the request for reexamination. (See 37 CFR 1.515(a)).

A copy of the Notice is being sent to the person identified by the requester as the patent owner. Further patent owner correspondence will be the latest attorney or agent of record in the patent file. (See 37 CFR 1.33). Any paper filed should include a reference to the present request for reexamination (by Reexamination Control Number).

cc: Patent Owner
89194
Patent Law Works/Proxense
Greg Sueoka
310 East 4500 South, Suite 400
Salt Lake City, UT 84107

/tplovelace/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/015,053	06/08/2022	9298905

CONFIRMATION NO. 7424

REEXAM ASSIGNMENT NOTICE

89194
Patent Law Works/Proxense
Greg Sueoka
310 East 4500 South, Suite 400
Salt Lake City, UT 84107

OC000000134510054

Date Mailed: 06/14/2022

NOTICE OF ASSIGNMENT OF REEXAMINATION REQUEST

The above-identified request for reexamination has been assigned to Art Unit 3992. All future correspondence to the proceeding should be identified by the control number listed above and directed to the assigned Art Unit.

A copy of this Notice is being sent to the latest attorney or agent of record in the patent file or to all owners of record. (See 37 CFR 1.33(c)). If the addressee is not, or does not represent, the current owner, he or she is required to forward all communications regarding this proceeding to the current owner(s). An attorney or agent receiving this communication who does not represent the current owner(s) may wish to seek to withdraw pursuant to 37 CFR 1.36 in order to avoid receiving future communications. If the address of the current owner(s) is unknown, this communication should be returned within the request to withdraw pursuant to Section 1.36.

NOTICE OF USPTO EX PARTE REEXAMINATION PATENT OWNER STATEMENT WAIVER PROGRAM

The USPTO has implemented a pilot program where, after a reexamination proceeding has been granted a filing date and before the examiner begins his or her review, the patent owner may orally waive the right to file a patent owner's statement. See *"Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings,"* 75 FR 47269 (August 5, 2010). One goal of the pilot program is to reduce the pendency of reexamination proceedings and improve the efficiency of the reexamination process.

Ordinarily when ex parte reexamination is ordered, the USPTO must wait until after the receipt of the patent owner's statement and the third party requester's reply, or after the expiration of the time period for filing the statement and reply (a period that can be as long as 5 to 6 months), before mailing a first determination of patentability. The USPTO's first determination of patentability is usually a first Office action on the merits or a Notice of Intent to Issue Reexamination Certificate (NIRC).

Under the pilot program, the patent owner's oral waiver allows the USPTO to act on the first determination of patentability immediately after determining that reexamination will be ordered, and in a suitable case issue the reexamination order and the first determination of patentability (which could be a NIRC if the claims under reexamination are confirmed) at the same time.

Benefits to the Patent Owner for participating in this pilot program include reduction in pendency.

To participate in this pilot program, Patent Owners may contact the USPTO's Central Reexamination Unit (CRU) at 571-272-7705. The USPTO will make the oral waiver of record in the reexamination file in an interview summary and a copy will be mailed to the patent owner and any third party requester.

cc: Third Party Requester(if any)
Marissa Ducca
Quinn Emanuel Urquhart & Sullivan, LLP
1300 I Street NW, Suite 900
Washington, DC 20005

/tplovelace/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 7424

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
90/015,053	06/08/2022 **RULE**	713	3992	

APPLICANTS

INVENTORS

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PROXENSE, LLC (Assignee), Bend, OR;
Marissa Ducca Quinn Emanuel Urquhart & Sullivan, LLP (3rd Pty Req.), Washington, DC;
Marissa Ducca, Washington, DC

** **CONTINUING DATA** *************************

This application is a REX of 14/521,982 10/23/2014 PAT 9298905 *
which is a CON of 13/710,109 12/10/2012 PAT 8886954
which is a CON of 11/314,199 12/20/2005 PAT 8352730
which claims benefit of 60/652,765 02/14/2005
and claims benefit of 60/637,538 12/20/2004
(*)Data provided by applicant is not consistent with PTO records.

** **FOREIGN APPLICATIONS** *************************

** **IF REQUIRED, FOREIGN FILING LICENSE GRANTED** **

		STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
Foreign Priority claimed ❑ Yes ❑ No 35 USC 119(a-d) conditions met ❑ Yes ❑ No Verified and Acknowledged ________ Examiner's Signature	❑ Met after Allowance ____ Initials			18	3

ADDRESS

Patent Law Works/Proxense
Greg Sueoka
310 East 4500 South, Suite 400
Salt Lake City, UT 84107
UNITED STATES

TITLE

Biometric personal data key (PDK) authentication

FILING FEE RECEIVED		
12600	FEES: Authority has been given in Paper No.___________ to charge/credit DEPOSIT ACCOUNT No.___________ for following:	❑ All Fees ❑ 1.16 Fees (Filing) ❑ 1.17 Fees (Processing Ext. of time) ❑ 1.18 Fees (Issue) ❑ Other _______________ ❑ Credit

BIB (Rev. 05/07).

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 90/015,053	Filing Date 06/08/2022	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	06/13/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 19	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/TYWANA P LOVELACE/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



User Name: Renee Preston
Date and Time: Thursday, June 9, 2022 8:43:00 AM EDT
Job Number: 172843466

Document (1)

1. *IPR2021-01447, SAMSUNG ELECTRONICS AMERICA, INC Vs. Proxense, LLC*
   Client/Matter: -None-
   Search Terms: 9298905 or 9,298,905
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
Dockets	-None-

IPR2021-01447, SAMSUNG ELECTRONICS AMERICA, INC Vs. Proxense, LLC

US Patent Trial and Appeals Board - Alexandria

Alexandria

This case was retrieved on 06/09/2022

Header

Case Number: IPR2021-01447
Date Filed: 08/26/2021
Date Full Case Retrieved: 06/09/2022
Status: Open
Misc: (0) Unknown; Civil

Summary

Court Case Status: Institution Denied
Case Type: IPR: Inter partes review
Date of Decision to Institute Case: 2022-02-28
Technical Center Number: 2400
Patent Application Number: 14521982
Patent Number: 9298905

Participants

Litigants	Attorneys
SAMSUNG ELECTRONICS AMERICA, INC **Petitioner** Proxense, LLC **PatentOwner**	

Proceedings

Date	#	Proceeding Text	Details
08/26/2021		905 Petition	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 1 Public? Yes
08/26/2021		905 POA	Filed By: petitioner Document Type: PAPER Paper/Exhibit No: 2 Public? Yes
08/26/2021		US 9,298,905	Filed By: petitioner

Renee Preston

Date	#	Proceeding Text	Details
			Document Type: EXHIBITS Paper/Exhibit No: 1001 Public? Yes
08/26/2021		905 File History	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1002 Public? Yes
08/26/2021		Decl of Dr. Wolfe	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1003 Public? Yes
08/26/2021		CV of Dr. Wolf	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1004 Public? Yes
08/26/2021		Scott	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1005 Public? Yes
08/26/2021		Lapsley	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1007 Public? Yes
08/26/2021		Robinson	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1008 Public? Yes
08/26/2021		Berardi	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1010

Date	#	Proceeding Text	Details
			Public? Yes
08/26/2021		Shreve	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1012 Public? Yes
08/26/2021		Kinoshita	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1013 Public? Yes
08/26/2021		Schneier	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1014 Public? Yes
08/26/2021		Decl of Dr. Hall-Ellis	Filed By: petitioner Document Type: EXHIBITS Paper/Exhibit No: 1015 Public? Yes
09/17/2021		NOTICE OF FILING DATE ACCORDED TO PETITION AND TIME FOR FILING PATENT OWNER PRELIMINARY RESPONSE	Filed By: board Document Type: PAPER Paper/Exhibit No: 3 Public? Yes
11/26/2021		Patent Owner Power of Attorney	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 4 Public? Yes
11/26/2021		Patent Owner Mandatory Notice	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 5 Public? Yes
11/29/2021		Patent Owner Preliminary Response	Filed By:

Date	#	Proceeding Text	Details
			patentowner Document Type: PAPER Paper/Exhibit No: 6 Public? No
11/29/2021		Samsung's Opening Claim Construction Brief	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2001 Public? Yes
11/29/2021		Proxense, LLC's Responsive Claim Construction Brief	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2002 Public? Yes
11/29/2021		Nielson Declaration	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2003 Public? Yes
11/29/2021		Law360 Article	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2004 Public? Yes
11/29/2021		Motion Requesting Acceptance of Submission	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 7 Public? Yes
12/07/2021		Order: Authorizing Motion to Expunge	Filed By: board Document Type: PAPER Paper/Exhibit No: 8 Public? Yes
12/16/2021		Motion to Expunge	Filed By: patentowner Document Type: PAPER Paper/Exhibit No:

Date	#	Proceeding Text	Details
			9 Public? Yes
12/17/2021		Patent Owner's Preliminary Response - December 17, 2021	Filed By: patentowner Document Type: PAPER Paper/Exhibit No: 10 Public? Yes
01/27/2022		ORDER Granting Motion to Expunge 37 C.F.R. 42.5	Filed By: board Document Type: PAPER Paper/Exhibit No: 11 Public? Yes
02/03/2022		Samsung's Reply Claim Construction Brief	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2005 Public? Yes
02/03/2022		Proxense, LLC's Sur-Reply Claim Construction Brief	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2006 Public? Yes
02/03/2022		December 27, 2021 Markman Hearing Transcript	Filed By: patentowner Document Type: EXHIBITS Paper/Exhibit No: 2007 Public? Yes
02/28/2022		Institution Decision: Deny	Filed By: board Document Type: PAPER Paper/Exhibit No: 12 Public? Yes
02/28/2022		Exhibit 3001	Filed By: board Document Type: EXHIBITS Paper/Exhibit No: 3001 Public? Yes

Date	#	Proceeding Text	Details
02/28/2022		Exhibit 3002	Filed By: board Document Type: EXHIBITS Paper/Exhibit No: 3002 Public? Yes

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End of Document

Patent Assignment Abstract of Title

Total Assignments: 1

Application #: 14521982 **Filing Dt:** 10/23/2014 **Patent #:** 9298905 **Issue Dt:** 03/29/2016
PCT #: NONE **Intl Reg #:** **Publication #:** NONE **Pub Dt:**
Inventor: John J. Giobbi
Title: Biometric Personal Data Key (PDK) Authentication

Assignment: 1

Reel/Frame: 034843 / 0145 **Received:** 01/29/2015 **Recorded:** 01/29/2015 **Mailed:** 01/30/2015 **Pages:** 3
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: GIOBBI, JOHN J. **Exec Dt:** 01/29/2015
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Search Results as of: 06/09/2022 08:23 AM

If you have any comments or questions concerning the data displayed, contact PRD / Assignments at 571-272-3350. v.2.6
Web interface last modified: Jun 26, 2017 v.2.6



User Name: Renee Preston
Date and Time: Thursday, June 9, 2022 8:56:00 AM EDT
Job Number: 172844257

Document (1)

1. *6:21cv210 Proxense, Llc V. Samsung Electronics Co. Ltd Et Al*

Client/Matter: -None-
Search Terms: 9298905 or 9,298,905
Search Type: Terms and Connectors
Narrowed by:

Content Type	Narrowed by
Dockets	-None-

6:21cv210, Proxense, Llc V. Samsung Electronics Co, Ltd Et Al

US District Court Docket

United States District Court, Texas Western

(Waco)

This case was retrieved on 06/09/2022

Header

Case Number: 6:21cv210
Date Filed: 03/05/2021
Assigned To: Judge Alan D Albright
Nature of Suit: Patent (830)
Cause: Patent Infringement
Lead Docket: None
Other Docket: None
Jurisdiction: Federal Question

Class Code: Open
Statute: 35:271
Jury Demand: Both
Demand Amount: $0
NOS Description: Patent

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Renee Preston

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Proceedings

#	Date	Proceeding Text	Source
1	03/05/2021	COMPLAINT (Filing fee $ 402 receipt number 0542-14561131), No Summons requested at this time. filed by Proxense, LLC. (Attachments: # 1 Appendix A, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9, # 11 Exhibit 10, # 12 Exhibit 11, # 13 Exhibit 12, # 14 Exhibit 13, # 15 Exhibit 14, # 16 Exhibit 15, # 17 Exhibit 16, # 18 Exhibit 17, # 19 Exhibit 18, # 20 Exhibit 19, # 21 Exhibit 20, # 22 Exhibit 21, # 23 Exhibit 22, # 24 Exhibit 23, # 25 Exhibit 24, # 26 Exhibit 25, # 27 Exhibit 26, # 28 Exhibit 27, # 29 Exhibit 28, # 30 Exhibit 29, # 31 Exhibit 30, # 32 Civil Cover Sheet)(Robinson, Erick) (Entered: 03/05/2021)	
2	03/05/2021	Notice of Filing of Patent/Trademark Form (AO 120). AO 120 forwarded to the Director of the U.S. Patent and Trademark Office. (Robinson, Erick) (Entered: 03/05/2021)	
	03/05/2021	All parties shall comply with the Standing Orders of Judge Alan D. Albright located at https://www.txwd.uscourts.gov/judges-information/standing-orders/. (am) (Entered: 03/05/2021)	
	03/05/2021	Case assigned to Judge Alan D Albright. CM WILL NOW REFLECT THE JUDGE INITIALS AS PART OF THE CASE NUMBER. PLEASE APPEND THESE JUDGE INITIALS TO THE CASE NUMBER ON EACH DOCUMENT THAT YOU FILE IN THIS CASE. (am) (Entered: 03/05/2021)	
3	03/10/2021	REQUEST FOR ISSUANCE OF SUMMONS by Proxense, LLC. on Samsung Electronics America, Inc. (Robinson, Erick) (Entered: 03/10/2021)	
4	03/10/2021	MOTION to Appear Pro Hac Vice by Erick Scott Robinson for David L. Hecht (Filing fee $ 100 receipt number 0542-14577346) by on behalf of Proxense, LLC. (Robinson, Erick) (Entered: 03/10/2021)	
5	03/10/2021	MOTION to Appear Pro Hac Vice by Erick Scott Robinson for Conor McDonough (Filing fee $ 100 receipt number 0542-14577393) by on behalf of Proxense, LLC. (Robinson, Erick) (Entered: 03/10/2021)	
6	03/10/2021	Summons Issued as to Samsung Electronics America, Inc.. (bw) (Entered: 03/10/2021)	
7	03/10/2021	MOTION to Appear Pro Hac Vice by Erick Scott Robinson for Yi Wen Wu (Filing fee $ 100 receipt number 0542-14577546) by on behalf of Proxense, LLC. (Robinson, Erick) (Entered: 03/10/2021)	
8	03/10/2021	MOTION to Appear Pro Hac Vice by Erick Scott Robinson for Maxim Price (Filing fee $ 100 receipt number 0542-14577656) by on behalf of Proxense, LLC. (Robinson, Erick) (Entered: 03/10/2021)	
	03/18/2021	Text Order GRANTING 4 Motion to Appear Pro Hac Vice for Attorney David L. Hecht for Proxense, LLC. Before the Court is the Motion for Admission Pro Hac Vice. The Court, having reviewed the Motion, finds it should be GRANTED and therefore orders as follows: IT IS ORDERED the Motion for Admission Pro Hac Vice is GRANTED. IT IS FURTHER ORDERED that Applicant, if he/she has not already done so, shall immediately tender the amount of $100.00, made payable to: Clerk, U.S. District Court, in compliance with Local Rule AT-I (f)(2). Pursuant to our Administrative Policies and Procedures for Electronic Filing, the attorney hereby granted to practice pro hac vice in this case must register for electronic filing with our court within 10 days of this order entered by Judge Alan D Albright. (This is a text-only entry generated by the court. There is no document associated	

#	Date	Proceeding Text	Source
		with this entry.) (mm6) (Entered: 03/18/2021)	
	03/18/2021	Text Order GRANTING 5 Motion to Appear Pro Hac Vice for Attorney Conor McDonough for Proxense, LLC. Before the Court is the Motion for Admission Pro Hac Vice. The Court, having reviewed the Motion, finds it should be GRANTED and therefore orders as follows: IT IS ORDERED the Motion for Admission Pro Hac Vice is GRANTED. IT IS FURTHER ORDERED that Applicant, if he/she has not already done so, shall immediately tender the amount of $100.00, made payable to: Clerk, U.S. District Court, in compliance with Local Rule AT-I (f)(2). Pursuant to our Administrative Policies and Procedures for Electronic Filing, the attorney hereby granted to practice pro hac vice in this case must register for electronic filing with our court within 10 days of this order entered by Judge Alan D Albright. (This is a text-only entry generated by the court. There is no document associated with this entry.) (mm6) (Entered: 03/18/2021)	
	03/18/2021	Text Order GRANTING 7 Motion to Appear Pro Hac Vice for Attorney Yi Wen Wu for Proxense, LLC. Before the Court is the Motion for Admission Pro Hac Vice. The Court, having reviewed the Motion, finds it should be GRANTED and therefore orders as follows: IT IS ORDERED the Motion for Admission Pro Hac Vice is GRANTED. IT IS FURTHER ORDERED that Applicant, if he/she has not already done so, shall immediately tender the amount of $100.00, made payable to: Clerk, U.S. District Court, in compliance with Local Rule AT-I (f)(2). Pursuant to our Administrative Policies and Procedures for Electronic Filing, the attorney hereby granted to practice pro hac vice in this case must register for electronic filing with our court within 10 days of this order entered by Judge Alan D Albright. (This is a text-only entry generated by the court. There is no document associated with this entry.) (mm6) (Entered: 03/18/2021)	
	03/18/2021	Text Order GRANTING 8 Motion to Appear Pro Hac Vice for Attorney Maxim Price for Proxense, LLC. Before the Court is the Motion for Admission Pro Hac Vice. The Court, having reviewed the Motion, finds it should be GRANTED and therefore orders as follows: IT IS ORDERED the Motion for Admission Pro Hac Vice is GRANTED. IT IS FURTHER ORDERED that Applicant, if he/she has not already done so, shall immediately tender the amount of $100.00, made payable to: Clerk, U.S. District Court, in compliance with Local Rule AT-I (f)(2). Pursuant to our Administrative Policies and Procedures for Electronic Filing, the attorney hereby granted to practice pro hac vice in this case must register for electronic filing with our court within 10 days of this order entered by Judge Alan D Albright. (This is a text-only entry generated by the court. There is no document associated with this entry.) (mm6) (Entered: 03/18/2021)	
9	03/31/2021	Unopposed MOTION for Extension of Time to File Answer re 1 Complaint,,, by Proxense, LLC. (Attachments: # 1 Proposed Order)(Robinson, Erick) (Entered: 03/31/2021)	
	04/01/2021	Text Order GRANTING 9 Motion for Extension of Time to Answer entered by Judge Alan D Albright. Having reviewed the Unopposed Motion Requesting Leave to Extend Time to Respond or Answer Complaint (the Motion), and finding that it should be GRANTED, the Court hereby GRANTS the Motion. (This is a text-only entry generated by the court. There is no document associated with this entry.) (ep4) (Entered: 04/01/2021)	
	04/01/2021	Reset Deadlines: Samsung Electronics America, Inc. and Samsung Electronics CO, LTD answer due 6/10/2021. (lad) (Entered: 04/01/2021)	

#	Date	Proceeding Text	Source
10	04/14/2021	NOTICE of Attorney Appearance by Marissa Ducca on behalf of Samsung Electronics America, Inc., Samsung Electronics CO, LTD (Ducca, Marissa) (Main Document 10 replaced on 4/14/2021) (lad). (Entered: 04/14/2021)	
11	04/14/2021	NOTICE of Attorney Appearance by Victoria F. Maroulis on behalf of Samsung Electronics America, Inc., Samsung Electronics CO, LTD (Maroulis, Victoria) (Main Document 11 replaced on 4/14/2021) (lad). (Entered: 04/14/2021)	
12	04/15/2021	NOTICE of Attorney Appearance by Kevin P.B. Johnson on behalf of Samsung Electronics America, Inc., Samsung Electronics CO, LTD. Attorney Kevin P.B. Johnson added to party Samsung Electronics America, Inc.(pty:dft), Attorney Kevin P.B. Johnson added to party Samsung Electronics CO, LTD(pty:dft) (Johnson, Kevin) (Entered: 04/15/2021)	
13	06/10/2021	Motion to Dismiss for Failure to State a Claim for Willful and Indirect Infringement by Samsung Electronics America, Inc., Samsung Electronics CO, LTD. (Maroulis, Victoria) (Entered: 06/10/2021)	
14	06/10/2021	RULE 7 DISCLOSURE STATEMENT filed by Samsung Electronics America, Inc., Samsung Electronics CO, LTD. (Maroulis, Victoria) (Entered: 06/10/2021)	
15	06/11/2021	Pro Hac Vice Letter to Sean Pak. (lad) (Entered: 06/11/2021)	
16	06/11/2021	NOTICE of Attorney Appearance by Mark Tung on behalf of Samsung Electronics America, Inc., Samsung Electronics CO, LTD (Tung, Mark) (Entered: 06/11/2021)	
17	06/11/2021	MOTION to Appear Pro Hac Vice by Scott L. Cole for attorney Sean S. Pak (Filing fee $ 100 receipt number 0542-14906368) by on behalf of Samsung Electronics America, Inc., Samsung Electronics CO, LTD. (Cole, Scott) (Main Document 17 replaced on 6/16/2021) (lad). (Entered: 06/11/2021)	
18	06/16/2021	Standing Order regarding Scheduling Order. Signed by Judge Alan D Albright. (Entered: 06/17/2021)	
19	06/17/2021	AMENDED COMPLAINT against Samsung Electronics America, Inc., Samsung Electronics CO, LTD amending, filed by Proxense, LLC. (Attachments: # 1 Appendix A - List of Samsung Devices, # 2 Exhibit A - Letter, # 3 Exhibit 1 - US Patent No. 8,352,730, # 4 Exhibit 2 - US Patent No. 9,298,905, # 5 Exhibit 3 - US Patent No. 10,698,989, # 6 Exhibit 4 - US Patent No. 9,049,188, # 7 Exhibit 5 - US Patent No. 9,235,700, # 8 Exhibit 6 - Article, # 9 Exhibit 7 - Article, # 10 Exhibit 8 - Article, # 11 Exhibit 9 - Webpage, # 12 Exhibit 10 - Webpage, # 13 Exhibit 11 - Webpage, # 14 Exhibit 12 - Webpage, # 15 Exhibit 13 - EMVCo Approval Letter, # 16 Exhibit 14 - Webpage, # 17 Exhibit 15 - Article, # 18 Exhibit 16 - Article, # 19 Exhibit 17 - Webpage, # 20 Exhibit 18 - Article, # 21 Exhibit 19 - EMV Payment Tokenization - June 2019, # 22 Exhibit 20 - EMV Payment Tokenization - October 2020, # 23 Exhibit 21 - Samsung Pay Developers Onboarding and Project Integration Guide, # 24 Exhibit 22 - Article, # 25 Exhibit 23 - Webpage, # 26 Exhibit 24 - Webpage, # 27 Exhibit 25 - Webpage, # 28 Exhibit 26 - Samsung Pay Web checkout Integration guide, # 29 Exhibit 27 - Webpage, # 30 Exhibit 28 - Webpage, # 31 Exhibit 29 - Webpage, # 32 Exhibit 30 - Webpage)(Hecht, David) (Entered: 06/17/2021)	
20	06/24/2021	STATUS REPORT Re: Case Readiness by Proxense, LLC. (Hecht, David) (Entered: 06/24/2021)	
21	07/01/2021	Sealed Motion to Dismiss Willful and Indirect Infringement by Samsung Electronics America, Inc., Samsung Electronics CO, LTD (Attachments: # 1 Exhibit 1) (Maroulis, Victoria) (Entered: 07/01/2021)	

#	Date	Proceeding Text	Source
22	07/08/2021	Redacted Copy of 21 Sealed Motion to Dismiss Willful and Indirect Infringement by Samsung Electronics America, Inc., Samsung Electronics CO, LTD by Samsung Electronics America, Inc., Samsung Electronics CO, LTD. (Maroulis, Victoria) (Entered: 07/08/2021)	
	07/13/2021	Text Order GRANTING 17 Motion to Appear Pro Hac Vice for Attorney Sean San-Chul Pak for Samsung Electronics America, Inc. and Samsung Electronics CO, LTD. Before the Court is the Motion for Admission Pro Hac Vice. The Court, having reviewed the Motion, finds it should be GRANTED and therefore orders as follows: IT IS ORDERED the Motion for Admission Pro Hac Vice is GRANTED. IT IS FURTHER ORDERED that Applicant, if he/she has not already done so, shall immediately tender the amount of $100.00, made payable to: Clerk, U.S. District Court, in compliance with Local Rule AT-I (f)(2). Pursuant to our Administrative Policies and Procedures for Electronic Filing, the attorney hereby granted to practice pro hac vice in this case must register for electronic filing with our court within 10 days of this order entered by Judge Alan D Albright. (This is a text-only entry generated by the court. There is no document associated with this entry.) (mm6) (Entered: 07/13/2021)	
23	07/15/2021	Sealed Document: Plaintiff Proxense, LLC's Opposition to 21 Defendant's Renewed Rule 12(b)(6) Motion to Dismiss by Proxense, LLC (Attachments: # 1 Exhibit A) (Hecht, David) (Entered: 07/15/2021)	
24	07/15/2021	Redacted Copy of Plaintiff Proxense, LLC's Opposition to 21 Defendant's Renewed Rule 12(b)(6) Motion to Dismiss of 23 Sealed Document by Proxense, LLC. (Attachments: # 1 Exhibit A)(Hecht, David) (Entered: 07/15/2021)	
25	07/22/2021	Proposed Scheduling Order by Proxense, LLC. (Attachments: # 1 Proposed Order)(Hecht, David) (Entered: 07/22/2021)	
26	07/22/2021	Sealed Document: Samsung's Reply In Support Of of 21 Sealed Motion to Dismiss Willful and Indirect Infringement by Samsung Electronics America, Inc., Samsung Electronics CO, LTD by Samsung Electronics America, Inc., Samsung Electronics CO, LTD (Maroulis, Victoria) (Entered: 07/22/2021)	
27	07/23/2021	Pro Hac Vice Letter for James Zak. (ir) (Entered: 07/23/2021)	
28	07/27/2021	JOINT AGREED SCHEDULING ORDER AND DISCOVERY ORDER GOVERNING PROCEEDINGS PATENT CASE: Markman Hearing set for 12/16/2021 01:30 PM before Judge Alan D Albright. Signed by Judge Alan D Albright. (ir) (Entered: 07/27/2021)	
29	07/28/2021	ORDER Setting Zoom Markman Hearing for 12/16/2021 01:30 PM before Judge Alan D Albright. Signed by Judge Alan D Albright. (bot1) (Entered: 07/28/2021)	
30	07/29/2021	Redacted Copy of 26 Sealed Document, by Samsung Electronics America, Inc., Samsung Electronics CO, LTD. (Maroulis, Victoria) (Entered: 07/29/2021)	
31	10/08/2021	Standing Order Regarding Order Governing Proceedings Patent Cases. Signed by Judge Alan D Albright. (Entered: 10/13/2021)	
32	10/18/2021	Motion/NOTICE OF PROPOSED AMENDED SCHEDULING ORDER (JOINT) by Proxense, LLC (Attachments: # 1 Proposed Order Exhibit A - Proposed Amended Scheduling Order)(Hecht, David) Modified on 10/19/2021 to changed to a motion due to proposed order being attached(ir). (Entered: 10/18/2021)	
33	10/28/2021	Opening Claim Construction Brief by Samsung Electronics America, Inc., Samsung Electronics CO, LTD. (Attachments: # 1 Ducca Declaration, # 2 Exhibit A, # 3 Exhibit 1, # 4 Exhibit 2, # 5 Exhibit 3, # 6 Exhibit 4, # 7 Exhibit 5)(Maroulis, Victoria) (Entered:	

#	Date	Proceeding Text	Source
		10/28/2021)	
34	11/03/2021	NOTICE of Inter Partes Review by Proxense, LLC (McDonough, Conor) (Entered: 11/03/2021)	
35	11/17/2021	Reply Claim Construction Brief regarding 33 Claim Construction Brief, by Proxense, LLC. (Attachments: # 1 Declaration of Conor B. McDonough, # 2 Exhibit A - Samsungs Proposed Claim Constructions, # 3 Exhibit B - Proxenses Proposed Claim Constructions, # 4 Exhibit C - October 8, 2021 Email, # 5 Exhibit D - October 17, 2021 Email, # 6 Exhibit E - Chart, # 7 Exhibit F - November 1-2, 2021 Emails, # 8 Exhibit G - File History Excerpt, # 9 Exhibit H - PROX_SAMSUNG_003928)(Hecht, David) (Entered: 11/17/2021)	
36	11/29/2021	ORDER, (Markman Hearing RESET for 12/27/2021 09:00 AM before Judge Alan D Albright). Signed by Judge Alan D Albright. (bot2) (Entered: 11/29/2021)	
37	12/06/2021	BRIEF Reply Claim Construction Brief regarding 33 Claim Construction Brief, by Samsung Electronics America, Inc., Samsung Electronics CO, LTD. (Attachments: # 1 Declaration of M Ducca in Support of Samsung's Reply Claim Construction Brief, # 2 Exhibit Ex. 6)(Maroulis, Victoria) (Entered: 12/06/2021)	
38	12/06/2021	NOTICE of Proposed Second Amended Scheduling Order by Samsung Electronics America, Inc., Samsung Electronics CO, LTD (Attachments: # 1 Proposed Joint Second Amended Scheduling Order)(Maroulis, Victoria) Modified on 12/7/2021 (jc5). (Entered: 12/06/2021)	
39	12/13/2021	Reply Claim Construction Brief regarding 33 Claim Construction Brief, 37 Brief, 35 Claim Construction Brief,, by Proxense, LLC. (Attachments: # 1 Declaration of Conor B. McDonough, # 2 Exhibit I - Excerpts from the '730 Patent History, # 3 Exhibit J - Excerpts from IPR2021-01444, Paper 3, # 4 Exhibit K - Excerpts from IPR2021-01447, Paper 1, # 5 Exhibit L - Excerpts from IPR2021-01448, Paper 1)(Hecht, David) (Entered: 12/13/2021)	
40	12/20/2021	NOTICE Joint Claim Construction Statement by Proxense, LLC (Hecht, David) (Entered: 12/20/2021)	
41	12/20/2021	Sealed Order. Signed by Judge Alan D Albright. (jc5) (Entered: 12/21/2021)	
42	12/27/2021	Minute Entry for proceedings held before Judge Alan D Albright: Markman Hearing held on 12/27/2021. PARTIES ANNOUNCE READY. STATEMENTS AND ARGUMENTS OF COUNSEL HEARD. DISCOVERY IS OPEN. WRITTEN ORDER FORTHCOMING. (Minute entry documents are not available electronically.) (Court Reporter Kristie Davis.)(jc5) (Entered: 12/27/2021)	
43	01/18/2022	CLAIM CONSTRUCTION ORDER. Signed by Judge Alan D Albright. (ir) (Entered: 01/18/2022)	
44	01/26/2022	Transcript filed of Proceedings held on 12-27-21, Proceedings Transcribed: Markman hearing. Court Reporter/Transcriber: Kristie Davis, Telephone number: 254-340-6114, Email: kmdaviscsr@yahoo.com. (kd) (Entered: 01/26/2022)	
45	01/26/2022	Proposed Scheduling Order by Proxense, LLC. (Hecht, David) (Entered: 01/26/2022)	
46	01/26/2022	DEFICIENCY NOTICE: re 45 Scheduling Recommendations/Proposed Scheduling Order. Pursuant to the Standing Order Governing Proceedings Dated 10/8/2021. The proposed Order shall omit the word Proposed from the title. Resubmit the Scheduling order and use the Motion to Extend Scheduling Order Deadlines. (ir) (Entered: 01/27/2022)	
47	01/27/2022	Joint MOTION to Extend Scheduling Order Deadlines by	

#	Date	Proceeding Text	Source
		Proxense, LLC. (Hecht, David) (Entered: 01/27/2022)	
48	01/28/2022	SCHEDULE: Joinder of Parties due by 2/21/2022. Amended Pleadings due by 5/2/2022. Dispositive and Daubert Motions due by 10/17/2022. Pretrial Conference set for 1/3/2023 before Judge Alan D Albright. Jury Selection set for 1/17/2023 before Judge Jeffrey C. Manske. Jury Trial set for 1/17/2023 before Judge Alan D Albright. Signed by Judge Alan D Albright. (ir) (Entered: 01/28/2022)	
	03/10/2022	Parties shall comply with Judge Albright's updated standing orders and COVID-19 standing order available by clicking the included hyperlinks. The updated orders are as follows:1. Standing Order Regarding Notice of Readiness for Patent Cases 030722,2. Standing Order on Pretrial Procedures and Requirements in Civil Cases 030722,3. Standing Order Governing Proceedings 4.0 - Patent Cases 030722,4. Amended Standing Order Regarding Coronavirus (COVID-19) and Court Proceedings.5. Amended Standing Order Regarding Joint Or Unopposed Request To Change Deadlines 030722,6. Amended Standing Order Regarding Filing Documents Under Seal and Redacted Public Versions 030722. (jkda) (Entered: 03/10/2022)	
49	03/10/2022	Proposed Protective Order by Samsung Electronics America, Inc., Samsung Electronics CO, LTD. (Maroulis, Victoria) (Entered: 03/10/2022)	
50	03/11/2022	PROTECTIVE ORDER. Signed by Judge Alan D Albright. (lad) (Entered: 03/11/2022)	
51	03/22/2022	NOTICE of Attorney Appearance by Brian D. Melton on behalf of Proxense, LLC (Melton, Brian) (Entered: 03/22/2022)	
52	03/22/2022	NOTICE of Attorney Appearance by Geoffrey L. Harrison on behalf of Proxense, LLC (Harrison, Geoffrey) (Entered: 03/22/2022)	
53	03/22/2022	NOTICE of Attorney Appearance by Bryce T. Barcelo on behalf of Proxense, LLC (Barcelo, Bryce) (Entered: 03/22/2022)	
54	03/22/2022	NOTICE of Attorney Appearance by Meng Xi on behalf of Proxense, LLC (Xi, Meng) (Entered: 03/22/2022)	
55	04/01/2022	Fourth MOTION to Appear Pro Hac Vice by Scott L. Cole (Filing fee $ 100 receipt number 0542-15878866) by on behalf of Samsung Electronics America, Inc., Samsung Electronics CO, LTD. (Attachments: # 1 Personal Data Sheet KH_Courts Admitted)(Cole, Scott) (Main Document 55 replaced on 4/1/2022) (sv). (Entered: 04/01/2022)	
56	04/04/2022	ORDER GRANTING 55 Motion to Appear Pro Hac Vice for Attorney Kevin Hardy. Attorney added for Samsung Electronics America, Inc., Samsung Electronics CO, LTD. Pursuant to our Administrative Policies and Procedures for Electronic Filing, the attorney hereby granted to practice pro hac vice in this case must register for electronic filing with our court within 10 days of this order, if he/she has not previously done so for a prior case in this District. Signed by Judge Alan D Albright. (bot1) (Entered: 04/04/2022)	
57	04/14/2022	Standing Order Regarding Order Governing Proceedings Patent Cases. Signed by Judge Alan D Albright. (Entered: 04/14/2022)	
58	05/02/2022	ANSWER to 19 Amended Complaint.,,,, with Jury Demand by Samsung Electronics America, Inc., Samsung Electronics CO, LTD.(Maroulis, Victoria) (Entered: 05/02/2022)	

Patents

Number	Title	Issued	Class	Subclass

Number	Title	Issued	Class	Subclass
8,352,730	Biometric personal data key (PDK) authentication	01/08/2013	713	155
9,049,188	Hybrid device having a personal digital key and receiver-decoder circuit and methods of use	06/02/2015	1	1
9,235,700	Hybrid device having a personal digital key and receiver-decoder circuit and methods of use	01/12/2016	1	1
9,298,905	Biometric personal data key (PDK) authentication	03/29/2016	1	1
10,698,989	Biometric personal data key (PDK) authentication	06/30/2020	1	1

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End of Document

Litigation Search Report CRU 3999

Reexamination Control No. 90/015,053

To: Examiner	From: Renee Preston
Location: CRU	Location: CRU 3999 / REM 4C75
Art Unit: 3992	Phone: (571) 272-1607
Date: 06/09/2022	E-mail: renee.preston@uspto.gov

Search Notes

U.S. Patent No. 9,298,905

1. Performed a KeyCite Search in Westlaw, which retrieves all history on the patent including any litigation.
2. Performed a search on the patent in Lexis CourtLink for any open dockets or closed cases.
3. Performed a search in Lexis in the Federal Courts and Administrative Materials databases for any cases found.
4. Performed a search in Lexis in the IP Journal and Periodicals database for any articles on the patent.
5. Performed a search in Lexis in the news databases for any articles about the patent or any articles about litigation on this patent.

Litigation: Cases Found

Status	Docket	Description
Open	IPR2021-01447	SAMSUNG ELECTRONICS AMERICA, INC Vs. Proxense, LLC
Open	6:21cv210	Proxense, Llc V. Samsung Electronics Co., Ltd Et Al

Paper No. 06/09/2022

2022 WL 683115 (Patent Tr. & App. Bd.)
Only the Westlaw citation is currently available.

SAMSUNG ELECTRONICS AMERICA, INC., Petitioner,

v.

PROXENSE, LLC, Patent Owner.

Patent Trial and Appeal Board.
IPR2021-01447
Patent 9,298,905 B1
Date: February 28, 2022

Attorneys and Law Firms

FOR PETITIONER: James M. Glass, Marissa Ducca, Richard Lowry, Sean Gloth, QUINN EMANUEL URQUHART & SULLIVAN, LLP, jimglass@quinnemanuel.com, marissaducca@quinnemanuel.com, richardlowry@quinnemanuel.com, seangloth@quinnemanuel.com

FOR PATENT OWNER: David L. Hecht, James Zak, HECHT PARTNERS LLP, dhecht@hechtpartners.com, jzak@hechtpartners.com

Before KEVIN F. T URNER, JUSTIN T. ARBES, and DAVID C. McKONE, Administrative Patent Judges.

DECISION

Denying Institution of *Inter Partes* Review

35 U.S.C. § 314

TURNER, Administrative Patent Judge.

I. INTRODUCTION

A. Background and Summary

***1** Petitioner Samsung Electronics America, Inc. filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of claims 1–12 of U.S. Patent No. 9,298,905 B1 (Ex. 1001, "the '905 Patent") pursuant to 35 U.S.C. § 311(a). Patent Owner Proxense, LLC filed a Preliminary Response (Paper 10, "Prelim. Resp.") pursuant to 35 U.S.C. § 313.

Pursuant to 35 U.S.C. § 314(a), the Director may not authorize an *inter partes* review unless the information in the petition and preliminary response "shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." *See* 37 C.F.R. § 42.4(a) ("The Board institutes the trial on behalf of the Director."). For the reasons that follow, we do not institute an *inter partes* review.

B. Related Matters

The parties indicate that the '905 Patent is the subject of *Proxense, LLC v. Samsung Electronics Co., Ltd.*, Case No. 6:21-cv-00210 (W.D. Tex.) ("the district court case"). *See* Pet. 3; Paper 5, 1. Petitioner also filed petitions challenging claims of other patents asserted in the district court case: Cases IPR2021-01438, IPR2021-01439, IPR2021-01444, and IPR2021-01448.

C. The '905 Patent

The '905 Patent discloses systems for "authentication responsive to biometric verification of a user being authenticated," using "a persistent storage to persistently store[ ] a code such as a device identifier (ID) and biometric data for a user in a tamper-resistant format." Ex. 1001, 1:65–67. The '905 Patent states that "[c]onventional user authentication techniques," such as requiring input of a password, were deficient because they "require[d] the user to memorize or otherwise keep track of the credentials" and "it can be quite difficult to keep track of them all." *Id.* at 1:28–37. Other techniques, such as "provid[ing] the user with an access object ... that the user can present to obtain access," were inadequate because "authentication merely proves that the access object itself is valid; it does not verify that the legitimate user is using the access object." *Id.* at 1:38–46. According to the '905 Patent, there was a need in the art for a system for "verifying a user that is being authenticated that does not suffer from [such] limitations" and "ease[s] authentications by wirelessly providing an identification of the user." *Id.* at 1:55–58.

Figure 2 of the '905 Patent is reproduced below.

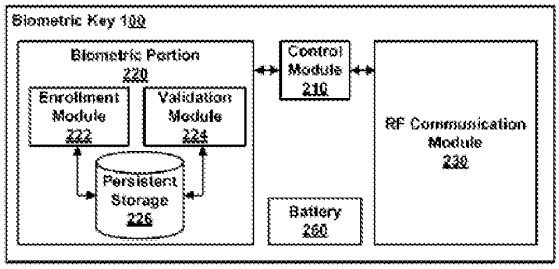


FIG. 2

Figure 2 is a block diagram of the functional modules of a biometric key. Ex. 1001, 3:30–33, 4:42–43. Enrollment module 222 registers a user with biometric key 100 by persistently storing biometric data associated with the user (e.g., a digital image of the retina, fingerprint, or voice sample) in persistent storage 226. *Id.* at 4:67–5:23. Enrollment module 222 registers biometric key 100 with a trusted authority by providing a code, such as a device ID, to the trusted authority or, alternatively, the trusted authority can provide a code to biometric key 100. *Id.* at 5:3–7. The code is stored in persistent storage 226. *Id.* at 5:24–26. "Persistent storage 226 is itself, and stores data in, a tamper-proof format to prevent any changes to the stored data." *Id.* at 5:31–33. "Tamper-proofingincreases reliability of authentication because it does not allow any changes to biometric data (i.e., allows reads of stored data, but not writes to store new data or modify existing data)." *Id.* at 5:33–36. In a fingerprint embodiment, validation module 224 uses scan pad 120 (shown in Figure 1) to capture scan data from the user's fingerprint and compares the scanned data to the stored fingerprint to determine whether the scanned data matches the stored data. *Id.* at 5:8–12.

***2** The interaction of biometric key 100 with other system components is illustrated in Figure 3, reproduced below.

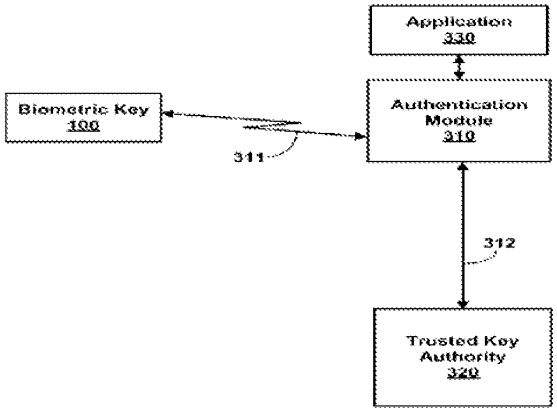


FIG. 3

Figure 3 is "a block diagram illustrating a system for providing authentication information for a biometrically verified user." Ex. 1001, 3:33–35. Authentication module 310 is coupled to biometric key 100 via line 311 (a wireless medium) and with trusted key authority 320 via line 312 (a secure data network such as the Internet). *Id.* at 5:67–6:7. Authentication module 310 requires the device ID code (indicating successful biometric verification) from biometric key 100 before allowing the user to access application 330. *Id.* at 6:10–13. Authentication module 310 provides the device ID code from biometric key 100 to trusted key authority 320 to verify that it belongs to a legitimate key. *Id.* at 6:13–19; *see also id.* 6:39–45 ("In one embodiment, trusted key authority 320 verifies that a code from a biometric key is legitimate. To do so, the trusted key authority 320 stores a list of codes for legitimate biometric keys .... In one embodiment, trusted key authority 320 can also store a profile associated with a biometric key."). Authentication module 310 then sends a message to application 330 to allow the user access to the application responsive to a successful authentication by trusted key authority 320. *Id.* at 6:17–19.

"Application 330 can be, for example, a casino machine, a keyless lock, a garage door opener, an ATM machine, a hard drive, computer software, a web site, a file, a financial account ... and the like." Ex. 1001, 6:21–26. Trusted key authority 320 can be operated by an agent, such as "a government official, a notary, and/or an employee of a third party which operates the trusted key authority, or another form of witness." *Id.* at 7:33–36. "The agent can follow standardized procedures such as requiring identification based on a state issued driver license, or a federally issued passport in order to establish a true identity of the user." *Id.* at 7:36–39.

D. Illustrative Claim

Challenged claims 1 and 9 of the '905 Patent are independent. Claims 2–8 and 10–12 depend directly or indirectly from claim 1, although the language of certain claims suggests that the Patentee may have intended certain claims to have different dependencies. *See* Pet. 34 (taking no position regarding potential indefiniteness due to the dependencies). Claims 13–18 also issued with the '905 Patent, but are not challenged.

***3** Claim 1 recites (with letter designations used in the Petition (Pet. iv) to refer to the various limitations):

1. A method comprising:

[A] persistently storing biometric data of a legitimate user and an ID code on an integrated device;

[B] responsive to receiving a request for a biometric verification of a user, receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor;

[C] comparing the scan data to the biometric data to determine whether the scan data matches the biometric data;

[D] responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and

[E] responsive to receiving an access message from the third-party trusted authority-indicating that the third-party trusted authority successfully authenticated the ID code, allowing the user to complete a financial transaction.

Ex. 1001, 10:11–28.

E. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability (Pet. 5), supported by the declaration of Dr. Andrew Wolfe (Ex. 1003) in support of its contentions:

Claim(s) Challenged	35 U.S.C. §	References/Basis
1, 3–10, 12	103(a)[1]	Scott[2], Lapsley[3]
2, 11	103(a)	Scott, Lapsley, Robinson[4]
1, 3–7, 9, 10, 12	103(a)	Berardi[5], Shreve[6], Kinoshita[7]

II. ANALYSIS

A. Discretionary Denial Under 35 U.S.C. § 314(a)

Institution of *inter partes* review is discretionary. *See Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) ("[T]he PTO is permitted, but never compelled, to institute an [*inter partes* review (IPR)] proceeding."); 35 U.S.C. § 314(a) ("The Director *may not* authorize an inter partes review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." (emphasis added)). In the Preliminary Response, Patent Owner argues that we should exercise our discretion to deny the Petition in view of the district court case, where Petitioner previously asserted that we should not exercise our discretion to deny institution. Prelim. Resp. 4–6; Pet. 13–19. We need not decide this issue, however, as we determine that Petitioner has not shown a reasonable likelihood that it would prevail with respect to at least one of the challenged claims.

B. Legal Standards

A claim is unpatentable for obviousness if, to one of ordinary skill in the pertinent art, "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting 35 U.S.C. § 103(a) (2006)). The question of obviousness is resolved on the basis of underlying factual determinations, including "the scope and content of the prior art"; "differences between the prior art and the claims at issue"; and "the level of ordinary skill in the pertinent art." *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Additionally, secondary considerations, such as "commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy." *Id.* When conducting an obviousness analysis, we consider a prior art reference "not only for what it expressly teaches, but also for what it fairly

suggests." *Bradium Techs. LLC v. Iancu*, 923 F.3d 1032, 1049 (Fed. Cir. 2019) (citation omitted).

***4** A patent claim "is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR*, 550 U.S. at 418. An obviousness determination requires finding "both 'that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.' " *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367–68 (Fed. Cir. 2016) (citation omitted); *See KSR*, 550 U.S. at 418 (for an obviousness analysis, "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does").

"Although the *KSR* test is flexible, the Board 'must still be careful not to allow hindsight reconstruction of references ... without any explanation as to *how* or *why* the references would be combined to produce the claimed invention.' " *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1066 (Fed. Cir. 2016) (citation omitted). Further, an assertion of obviousness "cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)); *accord In re NuVasive, Inc.*, 842 F.3d 1376, 1383 (Fed. Cir. 2016) (stating that "conclusory statements" amount to an "insufficient articulation[ ] of motivation to combine"; "instead, the finding must be supported by a 'reasoned explanation' " (citation omitted)); *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016) ("To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.").

C. Level of Ordinary Skill in the Art

Petitioner argues that at the time of the '905 Patent, a person of ordinary skill in the art would have had "a bachelor's degree in computer or electrical engineering (or an equivalent degree) with at least three years of experience in the field of encryption and security (or an equivalent)." Pet. 4. Patent Owner does not address the level of ordinary skill in the art in its Preliminary Response. Based on the record presented, including our review of the '905 Patent and the types of problems and solutions described in the '905 Patent and cited prior art, we adopt Petitioner's definition of the level of ordinary skill in the art and apply it for purposes of this Decision.

D. Claim Interpretation

We interpret the challenged claims

> using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

37 C.F.R. § 42.100(b) (2021). "In determining the meaning of [a] disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006). Claim terms are generally given their ordinary and customary meaning as would be understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). "There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution." *Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012).

***5** Petitioner submits that no express interpretations of any claim terms are necessary to resolve the parties' dispute and "the claim terms should be given their plain and ordinary meaning." Pet. 7. Patent Owner identifies two claim terms, "third-party trusted authority" and "access message," both recited in independent claims 1 and 9, that it presents as being edifying, based on Petitioner's Opening Claim Construction Brief in the district court case (Ex. 2001), and its own Responsive Claim Construction Brief (Ex. 2002). Prelim. Resp. 2–4.

Patent Owner points out that Petitioner argued in the district court case that a "third-party" is "an entity with a responsibility separate from executing the transaction itself." Prelim. Resp. 2 (quoting Ex. 2001, 7). In the district court case, Petitioner argued that no construction of "third-party trusted authority" was needed and "[t]he intrinsic evidence does not suggest a party or component numbered after a second party." Ex. 2001, 6–7. This was in response to its articulation of Patent Owner's position, namely, that a "third-

party trusted authority" is "[a] third component that provides a second level of authentication." *Id.* at 6.[8]

Petitioner further argued that "[d]uring prosecution, the applicant explained a 'user [ ]prov[ing] to the same institution that authenticates the fingerprint information that the user is who he purports to be' does not satisfy the 'third party' limitation," and "[t]he applicant emphasized the prior art 'disclose[d] two parties: the user and the institution.' " Ex. 2001, 7 (quoting remarks made by the applicant for a related patent accompanying an amendment and addressing the same claim term) (alterations by Petitioner). Petitioner argued that "the intrinsic evidence suggests 'third party' relates to a specific class of entity occupying the aforementioned particular relationship." *Id.* Petitioner then pointed out that "the [S]pecification [of the related patent] explains the agent for the trusted authority 'can be, for example, a government official, a notary, and/or an employee of a third party which operates the trusted key authority, or another form of witness.' " *Id.* According to Petitioner, "[t]his 'witness' role further aligns with prosecution history where the applicant explained 'sending a code to a receiver of a *door that the user is trying to access*' does not satisfy the 'third party' limitation." *Id.* (quoting an amendment in the related patent file history).

Petitioner further offered expert testimony in the district court case to support an argument that "[c]ommon industry use of 'trusted third party' identifies 'third party' as an entity with a responsibility separate from executing the transaction itself." *Id.* at 7–8 (citing a declaration of Seth James Nielson, Ph.D. (Ex. 2003 ¶¶ 70–74) and a book, Cryptographic Libraries for Developers). Dr. Nielson appears to best articulate the distinction Petitioner was drawing between a third component and a third entity: "the [S]pecification, the prosecution history, and common industry usage all suggest a 'third party' refers to an entity outside of the transaction or a witness thereto rather than a 'third component.' " Ex. 2003 ¶ 74.

In light of Petitioner's arguments in the district court case, Patent Owner contends that the parties "agree that a 'third-party trusted authority' is an institution or entity that is outside of the multi-party system (user and application or vendor) that is being authenticated." Prelim. Resp. 3.

***6** We agree with Patent Owner. The plain meaning of "third-party trusted authority" suggests an entity or party separate from the principal parties to a transaction. *See, e.g.*, The American Heritage College Dictionary 1433 (4th ed. 2004) ("third party n. ... 2. One other than the principals involved in a transaction.") (Ex. 3002).

This is consistent with the description in the Specification. For example, Figure 3, reproduced above, depicts trusted key authority 320 as an entity separate from biometric key 100, authentication module 310, and application 330. As the Specification states, "[t]rusted key authority 320 is a third-party authority that is present in some embodiments in order to provide enhanced security." Ex. 1001, 6:37–39. Examples of trusted key authorities include "a government official, a notary, and/or an employee of a third party which operates the trusted key authority, or another form of witness." *Id.* at 7:33–36. Petitioner's citations to the applicant's statement during prosecution of the related patent also are consistent with a third-party trusted authority being an entity separate from the principal parties to a transaction, as is the declaration of Dr. Nielson. *See* Ex. 2001, 6–8; Ex. 2003 ¶¶ 70–74. Thus, we interpret "third-party trusted authority" to mean a trusted authority that is an entity separate from the parties to a transaction.

Claim 1 also recites "responsive to receiving an access message from the third-party trusted authority-indicating that the third-party trusted authority successfully authenticated the ID code," with claim 9 providing a similar recitation. Patent Owner argues that "[a]n 'access message' must be sent by the 'third party trusted authority' " and the parties "agree that the 'access message' originates from the 'third-party trusted authority' and communicates information regarding authentication." Prelim. Resp. 3–4 (citing Ex. 2001, 9). Given the express requirement in claims 1 and 9 that the access message be received "from" the third-party trusted authority, we conclude that no further interpretation of the "access message" limitations is necessary.[9]

E. Obviousness Ground Based on Scott and Lapsley

Petitioner contends that claims 1, 3–10, and 12 are unpatentable over Scott and Lapsley under 35 U.S.C. § 103(a). Pet. 19–34. Patent Owner argues that the Petition fails to demonstrate that the combination of references teaches or suggests all elements of the challenged claims. Prelim. Resp. 6–9. We are not persuaded that Petitioner has established a reasonable likelihood of prevailing on this asserted ground as to any of the challenged claims. We begin with short discussions of Scott and Lapsley, and discuss Petitioner's contentions and Patent Owner's arguments thereafter.

1. Scott

*7 Scott describes "a portable personal identification device for providing secure access to a host facility" in which the device "includes a biometric sensor system capable of sensing a biometric trait of a user that is unique to the user and provid[es] a biometric signal indicative thereof." Ex. 1005, 2:5–8. Figure 1 of Scott, reproduced below, illustrates an example.

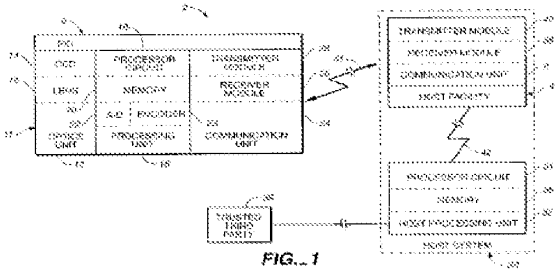


FIG._1

Figure 1 is a block diagram of security system 2 that provides access to host facility 4 (e.g., a bank, store, military base, computer system, automobile, home security system, or gate). *Id.* at 10:1, 24–28.

A registered person carries battery powered personal identification device (PID) 6 (e.g., similar in size to a hand-held pager), which includes biometric sensor 11. *Id.* at 10:28–11:5. Memory 20 stores an ID code that is set in PID 6 by the manufacturer. *Id.* at 11:11–13. The owner of PID 6 enrolls into the unit by scanning a finger using biometric sensor 11 to create an image that is stored as the fingerprint template in memory 20. *Id.* at 11:14–20, 15:30–16:6. PID 6 communicates wirelessly via transmission signal 41 with host facility 4. *Id.* at 12:14–16.

Host facility 4 is part of host system 30 (e.g., a bank ATM system or point of sale system), which also includes host processing unit 32. *Id.* at 11:31–12:2. "Host processing unit 32 may be located with host facility 4, or may be located at a remote location, where it may also serve other host facilities 4 in a distributed network 42." *Id.* at 12:3–5. "Memory 36 stores ID codes of enrolled individuals who have registered with host system 30." *Id.* at 12:6–7.

Figure 7 of Scott is reproduced below.

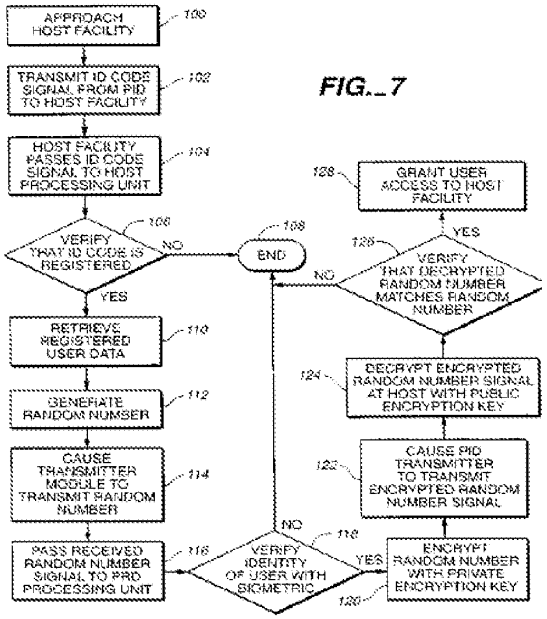


FIG._7

Figure 7 is a flow diagram of a method of accessing a host facility with a personal identification device. *Id.* at 10:13–14. A user with PID 6 approaches host facility 4 (e.g., an ATM) and transmits the ID code to host receiver module 38, which passes it to host processing unit 32. *Id.* at 17:20–27 (steps 100–104). Host processing unit 32 verifies that the received ID code represents a registered ID code and, if so, the account or user information is located. *Id.* at 17:27–30 (steps 106, 110). Host processing unit 32, via transmitter module 40, sends a random number to PID 6, in response to which PID 6 performs a user verification. *Id.* at 18:1–4 (steps 112–118). PID 6 verifies the user's fingerprint when the user places their finger on platen 15 of biometric sensor 11 by comparing the fingerprint signal to the stored fingerprint template. *Id.* at 16:19–29. If PID 6 successfully verifies the user's fingerprint, PID 6 encrypts the random number and sends it back to host processing unit 32, which decrypts the random number and verifies that it matches the random number it sent to PID 6. *Id.* at 18:5–14 (steps 120–126). If the random number is a match, host processing unit 32 grants the user access to host facility 4. *Id.* at 18:14–15 (step 128).

2. Lapsley

Lapsley describes "a system and method of using biometrics for processing electronic financial transactions such as on-line debit, off-line debit and credit transactions without requiring the user to directly use or possess any man-made tokens such as debit or credit cards or checks." Ex. 1007 ¶ 2.

***8** Figure 2 of Lapsley, reproduced below, illustrates an example.

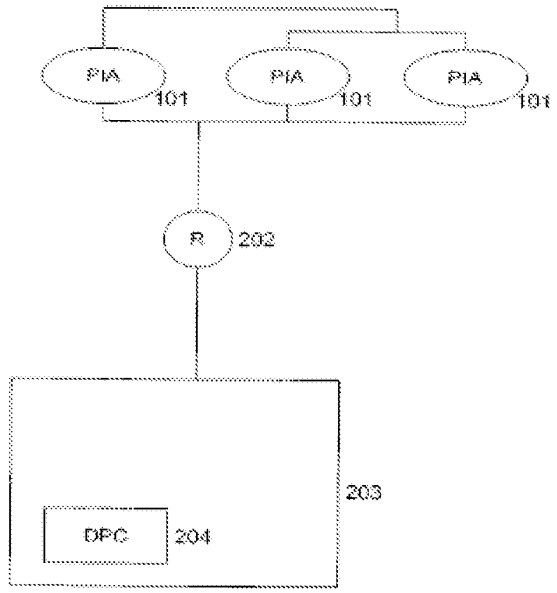


Figure 2 is a block diagram showing the connections among Party Identification Devices (PIAs) 101, router 202, and Network Operations Center (NOC) 203. *Id.* ¶ 47. Figure 2 is in the context of a supermarket chain or other multi-lane retail chain with multiple PIAs 101 connected via an in-store local area network to local router 202, which is connected to NOC 203 via frame relay lines. *Id.* ¶ 98. NOC 203 includes Data Processing Center (DPC) 204. *Id.*

Each PIA 101 has a hardware identification code that is assigned to it and registered with DPC 204 at the time of manufacture, making the PIA uniquely identifiable to DPC 204 in transmissions from the PIA. *Id.* ¶¶ 85, 161. An entity uses the PIA hardware identification code to identify itself to the DPC. *Id.* ¶ 158.

Figure 7 of Lapsley is reproduced below.

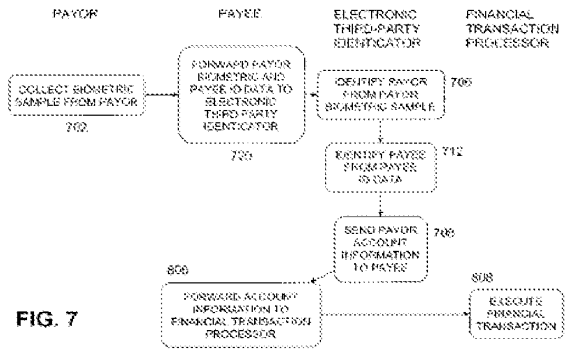


FIG. 7

Figure 7 is a flow diagram showing a transaction flow among the participants in a retail point-of-sale transaction. *Id.* ¶¶ 52, 166.

The customer/payor originates an electronic payment at a point-of-sale by submitting a bid biometric sample obtained by a biometric sensor of the PIA controlled by a payee/seller. *Id.* ¶¶ 166–167 (step 702). The PIA determines that the sample is not fraudulent and sends the sample to the DPC. *Id.* ¶ 167. The payor enters a PIN code into the PIA, and the PIA transmits the biometric data, PIN, and hardware identification code of the PIA to the DPC. *Id.* ¶ 168 (step 720). The DPC identifies the payor using the biometric sample, retrieves a list of financial accounts that the payor has registered with the system, and transmits the list to the PIA. *Id.* (steps 706, 708). The DPC identifies the payee using the PIA hardware identification code. *Id.* ¶¶ 166, 168. The payor selects a financial account at the PIA, and the PIA transmits the financial information to the payee's in-store payment system (e.g., point-of-sale terminal or electronic cash register). *Id.* ¶¶ 169–170. The in-store payment system authorizes the transaction. *Id.* ¶ 170.

3. Claim 1

Petitioner argues that Scott and Lapsley collectively teach all of the limitations of claim 1. Pet. 19–26. With respect to the preamble of claim 1, Petitioner contends that Scott teaches a method of verifying a user during authentication of an integrated device (i.e., PID 6). *Id.* at 19.

With respect to limitation A, Petitioner argues that Scott teaches persistently storing "biometric data of a user" in memory 20 of PID 6 and persistently storing a plurality of codes and other data values including an ID code that uniquely identifies PID 6, where the ID code may be set by the device manufacturer and can be the device serial number. Pet. 20–21 (citing Ex. 1005 4:1–18, 6:28–7:23, 8:13–22, 11:11–20, 13:10–15, 15:30–16:6, 19:30–32).

With respect to limitation B, Petitioner argues that Scott discloses receiving a request for a biometric verification of the user by pressing a "verify" button on PID 6, and in response to this request, PID 6 can receive scan data from a biometric scan, such as a fingerprint scan from the user placing a finger on platen 15, a voice biometric scan, "or any other type of biometric scan." Pet. 21–22 (citing Ex. 1005, 3:21–32, 16:19–29, Fig. 4A).

With respect to limitation C, Petitioner argues that Scott discloses that after receiving the biometric scan data, PID 6

compares the received biometric scan data (e.g., voice, iris, or fingerprint biometric) to a stored biometric template in order to verify the user's identity. Pet. 22 (citing Ex. 1005, 15:30–16:29).

***9** With respect to the first portion of limitation D, Petitioner relies on the teachings of Scott. Pet. 22–23. As to the limitation of "responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code," Petitioner contends that, in response to the comparison discussed in connection with limitations B and C above, Scott's PID 6 wirelessly transmits to host facility 4 "an encrypted message with [the] ID code and other data such as a synchronization counter." *Id.* (citing Ex. 1005, 4:6–18, 5:22–6:24, 6:28–7:23).

With respect to the second portion of limitation D, namely "for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority," Petitioner contends that "Scott discloses that the third-party trusted authority host processing unit 32 stores a list that includes an ID code and a public key for each registered PID 6," and host processing unit 32 compares the device ID code received from PID 6 to this list to authenticate PID 6 as a legitimately registered device. *Id.* at 23–24 (citing 5:10–21, 6:11–21, 7:24–8:4, 8:18–22; 9:23–25, 11:12–13, 12:6–13, 13:10–15, 19:18–20, 30–32, Fig. 1). Although not cited in the Petition, Dr. Wolfe repeats these arguments in his testimony. *See* Ex. 1003 ¶ 45. Petitioner and Dr. Wolfe thus identify Scott's host processing unit 32 as corresponding to the claimed "third-party trusted authority." Also, in its analysis of limitation E of claim 1, Petitioner makes clear that host facility 4 is the application (e.g., key card entry, ATM machine, garage door opener) that is accessed when the transaction is completed. Pet. 26 (citing Ex. 1005, 17:20–18:19, 5:10–21, 8:5–12).

Patent Owner argues that "host processing unit 32 is *part of* the system being accessed—it is not a third party." Prelim. Resp. 7 (citing Ex. 1005, 11:24–25, 11:30–12:1). As explained above, a "third-party trusted authority" is a trusted authority that is an entity separate from the parties to a transaction. *See supra* Section II.D. Scott describes both host processing unit 32 (the alleged "third-party trusted authority") and host facility 4 (the alleged application to be accessed by the user, "selected from a group consisting of a casino machine, a keyless lock, a garage door opener, an ATM machine, a hard drive, computer software, a web site and a file") as part of a single entity, host system 30. Ex. 1005, 11:31–12:5 ("Host facility 4 is part of a host system 30. Host system 30 will typically be bank ATM systems, point of sale systems, and the like. Host system 30 also includes a host processing unit 32, which has a processor circuit 34 and memory 36 .... Host processing unit 32 may be located with host facility 4, or may be located at a remote location, where it may also serve other host facilities 4 in a distributed network 42."). As such, host processing unit 32, because it is not an entity separate from host facility 4, is not a third-party trusted authority.

Petitioner further argues that, "[t]o the extent [that Patent Owner] argues that Scott's host processing unit 32 is not a third-party trusted authority, Lapsley ... provides additional disclosure rendering this feature of the limitation obvious to a [person of ordinary skill in the art]." Pet. 24. Petitioner contends that Lapsley's DPC is a trusted third-party authority that receives biometric data and a hardware identification code from a PIA and uniquely identifies the PIA by finding the identification code on a list the DPC maintains. *Id.* at 24–25 (citing Ex. 1007 ¶¶ 54, 82, 85, 103, 104, 158, 161, 166–168).

***10** Relying on Dr. Wolfe's testimony, Petitioner argues that a person of ordinary skill in the art

> would have been motivated to modify Scott's system such that authentication is performed by an external third-party trusted authority possessing a list of device ID codes that unique[ly] identify legitimate PIDs, as taught in Lapsley, to improve efficiency and flexibility of the system by consolidating ID codes to a central location at a secure third-party agent.

Pet. 25 (citing Ex. 1003 ¶ 47). Dr. Wolfe repeats this argument in his testimony, but does not state the basis for his opinion, rendering it of little value. *See* 37 C.F.R. § 42.65(a). Citing to Lapsley, Petitioner argues that an ordinarily skilled artisan "would have recognized the benefit in reducing the risk of fraud by improving security and authentication by using a trusted third-party agent to verify devices involved in a transaction." *Id.* (citing Ex. 1007 ¶¶ 8, 9, 27, 29). Petitioner argues that an ordinarily skilled artisan "would have further understood that it was common to have an ATM that is not owned by a bank use the bank as a third party for authorization and it was common for a store to use a bank or credit card exchange as a third party for authorization." *Id.* at 26. Petitioner does not cite any evidence for this argument.

Patent Owner responds that "Lapsley's DPC is part of the system providing access to a user's registered financial

accounts, *i.e.*, a cloud based digital wallet—not a *third party* trusted authority." Prelim. Resp. 8 (citing Ex. 1007 ¶¶ 102, 138, 139). Patent Owner contends that, "[i]n Lapsley, instead of using a personal fob or phone to access the DPC digital wallet, the user utilizes a Party Identification Apparatus located at a store." *Id.* at 8–9 (citing Ex. 1007 ¶¶ 167–169). According to Patent Owner, "[a]s the DPC is accessed with the PIA to retrieve a list of user financial accounts stored in the DPC, the DPC must be the system being accessed/ authenticated. Consequently, Lapsley's DPC is not what the Petitioner and Patent Owner agree constitutes a 'third-party trusted authority.' " *Id.* at 9.

We agree with Patent Owner. Petitioner has not explained sufficiently why Lapsley's DPC is a third-party trusted authority, what entities the DPC is a third-party relative to, or what application the user is being permitted to access in the asserted combination. As Patent Owner points out, the DPC appears to be what is being accessed, as the payee and payor, with the PIA, access a list of financial accounts from the DPC. *See id.* at 8–9; Ex. 1007 ¶¶ 167–170. Here, the DPC is the resource to be accessed, but it is a party to the transaction, rather than a third party. This is similar to the situation Petitioner argues that the applicant distinguished during prosecution: "[d]uring prosecution, the applicant explained a 'user [ ]prov[ing] to the same institution that authenticates the fingerprint information that the user is who he purports to be' does not satisfy the 'third party' limitation." *See* Ex. 2001, 7 (quoting remarks made by the applicant during prosecution of the related patent (alterations by Petitioner)).

***11** Petitioner's reasons to combine also are conclusory and unsupported by persuasive evidence. In particular, Dr. Wolfe merely repeats Petitioner's arguments in his testimony, without further explaining them or identifying the basis for his opinions.[10] *See* Ex. 1003 ¶ 48. We agree with Patent Owner that Petitioner has not shown that Lapsley teaches a "third-party trusted authority" or that a skilled artisan would have had reasons, with rational underpinning, to combine the teachings of Scott and Lapsley.

Because Petitioner does not show persuasively that either Scott or Lapsley teaches a "third-party trusted authority," as recited in claim 1, or that an ordinarily skilled artisan would have combined the teachings of those references, Petitioner has not shown sufficiently that Scott and Lapsley teach limitation D:

> responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority.

Petitioner's ground fails for an additional reason as well. The claim plainly requires that the access message be received "from the third-party trusted authority," per limitation E.

Petitioner argues that "in response to authentication of the received ID code by comparing it to a stored ID code, the receiver module 26 of PID 6 receives a random number signal from [host processing unit 32] that enables access to a secure resource." Pet. 26 (citing Ex. 1005, 5:10–21, 8:5–12, 17:20–18:19). Petitioner does not provide any further explanation as to why Scott's host processing unit 32 allegedly constitutes a "third-party trusted authority." *See id.* Nor does Petitioner mention Lapsley, or the combined teachings of Scott and Lapsley, in addressing limitation E of claim 1. *See id.* Because Petitioner has not shown sufficiently that host processing unit 32 is a "third-party trusted authority," Petitioner likewise has not established that Scott's random number signal is an "access message [sent] from the thirdparty trusted authority-indicating that the third-party trusted authority successfully authenticated the ID code," as recited in limitation E of claim 1. *See* Prelim. Resp. 9.

Therefore, Petitioner has not shown a reasonable likelihood of prevailing on its assertion that claim 1 is unpatentable over Scott and Lapsley.

4. Claims 3–10 and 12

Independent claim 9 recites the same elements of independent claim 1, discussed above, that we determine that Petitioner's Petition has not shown according to this ground of unpatentability. *See* Ex. 1001, 10:54–11:3. Claims 3–8 and 10–12 ultimately depend from claim 1. For the reasons explained above regarding claim 1, Petitioner has not shown a reasonable likelihood of prevailing on its assertion that claims 3–10 and 12 are unpatentable over Scott and Lapsley.

F. Obviousness Ground Based on Scott, Lapsley, and Robinson

Petitioner contends that claims 2 and 11 are unpatentable over Scott, Lapsley, and Robinson under 35 U.S.C. § 103(a). Pet. 34–36. Claims 2 and 11 ultimately depend from claim 1. Petitioner does not argue that the additional reference

(Robinson) teaches the missing limitations of parent claim 1, as discussed above. *See id.* Accordingly, for the reasons explained above, Petitioner has not shown a reasonable likelihood of prevailing on its assertion that claims 2 and 11 are unpatentable.

G. Obviousness Ground Based on Berardi, Shreve, and Kinoshita

***12** Petitioner contends that claims 1, 3–7, 9, 10, 12 are unpatentable over Berardi, Shreve, and Kinoshita under 35 U.S.C. § 103(a), citing the testimony of Dr. Wolfe as support. Pet. 36–46 (citing Ex. 1003).

Petitioner's allegations and citations to Berardi do not correspond to the disclosure of that reference. *See* Prelim. Resp. 10 ("With regard to Berardi, Petitioner references elements and paragraphs not contained within Berardi at all, *i.e.*, in error.").[11]

For example, in alleging that Berardi teaches "responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority," as recited in limitation D of claim 1, Petitioner argues that "issuer system 1010 [that] includes an issuer account server (IAS) 1014 that processes fob identifying information," of Berardi, corresponds to the claimed "third-party trusted authority." Pet. 38–39 (citing Ex. 1010, 10:56–11:12, 22:1–41, 28:50–67). Berardi does not describe an "issuer system 1010" or "issuer account server (IAS) 1014." The cited material in columns 10 and 11 is inapposite (and does not discuss issuer system 1010 or IAS 1014), Berardi ends its disclosure at line 30 (not line 41) of column 22, and column 28 does not exist in Berardi. Additionally, following the normal numbering of elements in patent drawings, the highest number referenced in Berardi is "906," short of the elements "1010" and "1014," discussed by Petitioner.

Also in its analysis of limitation E of claim 1, Petitioner states that Berardi discloses that "in response to authentication of the received identifying information of the fob 102, the POS device 110 may send 'an optical and/or audible transaction status message' to the RFID reader 104 for communication directly with the customer." Pet. 40–41 (citing Ex. 1010, 20:51-62, Fig. 8). Column 20, lines 51–62 of Berardi encompass a portion of claim 1 of Berardi, and the cited section does not discuss POS Device 110. Figure 8 of Berardi provides a flow diagram of an exemplary payment/transaction process, but does not detail sending an optical and/or audible message, as Petitioner alleges. We conclude that Petitioner did not simply misidentify or mislabel the components of Berardi it sought to reference.

There are numerous similar errors. For example, Petitioner relies on column 28, lines 50–67, which does not exist in Berardi, for limitations A, B and D of claim 1. *See* Pet. 37–39. Petitioner's citation to column 12, lines 36–41 in its analysis of limitation B of claim 1 does not correspond to biometric information, or anything else we can discern to be relevant to these limitations. *See id.* at 38. Instead, it discusses RFID reader 104 authenticating fob 102. Ex. 1010, 12:36–41. We do not intend to list all such errors here. We decline to speculate as to what Petitioner might have intended to cite. The result of the errors in the Petition is that we are unable to understand Petitioner's allegations and Patent Owner cannot fairly be said to be on notice of Petitioner's challenge based on Berardi.

***13** Petitioner contends that (1) to the extent Berardi fails to teach limitation D of claim 1, Shreve provides additional disclosure; and (2) to the extent Berardi fails to teach limitation E of claim 1, Kinoshita provides additional disclosure. Pet. 39–41. However, because Petitioner has not sufficiently explained its allegations as to Berardi, it is impossible to understand Petitioner's proposed combination with Shreve and Kinoshita. Moreover, as explained above, Petitioner's arguments regarding limitations A, B, D, and E of claim 1 are based largely on material that does not exist in Berardi. Thus, even if we were able to discern Petitioner's arguments for limitations A, B, D, and E of claim 1, Petitioner's cited evidence does not support its allegations for other elements of claim 1.

Petitioner's allegations for independent claim 9 largely track or refer back to its analysis of claim 1 and, thus, suffer from the same defects. *See* Pet. 44–46. Petitioner's allegations for dependent claims 3–7, 10, and 12 do not shed any additional light on what Petitioner might have intended for claim 1, and instead largely cite irrelevant or non-existent material in Berardi. *Id.* at 42–44, 46.[12]

In sum, we cannot discern Petitioner's allegations of obviousness based on Berardi, Shreve, and Kinoshita, nor can we say Patent Owner is on notice of those allegations. Accordingly, Petitioner has not shown a reasonable likelihood of prevailing on its assertion that claims 1, 3–7, 9, 10, 12 are unpatentable over Berardi, Shreve, and Kinoshita.

III. CONCLUSION

Based on the arguments presented in the Petition, we conclude that Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to at least one claim of the '905 Patent challenged in the Petition. Therefore, we do not institute an *inter partes* review.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is denied and no *inter partes* review is instituted.

Footnotes

1 The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), amended 35 U.S.C. § 103. Because the challenged claims of the '905 Patent have an effective filing date before the effective date of the applicable AIA amendment, we refer to the pre-AIA version of 35 U.S.C. § 103. *See* Ex. 1001, codes (22), (60).

2 International Patent Application Publication No. WO 99/56429, published Nov. 4, 1999 (Ex. 1005, "Scott"); when referencing portions of Scott, we refer to the original publication's page numbers in the top-center of each page (not the page numbers added by Petitioner in the lower-right corner of each page), consistent with the parties' usage in their papers.

3 US Patent Application Publication No. 2001/0000535 A1, published Apr. 26, 2001 (Ex. 1007, "Lapsley").

4 US Patent Application Publication No. 2003/0177102 A1, published Sept. 18, 2003 (Ex. 1008, "Robinson").

5 US Patent No. 7,239,226 B2, filed July 9, 2002, issued July 3, 2007 (Ex. 1010, "Berardi").

6 US Patent Application Publication No. 2002/0109580 A1, published Aug. 15, 2002 (Ex. 1012, "Shreve").

7 US Patent Application Publication No. 2003/0055792 A1, published Mar. 20, 2003 (Ex. 1013, "Kinoshita").

8 In its responsive brief, Patent Owner changed its position with respect to the terms "third-party trusted authority" and "agent" to "[n]o construction needed" and stated that it "no longer seeks to submit th[e] term[s] for construction." Ex. 2002, 12. The district court did not construe the terms. Ex. 3001.

9 Petitioner argued in the district court case that the limitations mean "[r]eceiving a signal from the agent permitting a user to access an application," Patent Owner argued that no construction was necessary and the phrases should be given their plain and ordinary meaning, and the district court determined that no construction was necessary. Ex. 3001, 3.

10 Moreover, as explained below, the entirety of Dr. Wolfe's testimony lacks credibility and is entitled to little or no weight. *See infra* Section II.G.

11 Patent Owner notes that Petitioner's errors "make[ ] it difficult to ascertain Petitioner's argument[s]," but argues that "a full reading of Berardi makes clear that it fails to disclose a 'third-party trusted authority.' " Prelim. Resp. 10. Patent Owner then presents substantive arguments as to Berardi, Shreve, and Kinoshita. *Id.* at 10–15. We deny the Petition as to this ground based on Petitioner's failure to present an understandable case as to Berardi and do not reach Patent Owner's additional arguments.

12 We also express concern with Dr. Wolfe's testimony. Paragraphs 71–97 of his declaration (Exhibit 1003) appear to be a near carbon copy of pages 36–46 of the Petition, and include the Petition's citations to obviously incorrect or non-existent material in Berardi. These circumstances suggest a lack of attention, as even a cursory review would have shown that his testimony regarding Berardi includes numerous references to irrelevant or non-existent material, rendering that testimony not useful. This is not an instance of one or even a few inadvertent errors that might go missed upon a diligent review. The entirety of Dr. Wolfe's testimony regarding Berardi is defective on its face. For these reasons, the entirety of Dr. Wolfe's testimony lacks credibility and is entitled to little or no weight.

End of Document

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Citing References (15)

Treatment	Title	Date	Type	Depth	Headnote(s)
Examined by	**1.** Petition for Inter Partes Review of U.S. Patent No. 9,298,905 Under 35 U.S.C s 312 and 37 C.F.R. s 42.104 SAMSUNG ELECTRONICS AMERICA, INC, Petitioner, v. PROXENSE, LLC, Patent Owner. 2021 WL 3833780, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Aug. 26, 2021	Administrative Filing		—
Discussed by	**2.** Proxense, LLC's Preliminary Response to Petition for Inter Partes Review of U.S. Patent No. 9,298,905 B1 SAMSUNG ELECTRONICS AMERICA, INC., Petitioner, v. PROXENSE, LLC, Patent Owner. 2021 WL 5993980, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Dec. 17, 2021	Administrative Filing		—
Discussed by	**3.** Proxense, LLC's Preliminary Response to Petition for Inter Partes Review of U.S. Patent No. 9,298,905 B1 SAMSUNG ELECTRONICS AMERICA, INC., Petitioner, v. PROXENSE, LLC, Patent Owner. 2021 WL 5621248, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Nov. 26, 2021	Administrative Filing		—
Cited by	**4.** Biometric personal data key (PDK) authentication LitAlert P2021-11-39	Mar. 05, 2021	Lit Alert		—
Cited by	**5.** Petition for Inter Partes Review of U.S. Patent No. 10,698,989 Under 35 U.S.C s 312 and 37 C.F.R. s 42.104 SAMSUNG ELECTRONICS AMERICA, INC, Petitioner, v. PROXENSE, LLC, Patent Owner. 2021 WL 3833782, *1+ , Patent Tr. & App. Bd. (Administrative Filing)	Aug. 26, 2021	Administrative Filing		—
Mentioned by	**6.** Petition for Inter Partes Review of U.S. Patent No. 8,352,730 Under 35 U.S.C s 312 and 37 C.F.R. s 42.104 SAMSUNG ELECTRONICS AMERICA, INC, Petitioner, v. PROXENSE, LLC, Patent Owner. 2021 WL 3833776, *1 , Patent Tr. & App. Bd. (Administrative Filing)	Aug. 26, 2021	Administrative Filing		—
—	**7.** BIOMETRIC VERIFICATION METHOD FOR AUTHENTICATING USER FOR PERFORMING AUTOMATED BANK TRANSACTION, INVOLVES WIRELESSLY SENDING CODE FOR AUTHENTICATION RESPONSIVE TO DETERMINATION THAT SCAN DATA MATCHES BIOMETRIC DATA Out Of Plan DWPI 2006-512961+	Dec. 20, 2004	DWPI	—	—
—	**8.** AUTOMATIC AUTHENTICATION SYSTEM FOR PERSONAL DIGITAL KEY INCLUDES RECEIVER/DECODER CIRCUIT TO AUTOMATICALLY AUTHENTICATE PERSONAL DIGITAL KEY UPON PROXIMITY OF KEY TO CIRCUIT Out Of Plan DWPI 2006-445484+	Dec. 27, 2000	DWPI	—	—

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Treatment	Title	Date	Type	Depth	Headnote(s)
—	**9.** RF 034843/0145 Out Of Plan	Jan. 29, 2015	Assignments	—	—
—	**11.** BIOMETRIC DEVICE PAIRING Out Of Plan US PAT 11012438 , U.S. PTO Utility	May 18, 2021	Patents	—	—
—	**12.** BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION Out Of Plan US PAT 10437976 , U.S. PTO Utility	Oct. 08, 2019	Patents	—	—
—	**13.** WIRELESS PAIRING AND COMMUNICATION BETWEEN DEVICES USING BIOMETRIC DATA Out Of Plan US PAT 10171458 , U.S. PTO Utility	2019	Patents	—	—
—	**14.** BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION Out Of Plan US PAT APP 20190384903 , U.S. PTO Application	Dec. 19, 2019	Patents	—	—
—	**15.** BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION Out Of Plan US PAT APP 20190065721 , U.S. PTO Application	Feb. 28, 2019	Patents	—	—
—	**16.** BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION Out Of Plan US PAT APP 20160171200 , U.S. PTO Application	June 16, 2016	Patents	—	—

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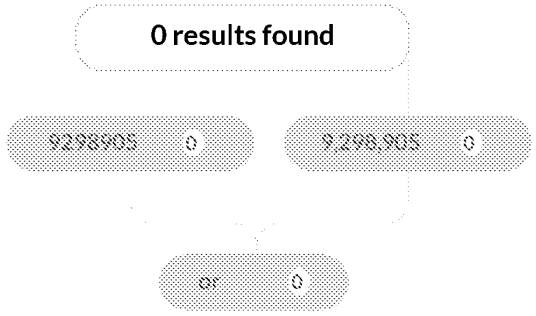
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☐ US9298905B1 - Biometric personal data key (PDK) authentication

Original

Bibliographic information & Images

Publication number and date
US9298905B1
2016-03-29

Granted

Application number and date
US14521982 {/api/control?query=AN:{"US14521982"}&autosearch=true}
2014-10-23

Priority number and date
US14521982 {/api/control?query=PRN:{"US14521982"}&autosearch=true}
2014-10-23

Ultimate owner
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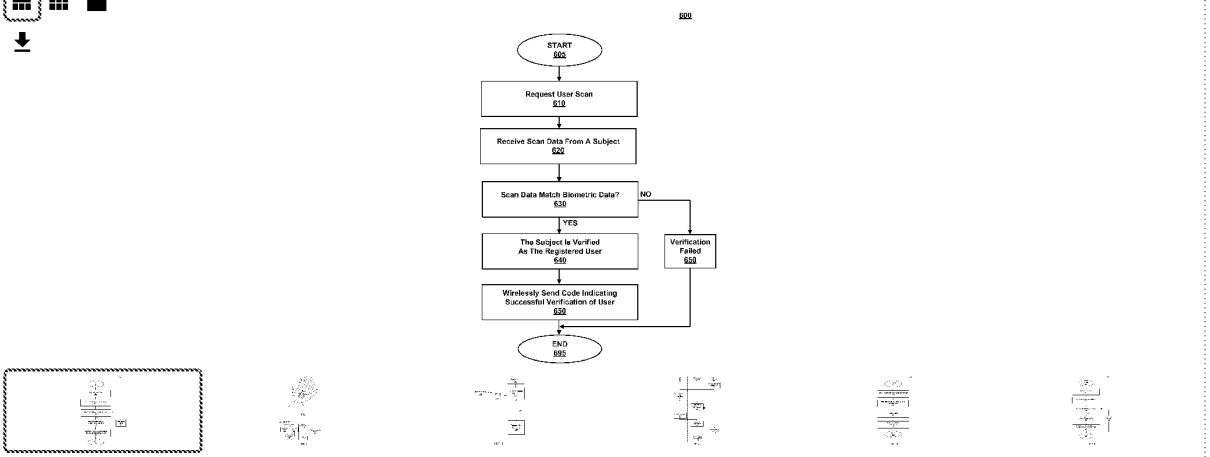
Original assignee
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Abstract

Systems and methods verifying a user during authentication of an integrated device. In one embodiment, the system includes an integrated device and an authentication unit. The integrated device stores biometric data of a user and a plurality of codes and other data values comprising a device ID code uniquely identifying the integrated device and a secret decryption value in a tamper proof format, and when scan data is verified by comparing the scan data to the biometric data, wirelessly sends one or more codes and other data values including the device ID code. The authentication unit receives and sends the one or more codes and the other data values to an agent for authentication, and receives an access message from the agent indicating that the agent successfully authenticated the one or more codes and other data values and allows the user to access an application.

Original

Claims

1. A method comprising: persistently storing biometric data of a legitimate user and an ID code on an integrated device; responsive to receiving a request for a biometric verification of a user, receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor; comparing the scan data to the biometric data to determine whether the scan data matches the biometric data; responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and responsive to receiving an access message from the third-party trusted authority-indicating that the third-party trusted authority successfully authenticated the ID code, allowing the user to complete a financial transaction.

2. The method of claim 1 , further comprising: registering an age verification for the user in association with the ID code.

3. The method of claim 1 , wherein an indication that the biometric verification was successful is sent with the ID code.

4. The method of claim 1 , wherein the biometric data includes data from one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition.

5. The method of claim 1 , wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

6. The method of claim 1 , wherein completing the financial transaction includes accessing an application.

7. The method of claim 1 , wherein completing the financial transaction includes accessing one or more of a casino machine, a keyless lock, an ATM machine, a web site, a file and a financial account.

8. The method of claim 1 , further comprising: responsive to determining the action does not require biometric verification, receiving a request for the ID code without a request for biometric verification; and responsive to receiving the request for the ID code without a request for biometric verification, sending the ID code for authentication without requesting the scan data.

9. An integrated device comprising: a persistent storage media that persistently stores biometric data of a user and an ID code; a validation module, coupled to communicate with the persistent storage media, that receives scan data from a biometric scan for comparison against the biometric data, and that sends the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and a radio frequency communication module that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code sent to the third-party trusted authority based on the comparison of the ID code and allowing the user to—complete a financial transaction.

10. The integrated device of claim 7 , wherein the ID code is transmitted to the third-party trusted authority over a network.

11. The integrated device of claim 7 , wherein an age verification is registered in association with the ID code.

12. The integrated device of claim 7 , wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

13. A system, comprising: an integrated hardware device that persistently stores biometric data of a legitimate user and an ID code in the integrated hardware device, and that wirelessly sends the—ID code; an authentication circuit that receives the ED code and sends the ID code to a third-party trusted authority for authentication, and that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code and allows the user to complete a financial transaction; and the third-party trusted authority operated by a third party, the third-party trusted authority storing a list of legitimate codes and determining the authentication of the ID code received based on a comparison of the ID code received and the legitimate codes included in the list of the legitimate codes.

14. The system of claim 11 wherein the integrated hardware device receives an authentication request from the authentication circuit, and in response, requests a biometric scan from a user to generate scan data and, when the integrated hardware device cannot verify the scan data as being from the legitimate user, the integrated hardware device does not send the ID code.

15. The system of claim 11 , wherein the integrated hardware device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

16. The system of claim 11 , wherein the biometric data includes data based on one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition.

17. The system of claim 11 , wherein completing the financial transaction includes accessing one or more of a casino machine, a keyless lock, an ATM machine, a web site, a file and a financial account.

18. The system of claim 11 , wherein completing the financial transaction includes accessing an application.

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Extended (79) Priority date/claims	Complete (1) Priority date/claims	Main (1) Priority date/claims	Domestic (1) Priority date/claims	Publication number	Application number	Title	Status
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			☐	US20070245158A1	US11745249	SINGLE STEP TRANSACTION AUTHENTICATION USING PROXIMITY AND BIOMETRIC INPUT	Granted
2007-05-05 US11744832 US60798172 US60798843 US60824758 US60838788 US60894608	2007-05-05 US11744832 US60798172 US60798843 US60824758 US60838788 US60894608	2007-05-05	☐	US8412949B2	US11744832	Personal digital key initialization and registration for secure transactions	Granted
			☐	US20070260888A1	US11744832	PERSONAL DIGITAL KEY INITIALIZATION AND REGISTRATION FOR SECURE TRANSACTIONS	Granted
2006-05-05 US11292330 US11744831 US11744833 US60798172 US60798843 US60824758 US60838788	2007-05-05 US11744833 US60798172 US60798843 US60824758 US60838788 US60894608	2007-05-05	☐	US7904718B2	US11744833	Personal digital key differentiation for secure transactions	Granted
			☐	US20070260883A1	US11744833	PERSONAL DIGITAL KEY DIFFERENTIATION FOR SECURE TRANSACTIONS	Granted

US60894608	2007-05-05 US11292330 US11744831 US60798172 US60798843 US60824758 US60838788 US60894608	2007-05-05	☐	US8433919B2	US11744831	Two-level authentication for secure transactions	Granted
			☐	US20070245157A1	US11744831	Two-Level Authentication For Secure Transactions	Granted
	2006-05-05 US11744831 US60798172 US60798843 US60824758 US60838788 US60894608	2006-05-05	☐	WO2007130687A3	WOUS07011105	TWO-LEVEL AUTHENTICATION FOR SECURE TRANSACTIONS	Filed
			☐	WO2007130687A2	WOUS07011105	TWO-LEVEL AUTHENTICATION FOR SECURE TRANSACTIONS	Ceased
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			☐	WO2007133542A2	WOUS07011104	PERSONAL DIGITAL KEY INITIALIZATION AND REGISTRATION FOR SECURE TRANSACTIONS	Ceased
		2006-05-05	☐	WO2007133540A3	WOUS07011102	PERSONAL DIGITAL KEY DIFFERENTIATION OF SECURE TRANSACTIONS	Filed
			☐	WO2007133540A2	WOUS07011102	PERSONAL DIGITAL KEY DIFFERENTIATION OF SECURE TRANSACTIONS	Ceased
2005-12-20 US11314199 US60637538 US60652765	2005-12-20 US11314199 US60637538 US60652765	2005-12-20	☐	US8352730B2	US11314199	Biometric personal data key (PDK) authentication	Granted
			☐	US20060143441A1	US11314199	Biometric personal data key (pdk) authentication	Granted
2005-11-30 US09750487 US10016857 US10153979 US10715035 US10847135 US11292330 US60632067 US60652765	2005-11-30 US09750487 US10016857 US10153979 US10715035 US10847135 US11292330 US60632067 US60652765	2005-11-30	☐	US9613483B2	US11292330	Personal digital key and receiver/decoder circuit system and method	Granted
			☐	US20060136742A1	US11292330	Personal digital key and receiver/decoder circuit system and method	Granted
2005-11-07 US09750487 US10016857 US10153979 US10715035 US11268145	2005-11-07 US09750487 US10016857 US10153979 US10715035 US11268145	2005-11-07	☐	US7404088B2	US11268145	Digital content security system	Granted
			☐	US20060064605A1	US11268145	Digital content security system	Granted
2004-12-01 US60632067 US60637538 US60652765	2004-12-20 US60637538 US60652765	2004-12-20	☐	EP1829283A2	EP05855409	BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION	Ceased
		2004-12-20	☐	CN101124769A	CN200580042624	Biometric personal data key (PDK) authentication	Ceased
		2004-12-20	☐	AU2005319019A1	AU2005319019	Biometric personal data key (PDK) authentication	Ceased
		2004-12-20	☐	CA2591751A1	CA2591751	BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION	Ceased
		2004-12-20	☐	RU2007127725A	RU2007127725	АУТЕНТИФИКАЦИЯ ПО БИОМЕТРИЧЕСКОМУ КЛЮЧУ ПЕРСОНАЛЬНЫХ ДАННЫХ (PDK)	Ceased
		2004-12-20	☐	WO2006069330A3	WOUS05046843	BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION	Filed

			☐	WO2006069330A2	WOUS05046843	BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION	Filed
	2004-12-01 US60632067 US60652765	2004-12-01	☐	CN101084524A	CN200580039571	Personal digital key and receiver/decoder circuit system and method	Ceased
		2004-12-01	☐	CA2589457A1	CA2589457	PERSONAL DIGITAL KEY AND RECEIVER/DECODER CIRCUIT SYSTEM ANDMETHOD	Ceased
		2004-12-01	☐	EP1828975A2	EP05852620	PERSONAL DIGITAL KEY AND RECEIVER/DECODER CIRCUIT SYSTEM AND METHOD	Ceased
		2004-12-01	☐	WO2006060558A3	WOUS05043447	PERSONAL DIGITAL KEY AND RECEIVER/DECODER CIRCUIT SYSTEM AND METHOD	Filed
			☐	WO2006060558A9	WOUS05043447	PERSONAL DIGITAL KEY AND RECEIVER/DECODER CIRCUIT SYSTEM AND METHOD	Filed
			☐	WO2006060558A2	WOUS05043447	PERSONAL DIGITAL KEY AND RECEIVER/DECODER CIRCUIT SYSTEM AND METHOD	Filed
		2004-12-01	☐	AU2005311849A1	AU2005311849	Personal digital key and receiver/decoder circuit system and method	Ceased
		2004-12-01	☐	RU2007124574A	RU2007124574	SYSTEM AND THE METHOD OF PERSONAL DIGITAL KEY AND DIAGRAM OF [PRIEMNIKA]/[DEKODERA]	Ceased
2004-03-08 US09750487 US10016857 US10153979 US10598735 US10715035 US10847135 US11292330 US14666268 US60551320 US60632067 US60652765	2005-03-08 US09750487 US10016857 US10153979 US10598735 US10715035 US10847135 US11292330 US14666268 US60551320 US60632067 US60652765	2015-03-23	☐	US11258791B2	US14666268	Linked account system using personal digital key (PDK-LAS)	Granted
			☐	US20150195279A1	US14666268	Linked Account System Using Personal Digital Key (PDK-LAS)	Granted
		2005-03-08	☐	US9020854B2	US10598735	Linked account system using personal digital key (PDK-LAS)	Granted
			☐	US20080040609A1	US10598735	Linked Account System Using Personal Digital Key (Pdk-Las)	Granted
	2004-03-08 US60551320	2004-03-08	☐	WO2005086802A3	WOUS05007535	LINKED ACCOUNT SYSTEM USING PERSONAL DIGITAL KEY (PDK-LAS)	Filed
			☐	WO2005086802A2	WOUS05007535	LINKED ACCOUNT SYSTEM USING PERSONAL DIGITAL KEY (PDK-LAS)	Filed
2003-11-17 US09750487 US10016857 US10153979 US10715035 US10847135	2004-05-17 US09750487 US10016857 US10153979 US10715035 US10847135	2004-05-17	☐	US7305560B2	US10847135	Digital content security system	Granted
			☐	US20040255139A1	US10847135	Digital content security system	Granted
	2003-11-17 US10715035 US10847135	2003-11-17	☐	WO2005050450A1	WOUS04038124	DIGITAL CONTENT SECURITY SYSTEM	Filed
	2003-11-17 US09750487 US10016857 US10153979 US10715035	2003-11-17	☐	US6973576B2	US10715035	Digital content security system	Granted
			☐	US20040098597A1	US10715035	Digital content security system	Granted
2002-05-23 US09750487 US10016857 US10153979	2002-05-23 US09750487 US10016857 US10153979	2002-05-23	☐	US7472280B2	US10153979	Digital rights management	Granted
			☐	US20020144116A1	US10153979	Digital rights management	Granted
2001-12-14 US10016857	2001-12-14 US10016857	2001-12-14	☐	US20030115351A1	US10016857	Digital content distribution system and method	Filed
2000-12-27 US09750487	2000-12-27 US09750487	2000-12-27	☐	AU2002235246A1	AU2002235246	DIGITAL RIGHTS MANAGEMENT WITH ACCESS CONTROL USING PHYSICAL KEY	Filed

			2000-12-27	☐	US20020080969A1	US09750487	Digital rights management system and method	Filed
			2000-12-27	☐	WO02052853A1	WOUS01049916	DIGITAL RIGHTS MANAGEMENT WITH ACCESS CONTROL USING PHYSICAL KEY	Filed

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims priority, under 35 U.S.C. §120, to U.S. patent application Ser. No. 13/710,109 filed Dec. 10, 2012 and entitled "Biometric Personal Data Key (PDK) Authentication" which claims priority to U.S. patent application Ser. No. 11/314,199, filed Dec. 20, 2005 and entitled "Biometric Personal Data Key (PDK) Authentication," which claims the benefit of U.S. Provisional Application No. 60/637,538, filed on Dec. 20, 2004, and of U.S. Provisional Application No. 60/652,765, filed on Feb. 14, 2005, the entire contents of which are hereby incorporated by reference.

FIELD OF THE INVENTION

[0002] The present invention relates generally to computerized authentication, and more specifically, to an authentication responsive to biometric verification of a user being authenticated.

BACKGROUND

[0003] Conventional user authentication techniques are designed to prevent access by unauthorized users. One technique is to require a user being authenticated to provide secret credentials, such as a password, before allowing access. Similarly, a PIN number can be required by an ATM machine before allowing a person to perform automated bank transactions. A difficulty with this technique is that it requires the user to memorize or otherwise keep track of the credentials. A uses often has multiple sets of credentials (e.g., passwords and PINs) and it can be quite difficult to keep track of them all.

[0004] Another technique that does not require the user to memorize credentials is to provide the user with an access object such as a key (e.g., an electronic key) that the user can present to obtain access. For example, a user can be provided with a small electronic key fob that allows access to a building or other secured location. A difficulty with using access objects is that authentication merely proves that the access object itself is valid; it does not verify that the legitimate user is using the access object. That is, illegitimate user can use a stolen access object to enter a secured location because the user's identity is never checked.

[0005] Some hybrid authentication techniques require the user to provide both an access object and credentials. The user is authenticated only upon providing both items. Of course, this solution does not resolve the problem of making the user memorize credentials.

[0006] Therefore, there is a need for systems and methods for verifying a user that is being authenticated that does not suffer from the limitations described above. Moreover, the solution should ease authentications by wirelessly providing an identification of the user.

SUMMARY

[0007] The present invention addresses the above needs by providing systems and methods for authentication responsive to biometric verification of a user being authenticated. In one embodiment, an integrated device includes a persistent storage to persistently stores a code such as a device identifier (ID) and biometric data for a user in a tamper-resistant format, and a verification module, in communication with the persistent storage, to receive scan data from a biometric scan for comparison against the biometric data, and if the scan data matches the biometric data, wirelessly sending a code for authentication.

[0008] In one embodiment, a method for verifying a user during authentication of an integrated device, includes persistently storing biometric data for the user in a tamper-resistant format; responsive to receiving a request for biometric verification of the user, receiving scan data from a biometric scan; comparing the scan data to the biometric data to determine whether the data match; and responsive to a determination that the scan data matches the biometric data, wirelessly sending a code for authentication.

[0009] Other embodiments include corresponding systems, apparatus, and computer programming products, configured to perform the actions of the methods, encoded on computer storage devices. These and other embodiments may each optionally include one or more of the following features. For instance the operations further include registering an age verification for the user in association with the code. For instance the operations further include establishing a secure communication channel prior to sending the code for authentication. For instance the operations further include receiving a request for the code without a request for biometric verification, and responsive to receiving the request for the code without a request for biometric verification, sending the code without requesting the scan data. For instance, the features include: the code is registered with a trusted authority, and the code can be authenticated to a third party by the trusted authority; the code uniquely identifies the integrated device; the code indicates that the biometric verification was successful; persistently storing biometric data includes permanently storing biometric data; the biometric data and the scan data are both based on a fingerprint scan by the user, an LED to be activated for requesting the biometric scan.

[0010] In one embodiment, a method for authenticating a verified user, includes receiving a code associated with a biometrically verified user; requesting authentication of the code; receiving an authentication result; and in response to the authentication result being positive, providing access to an application.

[0011] In one embodiment, a system includes an integrated device (e.g. a biometric key) to store biometric data for a user in a tamper resistant format, and if scan data can be verified as being from the user by comparing the scan data to the biometric data, wirelessly sending a code; and an authentication module to receive the code and send the code to a trusted authority for authentication, and responsive to the code being authenticated, allowing the user to access an application.

[0012] Other embodiments include corresponding systems, apparatus, and computer programming products, configured to perform the actions of the methods, encoded on computer storage devices. These and other embodiments may each optionally include one or more of the following features. For instance, the operations further include registering the code with a trusted authority, wherein requesting authentication of the code includes providing the code to the trusted authority and wherein receiving an authentication result comprises receiving the authentication result from the trusted authority. For instance the operations further include registering a date of birth or age with the trusted authority. For instance the operations further include establishing a secure communications channel with an integrated device, wherein the code associated with the biometrically verified user is received from the integrated device. For instance the features include: the integrated device receives an authentication request from the authentication module, and in response, requests a biometric scan from the user to generate the scan data; when the integrated device cannot verify the scan data as being from the user, it does not send the code.

[0013] Advantageously, user authentication is bolstered with highly reliable biometric verification of the user in an integrated device. Furthermore, a keyless environment relieves authorized users from having to memorize credentials, and of having to physically enter credentials or keys. In addition, the integrated device can be authenticated for an application that is open to the public (i.e., in an open loop system).

[0014] The features and advantages described in the specification are not all inclusive and, in particular, many additional features and advantages will be apparent to one of ordinary skill in the art in view of the drawings, specifications, and claims. Moreover, it should be noted that the language used in the specification has been principally selected for readability and instructional purposes and may not have been selected to delineate or circumscribe the inventive matter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The teachings of the present invention can be readily understood by considering the following detailed description in conjunction with the accompanying drawings.

[0016] FIG. 1 is a schematic diagram illustrating a biometric key for providing authentication information for a biometrically verified user according to one embodiment of the present invention.

[0017] FIG. 2 is a block diagram illustrating functional modules within the biometric key according to one embodiment of the present invention.

[0018] FIG. 3 is a block diagram illustrating a system for providing authentication information for a biometrically verified user.

[0019] FIG. 4 is a flow chart illustrating a method for providing authentication information for a biometrically verified user.

[0020] FIG. 5 is a flow chart illustrating a method for enrolling biometric data of the user with the biometric key.

[0021] FIG. 6 is a flow chart illustrating a method for verifying a subject presenting the biometric key according to one embodiment of the present invention.

[0022] FIG. 7 is a flow chart illustrating a method for authenticating a verified user of the biometric key according to one embodiment of the present invention.

DETAILED DESCRIPTION

[0023] Systems and methods for authentication responsive to biometric verification of a user being authenticated are described. Generally, biometric verification uses biometric data to ensure that the user of, for example, a biometric key, is the person registered as an owner. Biometric data is a digital or analog representation of characteristics unique to the user's body. For example, a fingerprint of a subject can be compared against previously-recorded biometric data for verification that the subject is the registered owner of the biometric key. Then, the biometric key itself can be authenticated.

[0024] Although the embodiments below are described using the example of biometric verification using a fingerprint, other embodiments within the spirit of the present invention can perform biometric verification using other types of biometric data. For example, the biometric data can include a palm print, a retinal scan, an iris scan, hand geometry recognition, facial recognition, signature recognition, or voice recognition.

[0025] FIG. 1 is a schematic diagram illustrating an example of a biometric key **100** for providing authentication information for a biometrically verified user according to one embodiment of the present invention. In one embodiment, the biometric key **100** comprises a frame **110**, a scan pad **120**, and an LED **130**. In one embodiment, biometric key **100** has a small form factor (e.g., the size of an automobile remote control) such that it can be unobtrusively carried by a user. In one embodiment, the biometric key **100** is integrated into another object or device. A device having an integrated biometric key **100** is occasionally referred to herein as an "integrated device." For example, in one embodiment, the biometric key **100** is integrated into a mobile phone (e.g. a cellular phone or smartphone), tablet, laptop, mp3 player, mobile gaming device, watch, key fob or other mobile device, thereby making the biometric key **100** unobtrusive to carry.

[0026] Frame **110** can be formed by plastic, metal or another suitable material. Frame **110** is shaped to secure scan pad **120**, and includes a perforation for attachment to, for example a key chain or clip. In one embodiment, frame **110** is formed from a unitary molding to protect biometric data. Accordingly, frame **110** cannot be opened to expose the underlying components unless it is broken.

[0027] Scan pad **120** can be, for example, an optical scanner using a charge coupled device, or a capacitive scanner. Scan pad **120** can be sized to fit a thumb or other finger. Biometric key **100** of the present embodiment includes LED **130** that lights up to request a fingerprint scan from a user. In one embodiment, LED **130** can also confirm that user verification and/or authentication has completed.

[0028] Biometric key **100** can authenticate a user for various purposes. For example, biometric key **100** can allow keyless entry into homes and autos. In another example, biometric key **100** can log a user onto a computer system or point of sale register without typing in credentials. In still another example, biometric key **100** can verify that an enrolled user is above a certain age (e.g., before allowing access to a slot machine in a casino). In some embodiments, biometric key **100** operates without biometric verification, and request a fingerprint scan from a user only when biometric verification is needed for the particular use.

[0029] FIG. 2 is a block diagram illustrating biometric key **100** according to one embodiment of the present invention. Biometric key **100** comprises control module **210**, biometric portion **220**, RF communication module **230**, persistent storage **240**, and battery **250**. Biometric key **100** can be formed from a combination of hardware and software components as described above. In one embodiment, biometric key **100** comprises a modified key fob.

[0030] Control module **210** coordinates between several functions of biometric key **100**. In one embodiment, control module **210** provides a verification code upon successful verification of the user. More specifically, once biometric portion **220** indicates that a fingerprint scan matches biometric data that was collected during enrollment, control module **210** can trigger RF communication module **230** for sending a code indicating that the user was verified. In another embodiment, control module **210** can work in the opposite direction by detecting a request for verification from RF communication module **230**, and then requesting verification of the user from biometric portion **210**. Note that control module **210** of FIG. 2 is merely a grouping of control functions in a central architecture, and in other embodiments, the control functions can be distributed between several modules around biometric key **100**.

[0031] Biometric portion **220** comprises enrollment module **222**, validation module **224**, and biometric data base **226**. In one embodiment, enrollment module **222** registers a user with biometric key **100** by persistently storing biometric data associated with the user. Further, enrollment module **222** registers biometric key **100** with a trusted authority by providing the code (e.g., device ID) to the trusted authority. Or conversely, the trusted authority can provide the code to biometric key **100** to be stored therein.

[0032] Validation module **224** can comprise scan pad **120** (FIG. 1) to capture scan data from a user's fingerprint (e.g., a digital or analog representation of the fingerprint). Using the scan data, validation module **214** determines whether the user's fingerprint matches the stored biometric data from enrollment. Conventional techniques for comparing fingerprints can be used. For example, the unique pattern of ridges and valleys of the fingerprints can be compared. A statistical model can be used to determine comparison results. Validation module **224** can send comparison results to control module **210**.

[0033] In other embodiments, validation module **224** can be configured to capture biometric data for other human characteristics. For example, a digital image of a retina, iris, and/or handwriting sample can be captured. In another example, a microphone can capture a voice sample.

[0034] Persistent storage **226** persistently stores biometric data from one or more users which can be provided according to specific implementations. In one embodiment, at least some of persistent storage **226** is a memory element that can be written to once but cannot subsequently be altered. Persistent storage **226** can include, for example, a ROM element, a flash memory element, or any other type of non-volatile storage element. Persistent storage **226** is itself, and stores data in, a tamper-proof format to prevent any changes to the stored data. Tamper-proofing increases reliability of authentication because it does not allow any changes to biometric data (i.e., allows reads of stored data, but not writes to store new data or modify existing data). Furthermore, data can be stored in an encrypted form.

[0035] In one embodiment, persistent storage **226** also stores the code that is provided by the key **100** responsive to successful verification of the user. As described above, in one embodiment the code is a device ID or other value that uniquely identifies biometric key **100**. In one embodiment, the code is providing during the manufacturing process and the biometric data are provided during an enrollment of the user. In other embodiments, the code is provided during enrollment and/or the biometric data are provided during manufacturing. Further, in some embodiments persistent storage **226** stores other data utilized during the operation of biometric key **100**. For example, persistent storage **226** can store encryption/decryption keys utilized to establish secure communications links.

[0036] Radio frequency (RF) communication module **230** is, for example, a transceiver or other mechanism for wireless communication. RF communication module **230** can send and receive data (e.g., the code) as modulated electromagnetic signals. In one embodiment, RF communication **220** can be optimized for low-power usage by, for example, using short-range transceivers. RF communication module **230** can actively send out connection requests, or passively detect connection requests.

[0037] Battery **260** can be a conventional power source suitable for the components of biometric key **100**. Battery **260** can be either replaceable or rechargeable. Alternatively, battery **260** can be embedded within key **100** such that the key must be discarded or recycled upon expiration of the battery.

[0038] FIG. 3 is a block diagram illustrating a system **300** for providing authentication information for a biometrically verified user. System **300** comprises an authentication module **310** in communication with biometric key **100**, a trusted key authority **320**, and an application **330**.

[0039] Authentication module **310** is coupled in communication with biometric key via line **311** (i.e., a wireless medium such as EM signals), and with trusted key authority **320** via line **312** (e.g., a secure data network such as the Internet, or a cell network). Authentication module **310** can include one or more of, for example, a computerized device, software executing on a computerized device, and/or a reader/decoder circuit. In one embodiment, authentication module **310** servers as a gatekeeper to application **330** by requiring the code indicating successful biometric verification of the user prior to allowing access to the application. Further, in one

embodiment, authentication module **310** provides the code to trusted key authority **320** in order to verify that it belongs to a legitimate key (e.g., when application **330** is security-critical). Authentication module **310** can send a message to application **330**, or otherwise allow access to the application, responsive to a successful authentication by trusted key authority **320**.

[0040] Application **330** is a resource that can be accessed by a verified and authenticated user. Application **330** can be, for example, a casino machine, a keyless lock, a garage door opener, an ATM machine, a hard drive, computer software, a web site, a file, a financial account (e.g. a savings account, checking account, brokerage account, credit card account, credit line, etc.) and the like. In one embodiment, a file includes medical information such as a medical record, insurance information or other healthcare information. Application **330** can execute on the same system as authentication module **310** or on another system in communication with the system of the authentication module. In one embodiment, application module **330** allows access by a user after receiving a message from authentication module **310**. At that point, application **330** can allow direct use by the user, or require that communications continue to pass through authentication module **310** for continued authentication.

[0041] Trusted key authority **320** is a third-party authority that is present in some embodiments in order to provide enhanced security. In one embodiment, trusted key authority **320** verifies that a code from a biometric key is legitimate. To do so, the trusted key authority **320** stores a list of codes for legitimate biometric keys. The list can be batched or updated each time a new user/key is enrolled. In one embodiment, trusted key authority **320** can also store a profile associated with a biometric key. The profile describes the user associated with the key, the key itself, the trusted key authority, and/or other relevant information. In one embodiment, the functionality of trusted key authority **320** is provided by a server or other computerized device.

[0042] In an open system, where unknown users can attempt authentication (e.g., in a public grocery store), trusted key authority **320** provides verification that a key presenting a certain code is legitimate. By contrast, in a closed system, only known users are legitimate (e.g., owners of a home), the trusted key authority **320** can be maintained locally and serves to verify that the key belongs to one of the limited number of users that can use the system.

[0043] FIG. 4 is a flow chart illustrating a method **400** for authenticating a biometrically verified user using a trusted key authority (e.g., authority **320**). A biometric key (e.g., biometric key **100**) is registered **410** with the trusted key authority. The code (e.g., device ID) of the key is stored by the trusted key authority. Additionally, a user is enrolled **420** with the biometric key as described below with reference to FIG. 5.

[0044] In various situations, authentication of the key is needed **430** (e.g., by authentication module **310**). In one embodiment, authentication can be required prior to allowing access to an application (e.g., application **330**). For example, a user can be standing proximate to a slot machine in a casino which requires that a user be over the age of 21. The slot machine can detect the biometric key in the user's pocket, and, in response, spawn a conspicuous pop-up window on the slot machine requesting age verification. Alternatively, the biometric key can blink an LED. In other embodiments, biometric verification is not necessary and only the key itself is authenticated.

[0045] The biometric key establishes communication with the authentication module using various techniques. In one embodiment, the key and authentication module engage in preliminary data exchanges to determine who and/or what they are (e.g., to ascertain that they belong to the same system). These data exchanges can include challenge-response dialogs, hashing algorithms, and the like in order to ensure that the biometric key and authentication module are themselves legitimate. Further, in one embodiment the key and authentication module establish a secure communications channel. The key performs the biometric verification of the user **440** as described below with reference to FIG. 6. If the biometric verification of the user is successful, the key provides its code over the secure communications channel.

[0046] The code is utilized to authenticate the biometric key itself **450**, **460** as described below with reference to FIG. 7 and profile information is received. Responsive to successful authentication of the key, access is allowed 470 to the application. In the slot machine example, a new pop-up window can be spawned to indicate a successful age verification.

[0047] FIG. 5 is a flow chart illustrating a method **500** for enrolling biometric data of the user with the biometric key according to one embodiment of the present invention. An agent checks **510** an identification of the user and establishes a profile. The agent can be, for example, a government official, a notary, and/or an employee of a third party which operates the trusted key authority, or another form of witness. The agent can follow standardized procedures such as requiring identification based on a state issued driver license, or a federally issued passport in order to establish a true identity of the user.

[0048] The profile describes the user and can include, for example, the user's name, date of birth, age, passwords, account numbers, preferences etc. In some embodiments, the profile stores no or only limited information about the user. For example, the agent might store the date of birth of the user in the profile, but not store any other information about the user. In addition, the profile describes the biometric key and/or key authority. For the biometric key, the profile can store a value indicating the status of the key, such as whether the key is in-service, out-of-service, abandoned, lost, stolen etc. For the key authority, the profile can store a value identifying the key authority.

[0049] The agent also collects and persistently stores **520** biometric data from the user. To do so, a fingerprint or eye retina can be scanned and converted to data which is then persistently stored in the biometric key. In one embodiment, the agent does not retain the biometric data. Since this step occurs under control of the agent, the agent can be certain that the biometric data stored within the key matches the user who presented the identification. The agent also obtains the code (e.g., device ID) from the biometric key in which the biometric data was stored. The agent associates the code and the profile using a table and/or other data structure.

[0050] FIG. 6 is a flow chart illustrating a method **600** for verifying a subject presenting the biometric key according to one embodiment of the present invention. In response to an authentication request, a user scan is requested **610** (e.g., by a blinking LED). Once the subject provides a fingerprint, scan data is received **620**. Scan data is compared for a match **630** to previously-stored biometric data. If there is no match, then verification fails **650**.

[0051] If there is a match, the subject is verified **640** as the user. The code indicating a successful verification is wirelessly sent **650** from the biometric key (e.g., by RF communication module **230**).

[0052] FIG. 7 is a flow chart illustrating a method **700** for authenticating a biometric key according to one embodiment of the present invention. The code is wirelessly received **710**. A request for authentication of the code is sent to the trusted key authority **720**. The trusted key authority determines whether the code is authentic **730** (i.e., it was created through an established enrollment process) and has a valid status (e.g., has not expired). If authentication is successful, the trusted key authority sends an access message to the application to allow user access and/or provide additional information from the profile **740** (such as the user's age). If authentication is not successful, authentication fails **750** and the message to the application indicates that the user should be denied access.

[0053] In some embodiments, the biometric key provides multiple codes and/or other data values. For example, the key can provide a device ID code that the authentication module can provide to the trusted key authority in order to authenticate the key, and the key can provide a secret decryption value that can be used to communicate with the biometric key. As used herein, the term "code" is intended to include one or more of these values, depending upon the specific embodiment.

[0054] The order in which the steps of the methods of the present invention are performed is purely illustrative in nature. The steps can be performed in any order or in parallel, unless otherwise indicated by the present disclosure. The methods of the present invention may be performed in hardware, firmware, software, or any combination thereof operating on a single computer or multiple computers of any type. Software embodying the present invention may comprise computer instructions in any form (e.g., source code, object code, interpreted code, etc.) stored in any computer-readable storage medium (e.g., a ROM, a RAM, a magnetic media, a compact disc, a DVD, etc.). Such software may also be in the form of an electrical data signal embodied in a carrier wave propagating on a conductive medium or in the form of light pulses that propagate through an optical fiber.

[0055] While particular embodiments of the present invention have been shown and described, it will be apparent to those skilled in the art that changes and modifications may be made without departing from this invention in its broader aspect and, therefore, the appended claims are to encompass within their scope all such changes and modifications, as fall within the true spirit of this invention.

[0056] In the above description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the invention. It will be apparent, however, to one skilled in the art that the invention can be practiced without these specific details. In other instances, structures and devices are shown in block diagram form in order to avoid obscuring the invention.

[0057] Reference in the specification to "one embodiment" or "an embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the invention. The appearances of the phrase "in one embodiment" in various places in the specification are not necessarily all referring to the same embodiment.

[0058] Some portions of the detailed description are presented in terms of algorithms and symbolic representations of operations on data bits within a computer memory. These algorithmic descriptions and representations are the means used by those skilled in the data processing arts to most effectively convey the substance of their work to others skilled in the art. An algorithm is here, and generally, conceived to be a self-consistent sequence of steps leading to a desired result. The steps are those requiring physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and otherwise manipulated. It has proven convenient at times, principally for reasons of common usage, to refer to these signals as bits, values, elements, symbols, characters, terms, numbers, or the like.

[0059] It should be borne in mind, however, that all of these and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities. Unless specifically stated otherwise as apparent from the discussion, it is appreciated that throughout the description, discussions utilizing terms such as "processing" or "computing" or "calculating" or "determining" or "displaying" or the like, refer to the action and processes of a computer system, or similar electronic computing device, that manipulates and transforms data represented as physical (electronic) quantities within the computer system's registers and memories into other data similarly represented as physical quantities within the computer system memories or registers or other such information storage, transmission or display devices.

[0060] The present invention also relates to an apparatus for performing the operations herein. This apparatus can be specially constructed for the required purposes, or it can comprise a general-purpose computer selectively activated or reconfigured by a computer program stored in the computer. Such a computer program can be stored in a computer readable storage medium, such as, but is not limited to, any type of disk including floppy disks, optical disks, CD-ROMs, and magnetic-optical disks, read-only memories (ROMs), random access memories (RAMs), EPROMs, EEPROMs, magnetic or optical cards, or any type of media suitable for storing electronic instructions, and each coupled to a computer system bus.

[0061] The algorithms and modules presented herein are not inherently related to any particular computer or other apparatus. Various general-purpose systems can be used with programs in accordance with the teachings herein, or it may prove convenient to construct more specialized apparatuses to perform the method steps. The required structure for a variety of these systems will appear from the description below. In addition, the present invention is not described with reference to any particular programming language. It will be appreciated that a variety of programming languages can be used to implement the teachings of the invention as described herein. Furthermore, as will be apparent to one of ordinary skill in the relevant art, the modules, features, attributes, methodologies, and other aspects of the invention can be implemented as software, hardware, firmware or any combination of the three. Of course, wherever a component of the present invention is implemented as software, the component can be implemented as a standalone program, as part of a larger program, as a plurality of separate programs, as a statically or dynamically linked library, as a kernel loadable module, as a device driver, and/or in every and any other way known now or in the future to those of skill in the art of computer programming. Additionally, the present invention is in no way limited to implementation in any specific operating system or environment.

[0062] It will be understood by those skilled in the relevant art that the above-described implementations are merely exemplary, and many changes can be made without departing from the true spirit and scope of the present invention. Therefore, it is intended by the appended claims to cover all such changes and modifications that come within the true spirit and scope of this invention.

Original

Classifications

IPC	CPC
G06F21/32	G06F21/32
G06F21/35	G06F21/35
	G07C9/257
	G05B1/00
	H04L9/321

Persons

Ultimate Owner

Original
PROXENSE LLC (/api/control?query=uo:("PROXENSE%20LLC")&autosearch=true)

Original Assignees

Original	Standardized	Normalized
Proxense, LLC (/api/control?query=pa:("Proxense%2C%20LLC")&autosearch=true) Bend, Oregon, United States of America, US	PROXENSE (/api/control?query=pas:("PROXENSE")&autosearch=true)	

Current Assignees

Original	Standardized	Normalized
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Inventor(s)

Original
John J. Giobbi (/api/control?query=in:("John%20J.%20Giobbi")&autosearch=true) Bend, Oregon, United States of America, US

Legal representative(s)

Original	Standardized	Normalized

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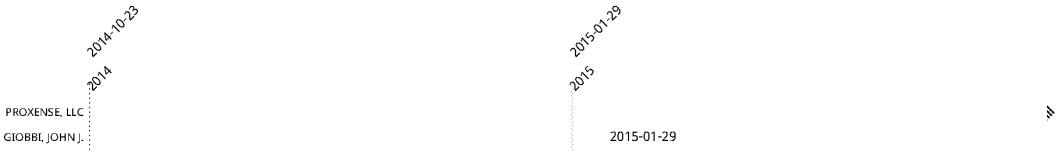
Legal status

Event	Date	Description
Granted	2016-03-29	GRANTED
Filed	2014-10-23	FILED

Designated states

Date	Event code	Description

Ownership



Payment status

Date	Status	Event code	Description
2019-09-09	Fee paid	M2551	PAYMENT OF MAINTENANCE FEE, 4TH YR, SMALL ENTITY.

Litigation/Opposition

Docket number	Docket description	Court	Date Filed
6:21cv210	Proxense, Llc V. Samsung Electronics Co, Ltd Et Al	United States District Court, Texas Western	2021-03-04
IPR2021-01447	SAMSUNG ELECTRONICS AMERICA, INC Vs. Proxense, LLC	United States Patent Trial and Appeal Board	2021-08-25

Pharmaceuticals

Product	Type	Active Ingredient	Applicant	Application No.	Application Type	Approval Date	Patent Expiry Date	Patent usage code	Exclusivity Code	Exclusivity Date	Dosage	Strength	Product Number	Route	RLD	Patent Delist Requested	Exclu Text

No pharmaceuticals data

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Display in a list {/api/control?citationsSearch= }

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Documents (5)

1. *US Patent Issued to Proxense on March 29 for "Biometric personal data key (PDK) authentication" (Oregon Inventor)*

Client/Matter: -None-
Search Terms: 9298905 or 9,298,905
Search Type: Terms and Connectors
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Content Type	Narrowed by
News	-None-

2. *PROXENSE, LLC —REPRESENTED BY HECHT PARTNERS —FILES SUIT AGAINST SAMSUNG FOR PATENT INFRINGEMENT*

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Search Terms: 9298905 or 9,298,905
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3. *PROXENSE, LLC —REPRESENTED BY HECHT PARTNERS —FILES SUIT AGAINST SAMSUNG FOR PATENT INFRINGEMENT*

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Search Terms: 9298905 or 9,298,905
Search Type: Terms and Connectors
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Content Type	Narrowed by
News	-None-

4. *Head Line: US Patent granted to Proxense, LLC (Oregon) on March 29, 2016 titled as "Biometric personal data key (PDK) authentication"*

Client/Matter: -None-
Search Terms: 9298905 or 9,298,905
Search Type: Terms and Connectors
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5. *Proxense LLC Obtains Patent for Biometric Personal Data Key (PDK) Authentication*

Client/Matter: -None-

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US Patent Issued to Proxense on March 29 for "Biometric personal data key (PDK) authentication" (Oregon Inventor)

US Fed News

April 1, 2016 Friday 12:22 PM EST

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Length: 272 words

Dateline: ALEXANDRIA, Va.

Body

ALEXANDRIA, Va., April 1 -- United States Patent no. ***9,298,905***, issued on March 29, was assigned to Proxense LLC (Bend, Ore.).

"Biometric personal data key (PDK) authentication" was invented by Proxense, LLC (Bend, Ore.). According to the abstract* released by the U.S. Patent & Trademark Office: "Systems and methods verifying a user during authentication of an integrated device. In one embodiment, the system includes an integrated device and an authentication unit. The integrated device stores biometric data of a user and a plurality of codes and other data values comprising a device ID code uniquely identifying the integrated device and a secret decryption value in a tamper proof format, and when scan data is verified by comparing the scan data to the biometric data, wirelessly sends one or more codes and other data values including the device ID code. The authentication unit receives and sends the one or more codes and the other data values to an agent for authentication, and receives an access message from the agent indicating that the agent successfully authenticated the one or more codes and other data values and allows the user to access an application." The patent was filed on Oct. 23, 2014, under Application No. 14/521,982. *For further information, including images, charts and tables, please visit:

http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=9298905&OS=9298905&RS=9298905 For any query with respect to this article or any other content requirement, please contact Editor at *htsyndication@hindustantimes.com*

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MENAFN - Press Releases (English)

March 8, 2021 Monday

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Length: 709 words

Body

Link to Story

Each time a Samsung Pay is used to facilitate a transaction, our IP is infringed. We are thrilled to be working with Hecht Partners to enforce our valuable patents. — John Giobbi, CEO of ProxenseNEW YORK, NY, UNITED STATES, March 8, 2021 /EINPresswire.com / -- Proxense , LLC ('Proxense'), a pioneer in mobile payment technologies, has filed a lawsuit against Samsung Electronics, Co., Ltd. and Samsung Electronics America, Inc. ('Samsung') for alleged infringement of Proxense's U.S. Patent Nos. 8,352,730; 9,049,188; 9,235,700; ***9,298,905***; and 10,698,989. These patents protect Proxense's intellectual property ('IP') relating to biometric authentication and personal data keys, among other things. The lawsuit was filed in the U.S. District Court in the Western District of Texas (Case Number 6:21-cv-00210).

Proxense's complaint alleges that Samsung infringes these patents by making, using (e.g., performing/executing), selling and/or offering to sell, mobile payment products, including Samsung Pay and mobile devices including Samsung Pay, e.g., Samsung's popular line of Galaxy phones and tablets, and watches. Proxense has alleged that Samsung's infringement was willful, as it has been on notice of certain of these patents since approximately July 2017. Proxense is seeking both injunctive relief and monetary damages.

"Proxense was responsible for significant innovation in the billion-dollar mobile payment industry, as Samsung well knows," said David L. Hecht, founding partner of Hecht Partners LLP, Proxense's lead counsel in the matter. "Proxense has a significant portfolio of early intellectual property in the field of mobile payments, and will vigorously defend its IP."

John Giobbi, CEO of Proxense, added: 'Each time a Samsung Pay is used to facilitate a transaction, our IP is infringed. We are thrilled to be working with Hecht Partners to enforce our valuable patents.'

Proxense has an IP portfolio with over 65 patents, which also cover proximity detection, multi-factor authentication, secure mobile data storage/exchange, multi-service management, secure two-way message, and local and remote monitoring and control.

In addition to the team at Hecht Partners, which includes Maxim Price, Conor McDonough, Yi Wen Wu, and James Zak. Proxense is also being represented by Erick Robinson of the Houston-based firm Porter Hedges LLP.

About Proxense:

Renee Preston

PROXENSE, LLC.—REPRESENTED BY HECHT PARTNERS—FILES SUIT AGAINST SAMSUNG FOR PATENT INFRINGEMENT

Proxense is a pioneer in the mobile payment space. In 2004, Proxense began to develop mobile payment technologies and commercial products, employing over thirty engineers, and investing many millions of dollars in product development and other research and development efforts. Foundational capabilities of Proxense's technologies included a secure element, biometrics captured and stored thereon, retrieval of biometrics and token passing to a trusted third party, and completion of a mobile payment transaction. Proxense continues to innovate in the fields of location tracking, secure id/signature, access control, ecommerce, secure mobile data, and device monitoring/control. The company is led by John Giobbi, an experienced product designer and prolific inventor, with over 35 years of experience as an entrepreneur and product development executive.

About Hecht Partners:

Hecht Partners is a national commercial litigation firm that focuses on intellectual property, complex civil litigation, plaintiff-side class actions, and international litigation and arbitration. Name partner David L. Hecht was recognized in the 2020 edition of the IAM Patent 1000: The World's Leading Patent Professionals. The firm's patent litigators have technical degrees in computer and electrical engineering, computer science, information technology, and neuroscience. Hecht Partners prides itself on its entrepreneurial spirit and lean, efficient operations based in next-generation technologies. With offices in New York and Los Angeles, Hecht Partners attorneys are also members of the bar in New Jersey, Massachusetts, Pennsylvania, Texas, Virginia, and the District of Columbia. For more information about the firm, please visit .Communications Department

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March 8, 2021 Monday

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Body

Link to Story

Each time a Samsung Pay is used to facilitate a transaction, our IP is infringed. We are thrilled to be working with Hecht Partners to enforce our valuable patents. — John Giobbi, CEO of ProxenseNEW YORK, NY, UNITED STATES, March 8, 2021 /EINPresswire.com / -- Proxense , LLC ('Proxense'), a pioneer in mobile payment technologies, has filed a lawsuit against Samsung Electronics, Co., Ltd. and Samsung Electronics America, Inc. ('Samsung') for alleged infringement of Proxense's U.S. Patent Nos. 8,352,730; 9,049,188; 9,235,700; ***9,298,905***; and 10,698,989. These patents protect Proxense's intellectual property ('IP') relating to biometric authentication and personal data keys, among other things. The lawsuit was filed in the U.S. District Court in the Western District of Texas (Case Number 6:21-cv-00210).

Proxense's complaint alleges that Samsung infringes these patents by making, using (e.g., performing/executing), selling and/or offering to sell, mobile payment products, including Samsung Pay and mobile devices including Samsung Pay, e.g., Samsung's popular line of Galaxy phones and tablets, and watches. Proxense has alleged that Samsung's infringement was willful, as it has been on notice of certain of these patents since approximately July 2017. Proxense is seeking both injunctive relief and monetary damages.

"Proxense was responsible for significant innovation in the billion-dollar mobile payment industry, as Samsung well knows," said David L. Hecht, founding partner of Hecht Partners LLP, Proxense's lead counsel in the matter. "Proxense has a significant portfolio of early intellectual property in the field of mobile payments, and will vigorously defend its IP."

John Giobbi, CEO of Proxense, added: 'Each time a Samsung Pay is used to facilitate a transaction, our IP is infringed. We are thrilled to be working with Hecht Partners to enforce our valuable patents.'

Proxense has an IP portfolio with over 65 patents, which also cover proximity detection, multi-factor authentication, secure mobile data storage/exchange, multi-service management, secure two-way message, and local and remote monitoring and control.

In addition to the team at Hecht Partners, which includes Maxim Price, Conor McDonough, Yi Wen Wu, and James Zak. Proxense is also being represented by Erick Robinson of the Houston-based firm Porter Hedges LLP.

About Proxense:

Renee Preston

PROXENSE, LLC.—REPRESENTED BY HECHT PARTNERS—FILES SUIT AGAINST SAMSUNG FOR PATENT INFRINGEMENT

Proxense is a pioneer in the mobile payment space. In 2004, Proxense began to develop mobile payment technologies and commercial products, employing over thirty engineers, and investing many millions of dollars in product development and other research and development efforts. Foundational capabilities of Proxense's technologies included a secure element, biometrics captured and stored thereon, retrieval of biometrics and token passing to a trusted third party, and completion of a mobile payment transaction. Proxense continues to innovate in the fields of location tracking, secure id/signature, access control, ecommerce, secure mobile data, and device monitoring/control. The company is led by John Giobbi, an experienced product designer and prolific inventor, with over 35 years of experience as an entrepreneur and product development executive.

About Hecht Partners:

Hecht Partners is a national commercial litigation firm that focuses on intellectual property, complex civil litigation, plaintiff-side class actions, and international litigation and arbitration. Name partner David L. Hecht was recognized in the 2020 edition of the IAM Patent 1000: The World's Leading Patent Professionals. The firm's patent litigators have technical degrees in computer and electrical engineering, computer science, information technology, and neuroscience. Hecht Partners prides itself on its entrepreneurial spirit and lean, efficient operations based in next-generation technologies. With offices in New York and Los Angeles, Hecht Partners attorneys are also members of the bar in New Jersey, Massachusetts, Pennsylvania, Texas, Virginia, and the District of Columbia. For more information about the firm, please visit .Communications Department

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MENAFN0803202100311800319 6ID1101721109

Load-Date: March 9, 2021

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Head Line: US Patent granted to Proxense, LLC (Oregon) on March 29, 2016 titled as "Biometric personal data key (PDK) authentication"

Plus Patent News

March 30, 2016 Wednesday

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Length: 216 words

Dateline: Lahore

Body

ALEXANDRIA, Va: United States Patent and Trademark Office has granted patent no. ***9,298,905*** on March 29, 2016, to Proxense, LLC (Oregon) titled as "Biometric personal data key (PDK) authentication"

Inventors: Giobbi; John J. (Bend, OR)

Assignee: Proxense, LLC (Bend, OR) (Oregon)

According to the abstract released by the U.S. Patent & Trademark Office: "Systems and methods verifying a user during authentication of an integrated device. In one embodiment, the system includes an integrated device and an authentication unit. The integrated device stores biometric data of a user and a plurality of codes and other data values comprising a device ID code uniquely identifying the integrated device and a secret decryption value in a tamper proof format, and when scan data is verified by comparing the scan data to the biometric data, wirelessly sends one or more codes and other data values including the device ID code. The authentication unit receives and sends the one or more codes and the other data values to an agent for authentication, and receives an access message from the agent indicating that the agent successfully authenticated the one or more codes and other data values and allows the user to access an application."

The patent was filed on October 23, 2014 Application No. 14/521,982

Load-Date: March 30, 2016

End of Document

Renee Preston

Proxense LLC Obtains Patent for Biometric Personal Data Key (PDK) Authentication

Global IP News. Security and Protection Patent News.

March 30, 2016 Wednesday

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Length: 270 words

Dateline: New Delhi

Body

FULL TEXT

Publication Name: Security & Protection Patent News**Patent Application Number:** 14/521,982**Patent Publication Number:** ***9,298,905*****International Patent Classification Codes:** G06F 21/35 (20130101), G06F 21/32 (20130101)**Patent Status:** Granted

Alexandria, March 30 -- Proxense LLC has obtained a patent for biometric personal data key (PDK) authentication. This invention was developed by Giobbi John J. The patent application number is 14/521,982. The International Patent Classification codes are G06F 21/35 (20130101) and G06F 21/32 (20130101). Cooperative Patent Classification codes are G06F 21/35 (20130101) and G06F 21/32 (20130101).

The abstract released by U.S. Patent and Trademark Office states, "Systems and methods verifying a user during authentication of an integrated device. In one embodiment, the system includes an integrated device and an authentication unit. The integrated device stores biometric data of a user and a plurality of codes and other data values comprising a device ID code uniquely identifying the integrated device and a secret decryption value in a tamper proof format, and when scan data is verified by comparing the scan data to the biometric data, wirelessly sends one or more codes and other data values including the device ID code. The authentication unit receives and sends the one or more codes and the other data values to an agent for authentication, and receives an access message from the agent indicating that the agent successfully authenticated the one or more codes and other data values and allows the user to access an application."

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Load-Date: May 31, 2016

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Renee Preston

PTO/SB/57 (01-18)
Approved for use through 09/30/2018. OMB 0651-0064
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

(Also referred to as FORM PTO-1465)

REQUEST FOR *EX PARTE* REEXAMINATION TRANSMITTAL FORM

Address to:
Mail Stop *Ex Parte* Reexam
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attorney Docket No.: 02198-00080

Date: June 8, 2022

1. ☒ This is a request for *ex parte* reexamination pursuant to 37 CFR 1.510 of patent number US 9,298,905 issued March 29, 2016. The request is made by:
   ☐ patent owner. ☒ third party requester.

2. ☒ The name and address of the person requesting reexamination is:
   Marissa R. Ducca, Quinn Emanuel Urquhart & Sullivan, LLP
   1300 I Street NW, Suite 900
   Washington, D.C. 20005

3. Requester ☐ asserts small entity status (37 CFR 1.27) or ☐ certifies micro entity status (37 CFR 1.29). Only a patent owner requester can certify micro entity status. Form PTO/SB/15A or B must be attached to certify micro entity status.

4. This request is accompanied by payment of the reexamination fee as set forth in:
   ☒ 37 CFR 1.20(c)(2); **or**
   ☐ 37 CFR 1.20(c)(1). **In checking this box for payment of the fee set forth in 37 CFR 1.20(c)(1), requester asserts that this request has forty (40) or fewer pages and complies with all other requirements of 37 CFR 1.20(c)(1).**

   Payment of the reexamination fee is made by the method set forth below.
   a. ☐ A check in the amount of $_____ is enclosed to cover the reexamination fee;
   b. ☒ The Director is hereby authorized to charge the reexamination fee to Deposit Account No. 50-5708;
   c. ☐ Payment by credit card. Form PTO-2038 is attached; **or**
   d. ☐ Payment made via EFS-Web.

   ☒ In addition, the Director is hereby authorized to charge any fee deficiencies to Deposit Account No. 50-5708.

5. ☒ Any refund should be made by ☐ check or ☐ credit to Deposit Account No. 50-5708. 37 CFR 1.26(c). If payment is made by credit card, refund must be to credit card account.

6. ☒ A copy of the patent to be reexamined having a double column format on one side of a separate paper is enclosed. 37 CFR 1.510(b)(4).

7. ☐ CD-ROM or CD-R in duplicate, Computer Program (Appendix) or large table
   ☐ Landscape Table on CD

This collection of information is required by 37 CFR 1.510. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) a request for reexamination. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop *Ex Parte* Reexam, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

8. ☐ Nucleotide and/or Amino Acid Sequence Submission
If applicable, items a. – c. are required.

a. ☐ Computer Readable Form (CRF)

b. Specification Sequence Listing on:

i. ☐ CD-ROM (2 copies) or CD-R (2 copies) **or**

ii. ☐ paper

c. ☐ Statements verifying identity of above copies.

9. ☐ A copy of any disclaimer, certificate of correction or reexamination certificate issued in the patent is included.

10. ☒ Reexamination of claim(s) 1-18 is requested.

11. ☒ A copy of every patent or printed publication relied upon is submitted herewith including a listing thereof on Form PTO/SB/08, PTO-1449, or equivalent.

12. ☐ An English language translation of all necessary and pertinent non-English language patents and/or printed publications is attached.

13. ☒ The attached detailed request includes at least the following items:

a. A statement identifying each substantial new question of patentability based on prior patents and printed publications. 37 CFR 1.510(b)(1).

b. An identification of every claim for which reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited art to every claim for which reexamination is requested. 37 CFR1.510(b)(2).

14. ☐ A proposed amendment is included (only where the patent owner is the requester). 37 CFR 1.510(e).

15. ☒ It is certified that the statutory estoppel provisions of 35 U.S.C. 315(e)(1) or 35 U.S.C. 325(e)(1) do not prohibit requester from filing this *ex parte* reexamination request. 37 CFR 1.510(b)(6).

16. Service

a. ☒ It is certified that a copy of this request (if filed by other than the patent owner) has been served in its entirety on the patent owner as provided in 37 CFR 1.33(c).

The name and address of the party served are:

Patent Law Works/Proxense, Greg Sueoka

310 East 4500 South, Suite 400

Salt Lake City, UT 84107

Date of Service: June 8, 2022

OR

b. ☐ A duplicate copy is enclosed since service on patent owner was not possible. An explanation of the efforts made to serve patent owner **is attached**. See MPEP 2220.

17. Correspondence Address: Direct all communication about the reexamination to:

☐ The address associated with Customer Number:

OR

☒ Firm or Individual Name Marissa R. Ducca
(at the address identified below)

Address
1300 I Street NW, Suite 900

City	State	Zip
Washington, D.C.	Washington, D.C.	20005

Country
US

Telephone	Email
(202) 583 8000	marissaducca@quinnemanuel.com

18. ☒ The patent is currently the subject of the following concurrent proceeding(s):

a. ☐ Copending reissue Application No. _____

b. ☐ Copending reexamination Control No. _____

c. ☐ Copending Interference No. _____

d. ☒ Copending litigation styled:
Proxense, LLC v. Samsung Electronics Co., Ltd. et al, 6:21-cv-00210 (W.D. Tex.)

WARNING : Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

/s/ Marissa Ducca — Authorized Signature

June 8, 2022 — Date

Marissa R. Ducca — Typed/Printed Name

59,807 — Registration No.

☐ For Patent Owner Requester ☒ For Third Party Requester

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/08a (07-09)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	14/521,982
Filing Date	October 23, 2014
First Named Inventor	John J. Giobbi
Art Unit	
Examiner Name	
Attorney Docket Number	

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US- 7,188,110 B1	03-06-2007	Ludtke	
		US- 2003/0196084 A1	10-16-2003	Okereke	
		US- 2003/0177102 A1	09-18-2003	Robinson	
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]–Number[4]–Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
		WO 1999/056429 A1	11-04-1999	Scott		

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

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Routine uses of the information in this record may include disclosure to: 1) law enforcement, in the event that the system of records indicates a violation or potential violation of law; 2) a Federal, state, local, or international agency, in response to its request; 3) a contractor of the USPTO having need for the information in order to perform a contract; 4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record; 5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record; 6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations; 7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals; 8) another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)); 9) the Office of Personnel Management (OPM) for personnel research purposes; and 9) the Office of Management and Budget (OMB) for legislative coordination and clearance.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Giobbi	
U.S. Patent No.: 9,298,905	Examiner: To Be Assigned
Issued: March 29, 2016	Art Unit: To Be Assigned
Application No.: 14/521,982	
Filed: October 23, 2014	
Title: BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION	**REQUEST FOR *EX PARTE* REEXAMINATION UNDER 37 C.F.R. § 1.510**

Mail Stop *Ex Parte* Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Certificate of Service

The undersigned hereby certifies that a USB flash drive with an electronic copy of the following documents have been served via US Mail on June 8, 2022:

1. Request for Ex Parte Reexamination of U.S. Patent 9,298,905;
2. All exhibits, attachments and supporting documentation including, Exhibits 1001-1015;

3. Form PTO/SB/57 (01-18): Request For Ex Parte Reexamination Transmittal Form;

4. Form PTO/SB/08a (07-09): Information Disclosure Statement By Applicant.

The name of address of the party being serviced is as follows:

Patent Law Works/Proxense
Greg Sueoka
310 East 4500 South, Suite 400
Salt Lake City, UT 84107

Additionally, the following have been provided courtesy copies as counsel in the associated district court action:

Hecht Partners
David Hecht
125 Park Avenue, 25th Floor
New York, NY 10017

Susman Godfrey
Brian Melton
1000 Louisiana St, Suite 5100
Houston, TX 77002

Dated: June 8, 2022 By: */s/ Marissa Ducca*
Marissa Ducca
(Reg. No. 59,807)

US009298905B1

(12) **United States Patent**
Giobbi

(10) **Patent No.: US 9,298,905 B1**
(45) **Date of Patent: *Mar. 29, 2016**

(54) **BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION**

(71) Applicant: **Proxense, LLC**, Bend, OR (US)

(72) Inventor: **John J. Giobbi**, Bend, OR (US)

(73) Assignee: **Proxense, LLC**, Bend, OR (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **14/521,982**

(22) Filed: **Oct. 23, 2014**

Related U.S. Application Data

(63) Continuation of application No. 13/710,109, filed on Dec. 10, 2012, now Pat. No. 8,886,954, which is a continuation of application No. 11/314,199, filed on Dec. 20, 2005, now Pat. No. 8,352,730.

(60) Provisional application No. 60/652,765, filed on Feb. 14, 2005, provisional application No. 60/637,538, filed on Dec. 20, 2004.

(51) **Int. Cl.**
G06F 21/35 (2013.01)
G06F 21/32 (2013.01)

(52) **U.S. Cl.**
CPC ***G06F 21/35*** (2013.01); ***G06F 21/32*** (2013.01)

(58) **Field of Classification Search**
CPC combination set(s) only.
See application file for complete search history.

(56) **References Cited**

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4,759,060 A 7/1988 Hayashi et al.
4,993,068 A 2/1991 Piosenka et al.
5,187,352 A 2/1993 Blair et al.
5,296,641 A 3/1994 Stelzl
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WO WO 01/22724 3/2001
(Continued)

OTHER PUBLICATIONS

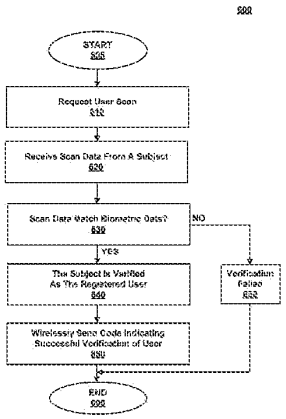
"Alliance Activities: Publications: Identity—Smart Card Alliance," Smart Card Alliance, 1997-2007, Retrieved on Jan. 7, 2007 from <URL:http://www.smartcardalliance.org/pages/publications-identity>, 3 pgs.
(Continued)

Primary Examiner — Taghi Arani
Assistant Examiner — Phy Anh Vu
(74) *Attorney, Agent, or Firm* — Patent Law Works LLP

(57) **ABSTRACT**

Systems and methods verifying a user during authentication of an integrated device. In one embodiment, the system includes an integrated device and an authentication unit. The integrated device stores biometric data of a user and a plurality of codes and other data values comprising a device ID code uniquely identifying the integrated device and a secret decryption value in a tamper proof format, and when scan data is verified by comparing the scan data to the biometric data, wirelessly sends one or more codes and other data values including the device ID code. The authentication unit receives and sends the one or more codes and the other data values to an agent for authentication, and receives an access message from the agent indicating that the agent successfully authenticated the one or more codes and other data values and allows the user to access an application.

18 Claims, 6 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

5,416,780 A 5/1995 Patel
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5,450,489 A 9/1995 Ostrover et al.
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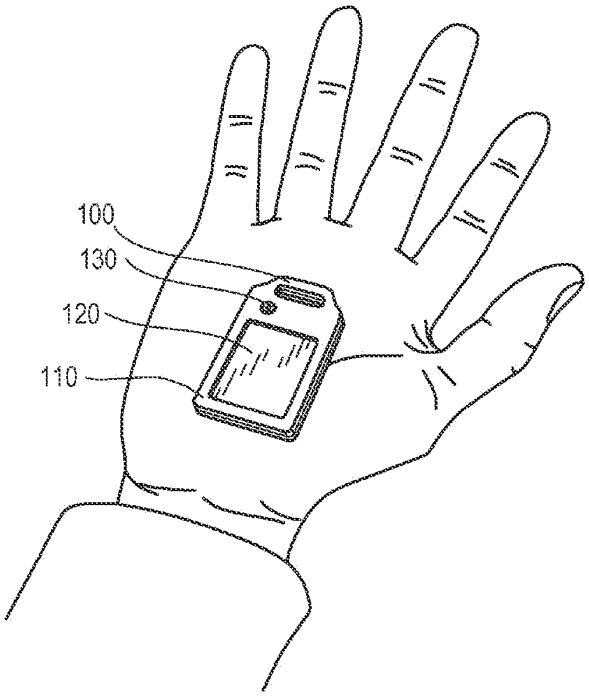

100
130
120
110

FIG. 1

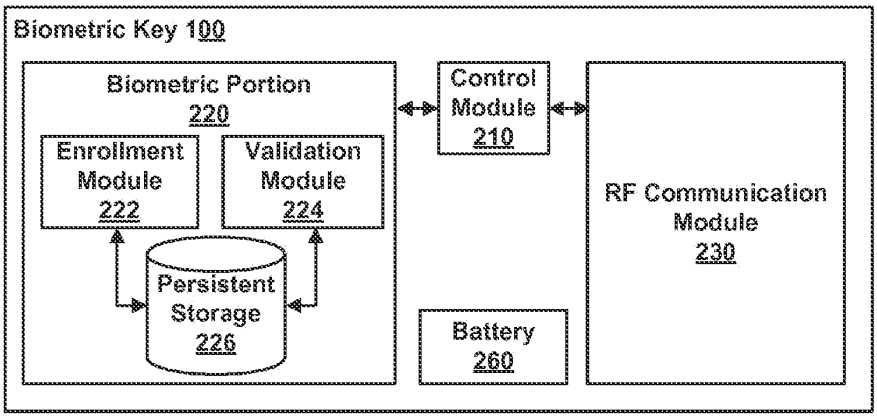

Biometric Key 100
Biometric Portion 220
Enrollment Module 222
Validation Module 224
Persistent Storage 226
Control Module 210
Battery 260
RF Communication Module 230

FIG. 2

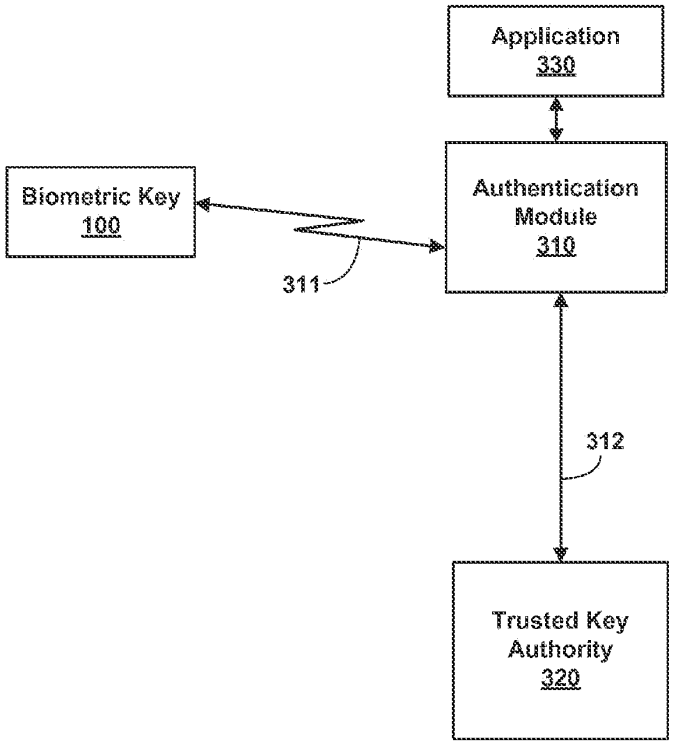

Application
330
Authentication
Module
310
Biometric Key
100
311
312
Trusted Key
Authority
320

FIG. 3

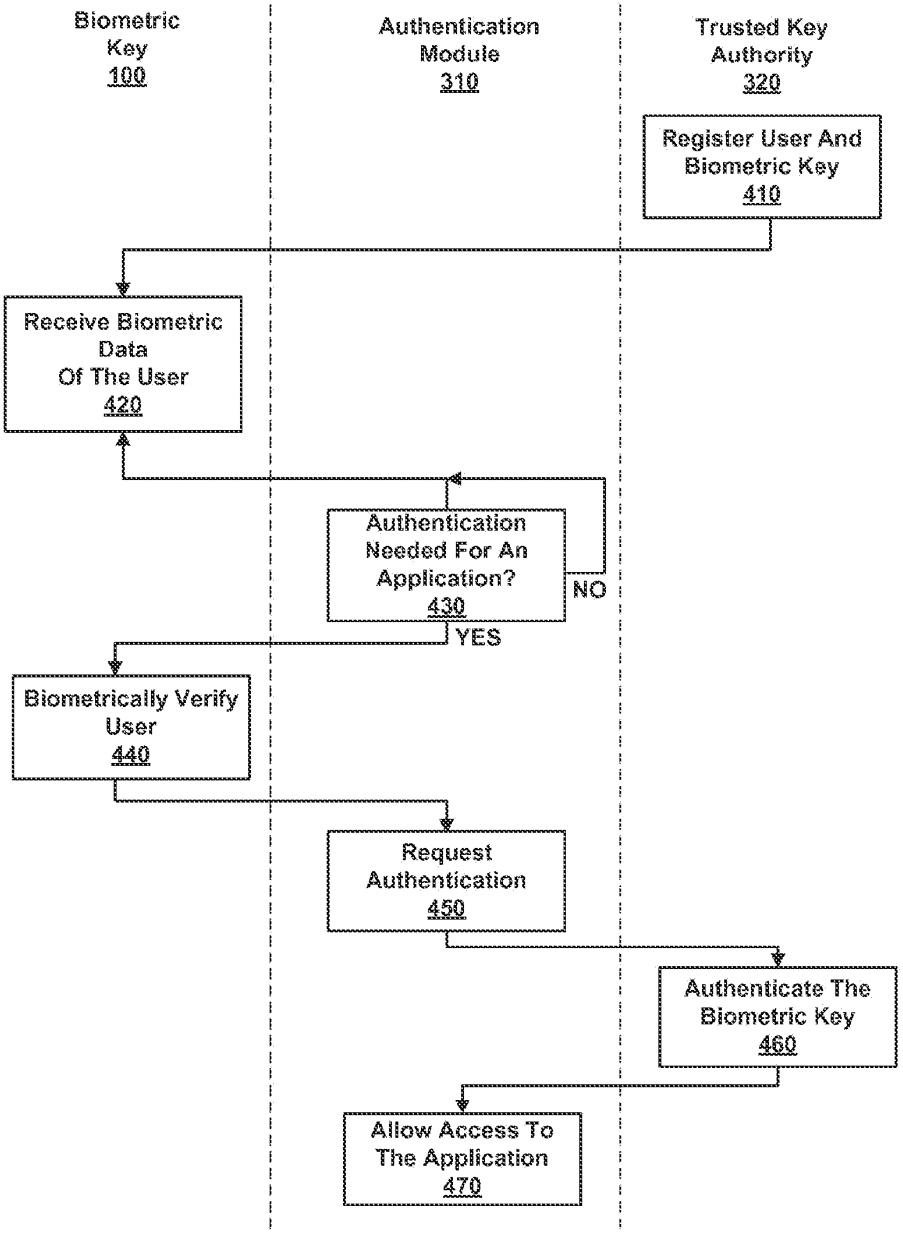

Biometric Key 100
Authentication Module 310
Trusted Key Authority 320
Register User And Biometric Key 410
Receive Biometric Data Of The User 420
Authentication Needed For An Application? 430
NO
YES
Biometrically Verify User 440
Request Authentication 450
Authenticate The Biometric Key 460
Allow Access To The Application 470

FIG. 4

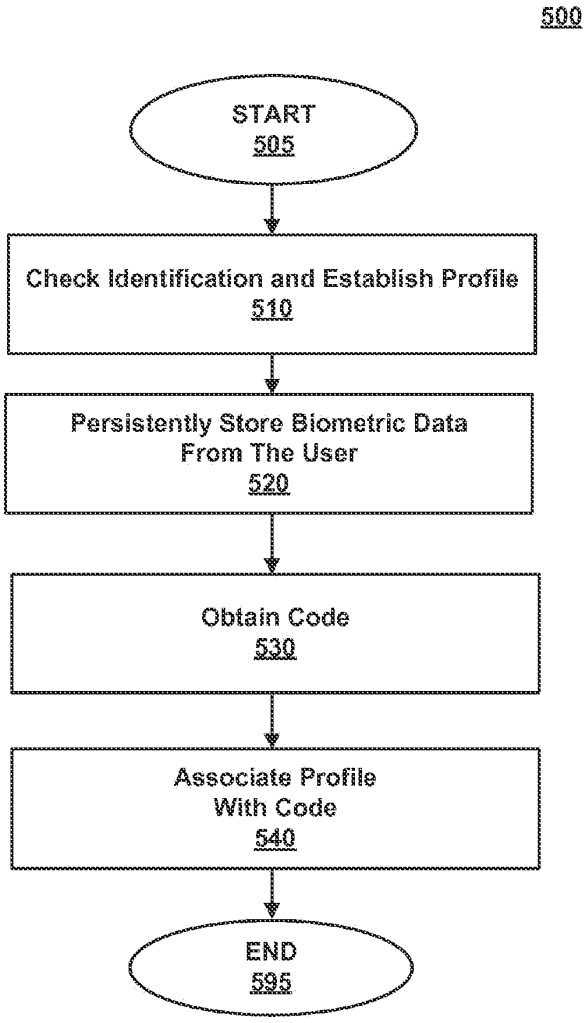

500
START
505
Check Identification and Establish Profile
510
Persistently Store Biometric Data
From The User
520
Obtain Code
530
Associate Profile
With Code
540
END
595

FIG. 5

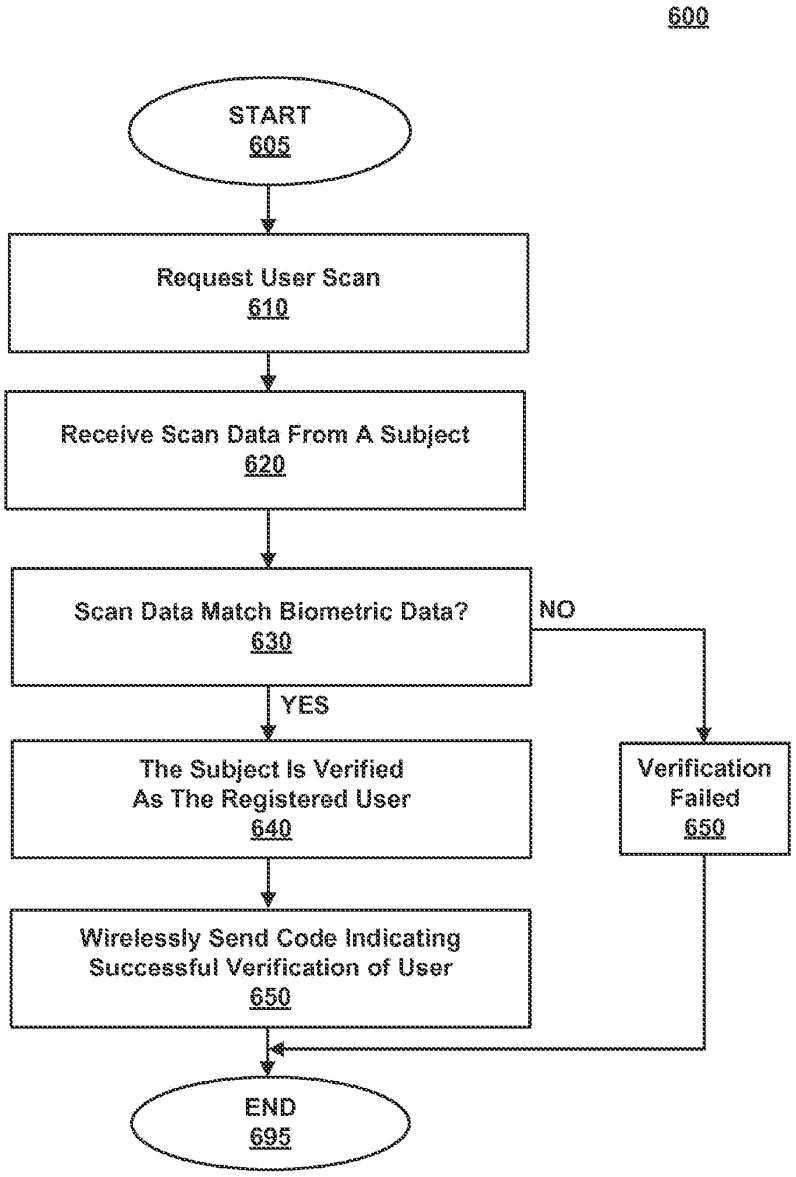

600
START
605
Request User Scan
610
Receive Scan Data From A Subject
620
Scan Data Match Biometric Data?
630
NO
YES
The Subject Is Verified
As The Registered User
640
Verification
Failed
650
Wirelessly Send Code Indicating
Successful Verification of User
650
END
695

FIG. 6

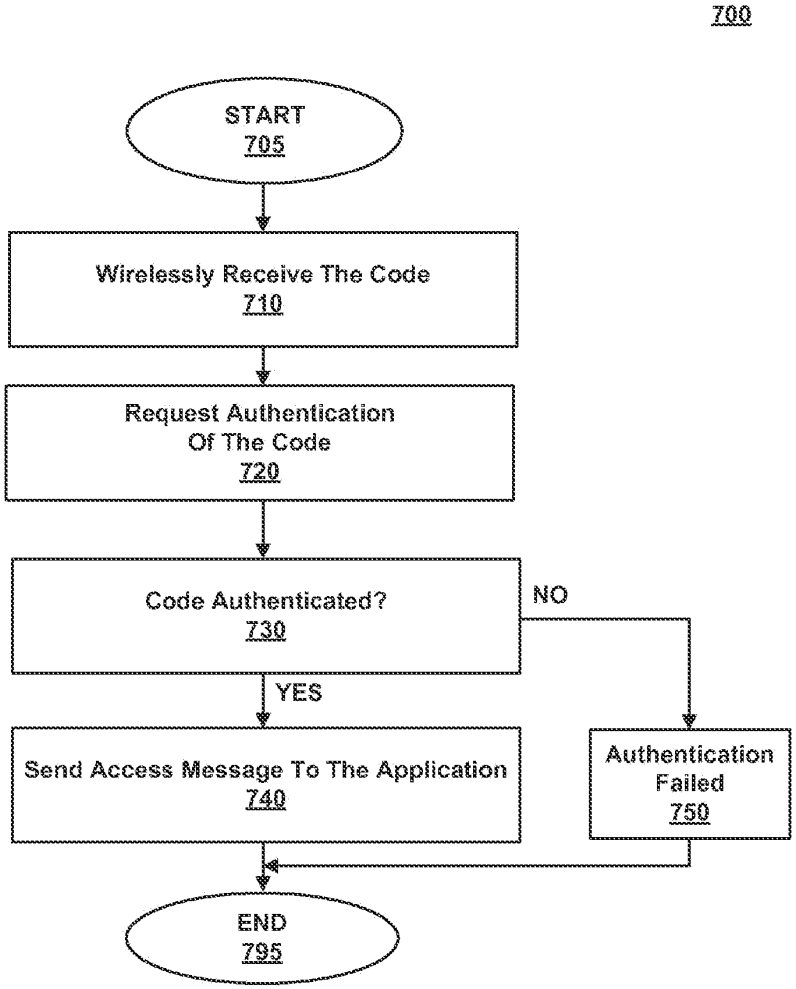

700
START
705
Wirelessly Receive The Code
710
Request Authentication
Of The Code
720
Code Authenticated?
730
NO
YES
Send Access Message To The Application
740
Authentication
Failed
750
END
795

FIG. 7

BIOMETRIC PERSONAL DATA KEY (PDK) AUTHENTICATION

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application claims priority, under 35 U.S.C. §120, to U.S. patent application Ser. No. 13/710,109 filed Dec. 10, 2012 and entitled "Biometric Personal Data Key (PDK) Authentication" which claims priority to U.S. patent application Ser. No. 11/314,199, filed Dec. 20, 2005 and entitled "Biometric Personal Data Key (PDK) Authentication," which claims the benefit of U.S. Provisional Application No. 60/637,538, filed on Dec. 20, 2004, and of U.S. Provisional Application No. 60/652,765, filed on Feb. 14, 2005, the entire contents of which are hereby incorporated by reference.

FIELD OF THE INVENTION

The present invention relates generally to computerized authentication, and more specifically, to an authentication responsive to biometric verification of a user being authenticated.

BACKGROUND

Conventional user authentication techniques are designed to prevent access by unauthorized users. One technique is to require a user being authenticated to provide secret credentials, such as a password, before allowing access. Similarly, a PIN number can be required by an ATM machine before allowing a person to perform automated bank transactions. A difficulty with this technique is that it requires the user to memorize or otherwise keep track of the credentials. A uses often has multiple sets of credentials (e.g., passwords and PINs) and it can be quite difficult to keep track of them all.

Another technique that does not require the user to memorize credentials is to provide the user with an access object such as a key (e.g., an electronic key) that the user can present to obtain access. For example, a user can be provided with a small electronic key fob that allows access to a building or other secured location. A difficulty with using access objects is that authentication merely proves that the access object itself is valid; it does not verify that the legitimate user is using the access object. That is, illegitimate user can use a stolen access object to enter a secured location because the user's identity is never checked.

Some hybrid authentication techniques require the user to provide both an access object and credentials. The user is authenticated only upon providing both items. Of course, this solution does not resolve the problem of making the user memorize credentials.

Therefore, there is a need for systems and methods for verifying a user that is being authenticated that does not suffer from the limitations described above. Moreover, the solution should ease authentications by wirelessly providing an identification of the user.

SUMMARY

The present invention addresses the above needs by providing systems and methods for authentication responsive to biometric verification of a user being authenticated. In one embodiment, an integrated device includes a persistent storage to persistently stores a code such as a device identifier (ID) and biometric data for a user in a tamper-resistant format, and a verification module, in communication with the persistent storage, to receive scan data from a biometric scan for comparison against the biometric data, and if the scan data matches the biometric data, wirelessly sending a code for authentication.

In one embodiment, a method for verifying a user during authentication of an integrated device, includes persistently storing biometric data for the user in a tamper-resistant format; responsive to receiving a request for biometric verification of the user, receiving scan data from a biometric scan; comparing the scan data to the biometric data to determine whether the data match; and responsive to a determination that the scan data matches the biometric data, wirelessly sending a code for authentication.

Other embodiments include corresponding systems, apparatus, and computer programming products, configured to perform the actions of the methods, encoded on computer storage devices. These and other embodiments may each optionally include one or more of the following features. For instance the operations further include registering an age verification for the user in association with the code. For instance the operations further include establishing a secure communication channel prior to sending the code for authentication. For instance the operations further include receiving a request for the code without a request for biometric verification, and responsive to receiving the request for the code without a request for biometric verification, sending the code without requesting the scan data. For instance, the features include: the code is registered with a trusted authority, and the code can be authenticated to a third party by the trusted authority; the code uniquely identifies the integrated device; the code indicates that the biometric verification was successful; persistently storing biometric data includes permanently storing biometric data; the biometric data and the scan data are both based on a fingerprint scan by the user, an LED to be activated for requesting the biometric scan.

In one embodiment, a method for authenticating a verified user, includes receiving a code associated with a biometrically verified user; requesting authentication of the code; receiving an authentication result; and in response to the authentication result being positive, providing access to an application.

In one embodiment, a system includes an integrated device (e.g. a biometric key) to store biometric data for a user in a tamper resistant format, and if scan data can be verified as being from the user by comparing the scan data to the biometric data, wirelessly sending a code; and an authentication module to receive the code and send the code to a trusted authority for authentication, and responsive to the code being authenticated, allowing the user to access an application.

Other embodiments include corresponding systems, apparatus, and computer programming products, configured to perform the actions of the methods, encoded on computer storage devices. These and other embodiments may each optionally include one or more of the following features. For instance, the operations further include registering the code with a trusted authority, wherein requesting authentication of the code includes providing the code to the trusted authority and wherein receiving an authentication result comprises receiving the authentication result from the trusted authority. For instance the operations further include registering a date of birth or age with the trusted authority. For instance the operations further include establishing a secure communications channel with an integrated device, wherein the code associated with the biometrically verified user is received from the integrated device. For instance the features include: the integrated device receives an authentication request from

the authentication module, and in response, requests a biometric scan from the user to generate the scan data; when the integrated device cannot verify the scan data as being from the user, it does not send the code.

Advantageously, user authentication is bolstered with highly reliable biometric verification of the user in an integrated device. Furthermore, a keyless environment relieves authorized users from having to memorize credentials, and of having to physically enter credentials or keys. In addition, the integrated device can be authenticated for an application that is open to the public (i.e., in an open loop system).

The features and advantages described in the specification are not all inclusive and, in particular, many additional features and advantages will be apparent to one of ordinary skill in the art in view of the drawings, specifications, and claims. Moreover, it should be noted that the language used in the specification has been principally selected for readability and instructional purposes and may not have been selected to delineate or circumscribe the inventive matter.

BRIEF DESCRIPTION OF THE DRAWINGS

The teachings of the present invention can be readily understood by considering the following detailed description in conjunction with the accompanying drawings.

FIG. **1** is a schematic diagram illustrating a biometric key for providing authentication information for a biometrically verified user according to one embodiment of the present invention.

FIG. **2** is a block diagram illustrating functional modules within the biometric key according to one embodiment of the present invention.

FIG. **3** is a block diagram illustrating a system for providing authentication information for a biometrically verified user.

FIG. **4** is a flow chart illustrating a method for providing authentication information for a biometrically verified user.

FIG. **5** is a flow chart illustrating a method for enrolling biometric data of the user with the biometric key.

FIG. **6** is a flow chart illustrating a method for verifying a subject presenting the biometric key according to one embodiment of the present invention.

FIG. **7** is a flow chart illustrating a method for authenticating a verified user of the biometric key according to one embodiment of the present invention.

DETAILED DESCRIPTION

Systems and methods for authentication responsive to biometric verification of a user being authenticated are described. Generally, biometric verification uses biometric data to ensure that the user of, for example, a biometric key, is the person registered as an owner. Biometric data is a digital or analog representation of characteristics unique to the user's body. For example, a fingerprint of a subject can be compared against previously-recorded biometric data for verification that the subject is the registered owner of the biometric key. Then, the biometric key itself can be authenticated.

Although the embodiments below are described using the example of biometric verification using a fingerprint, other embodiments within the spirit of the present invention can perform biometric verification using other types of biometric data. For example, the biometric data can include a palm print, a retinal scan, an iris scan, hand geometry recognition, facial recognition, signature recognition, or voice recognition.

FIG. **1** is a schematic diagram illustrating an example of a biometric key **100** for providing authentication information for a biometrically verified user according to one embodiment of the present invention. In one embodiment, the biometric key **100** comprises a frame **110**, a scan pad **120**, and an LED **130**. In one embodiment, biometric key **100** has a small form factor (e.g., the size of an automobile remote control) such that it can be unobtrusively carried by a user. In one embodiment, the biometric key **100** is integrated into another object or device. A device having an integrated biometric key **100** is occasionally referred to herein as an "integrated device." For example, in one embodiment, the biometric key **100** is integrated into a mobile phone (e.g. a cellular phone or smartphone), tablet, laptop, mp3 player, mobile gaming device, watch, key fob or other mobile device, thereby making the biometric key **100** unobtrusive to carry.

Frame **110** can be formed by plastic, metal or another suitable material. Frame **110** is shaped to secure scan pad **120**, and includes a perforation for attachment to, for example a key chain or clip. In one embodiment, frame **110** is formed from a unitary molding to protect biometric data. Accordingly, frame **110** cannot be opened to expose the underlying components unless it is broken.

Scan pad **120** can be, for example, an optical scanner using a charge coupled device, or a capacitive scanner. Scan pad **120** can be sized to fit a thumb or other finger. Biometric key **100** of the present embodiment includes LED **130** that lights up to request a fingerprint scan from a user. In one embodiment, LED **130** can also confirm that user verification and/or authentication has completed.

Biometric key **100** can authenticate a user for various purposes. For example, biometric key **100** can allow keyless entry into homes and autos. In another example, biometric key **100** can log a user onto a computer system or point of sale register without typing in credentials. In still another example, biometric key **100** can verify that an enrolled user is above a certain age (e.g., before allowing access to a slot machine in a casino). In some embodiments, biometric key **100** operates without biometric verification, and request a fingerprint scan from a user only when biometric verification is needed for the particular use.

FIG. **2** is a block diagram illustrating biometric key **100** according to one embodiment of the present invention. Biometric key **100** comprises control module **210**, biometric portion **220**, RF communication module **230**, persistent storage **240**, and battery **250**. Biometric key **100** can be formed from a combination of hardware and software components as described above. In one embodiment, biometric key **100** comprises a modified key fob.

Control module **210** coordinates between several functions of biometric key **100**. In one embodiment, control module **210** provides a verification code upon successful verification of the user. More specifically, once biometric portion **220** indicates that a fingerprint scan matches biometric data that was collected during enrollment, control module **210** can trigger RF communication module **230** for sending a code indicating that the user was verified. In another embodiment, control module **210** can work in the opposite direction by detecting a request for verification from RF communication module **230**, and then requesting verification of the user from biometric portion **210**. Note that control module **210** of FIG. **2** is merely a grouping of control functions in a central architecture, and in other embodiments, the control functions can be distributed between several modules around biometric key **100**.

Biometric portion **220** comprises enrollment module **222**, validation module **224**, and biometric data base **226**. In one

embodiment, enrollment module **222** registers a user with biometric key **100** by persistently storing biometric data associated with the user. Further, enrollment module **222** registers biometric key **100** with a trusted authority by providing the code (e.g., device ID) to the trusted authority. Or conversely, the trusted authority can provide the code to biometric key **100** to be stored therein.

Validation module **224** can comprise scan pad **120** (FIG. **1**) to capture scan data from a user's fingerprint (e.g., a digital or analog representation of the fingerprint). Using the scan data, validation module **214** determines whether the user's fingerprint matches the stored biometric data from enrollment. Conventional techniques for comparing fingerprints can be used. For example, the unique pattern of ridges and valleys of the fingerprints can be compared. A statistical model can be used to determine comparison results. Validation module **224** can send comparison results to control module **210**.

In other embodiments, validation module **224** can be configured to capture biometric data for other human characteristics. For example, a digital image of a retina, iris, and/or handwriting sample can be captured. In another example, a microphone can capture a voice sample.

Persistent storage **226** persistently stores biometric data from one or more users which can be provided according to specific implementations. In one embodiment, at least some of persistent storage **226** is a memory element that can be written to once but cannot subsequently be altered. Persistent storage **226** can include, for example, a ROM element, a flash memory element, or any other type of non-volatile storage element. Persistent storage **226** is itself, and stores data in, a tamper-proof format to prevent any changes to the stored data. Tamper-proofing increases reliability of authentication because it does not allow any changes to biometric data (i.e., allows reads of stored data, but not writes to store new data or modify existing data). Furthermore, data can be stored in an encrypted form.

In one embodiment, persistent storage **226** also stores the code that is provided by the key **100** responsive to successful verification of the user. As described above, in one embodiment the code is a device ID or other value that uniquely identifies biometric key **100**. In one embodiment, the code is providing during the manufacturing process and the biometric data are provided during an enrollment of the user. In other embodiments, the code is provided during enrollment and/or the biometric data are provided during manufacturing. Further, in some embodiments persistent storage **226** stores other data utilized during the operation of biometric key **100**. For example, persistent storage **226** can store encryption/decryption keys utilized to establish secure communications links.

Radio frequency (RF) communication module **230** is, for example, a transceiver or other mechanism for wireless communication. RF communication module **230** can send and receive data (e.g., the code) as modulated electromagnetic signals. In one embodiment, RF communication **220** can be optimized for low-power usage by, for example, using short-range transceivers. RF communication module **230** can actively send out connection requests, or passively detect connection requests.

Battery **260** can be a conventional power source suitable for the components of biometric key **100**. Battery **260** can be either replaceable or rechargeable. Alternatively, battery **260** can be embedded within key **100** such that the key must be discarded or recycled upon expiration of the battery.

FIG. **3** is a block diagram illustrating a system **300** for providing authentication information for a biometrically verified user. System **300** comprises an authentication module **310** in communication with biometric key **100**, a trusted key authority **320**, and an application **330**.

Authentication module **310** is coupled in communication with biometric key via line **311** (i.e., a wireless medium such as EM signals), and with trusted key authority **320** via line **312** (e.g., a secure data network such as the Internet, or a cell network). Authentication module **310** can include one or more of, for example, a computerized device, software executing on a computerized device, and/or a reader/decoder circuit. In one embodiment, authentication module **310** servers as a gatekeeper to application **330** by requiring the code indicating successful biometric verification of the user prior to allowing access to the application. Further, in one embodiment, authentication module **310** provides the code to trusted key authority **320** in order to verify that it belongs to a legitimate key (e.g., when application **330** is security-critical). Authentication module **310** can send a message to application **330**, or otherwise allow access to the application, responsive to a successful authentication by trusted key authority **320**.

Application **330** is a resource that can be accessed by a verified and authenticated user. Application **330** can be, for example, a casino machine, a keyless lock, a garage door opener, an ATM machine, a hard drive, computer software, a web site, a file, a financial account (e.g. a savings account, checking account, brokerage account, credit card account, credit line, etc.) and the like. In one embodiment, a file includes medical information such as a medical record, insurance information or other healthcare information. Application **330** can execute on the same system as authentication module **310** or on another system in communication with the system of the authentication module. In one embodiment, application module **330** allows access by a user after receiving a message from authentication module **310**. At that point, application **330** can allow direct use by the user, or require that communications continue to pass through authentication module **310** for continued authentication.

Trusted key authority **320** is a third-party authority that is present in some embodiments in order to provide enhanced security. In one embodiment, trusted key authority **320** verifies that a code from a biometric key is legitimate. To do so, the trusted key authority **320** stores a list of codes for legitimate biometric keys. The list can be batched or updated each time a new user/key is enrolled. In one embodiment, trusted key authority **320** can also store a profile associated with a biometric key. The profile describes the user associated with the key, the key itself, the trusted key authority, and/or other relevant information. In one embodiment, the functionality of trusted key authority **320** is provided by a server or other computerized device.

In an open system, where unknown users can attempt authentication (e.g., in a public grocery store), trusted key authority **320** provides verification that a key presenting a certain code is legitimate. By contrast, in a closed system, only known users are legitimate (e.g., owners of a home), the trusted key authority **320** can be maintained locally and serves to verify that the key belongs to one of the limited number of users that can use the system.

FIG. **4** is a flow chart illustrating a method **400** for authenticating a biometrically verified user using a trusted key authority (e.g., authority **320**). A biometric key (e.g., biometric key **100**) is registered **410** with the trusted key authority. The code (e.g., device ID) of the key is stored by the trusted key authority. Additionally, a user is enrolled **420** with the biometric key as described below with reference to FIG. **5**.

In various situations, authentication of the key is needed **430** (e.g., by authentication module **310**). In one embodiment, authentication can be required prior to allowing access to an

application (e.g., application **330**). For example, a user can be standing proximate to a slot machine in a casino which requires that a user be over the age of 21. The slot machine can detect the biometric key in the user's pocket, and, in response, spawn a conspicuous pop-up window on the slot machine requesting age verification. Alternatively, the biometric key can blink an LED. In other embodiments, biometric verification is not necessary and only the key itself is authenticated.

The biometric key establishes communication with the authentication module using various techniques. In one embodiment, the key and authentication module engage in preliminary data exchanges to determine who and/or what they are (e.g., to ascertain that they belong to the same system). These data exchanges can include challenge-response dialogs, hashing algorithms, and the like in order to ensure that the biometric key and authentication module are themselves legitimate. Further, in one embodiment the key and authentication module establish a secure communications channel. The key performs the biometric verification of the user **440** as described below with reference to FIG. **6**. If the biometric verification of the user is successful, the key provides its code over the secure communications channel.

The code is utilized to authenticate the biometric key itself **450**, **460** as described below with reference to FIG. **7** and profile information is received. Responsive to successful authentication of the key, access is allowed 470 to the application. In the slot machine example, a new pop-up window can be spawned to indicate a successful age verification.

FIG. **5** is a flow chart illustrating a method **500** for enrolling biometric data of the user with the biometric key according to one embodiment of the present invention. An agent checks **510** an identification of the user and establishes a profile. The agent can be, for example, a government official, a notary, and/or an employee of a third party which operates the trusted key authority, or another form of witness. The agent can follow standardized procedures such as requiring identification based on a state issued driver license, or a federally issued passport in order to establish a true identity of the user.

The profile describes the user and can include, for example, the user's name, date of birth, age, passwords, account numbers, preferences etc. In some embodiments, the profile stores no or only limited information about the user. For example, the agent might store the date of birth of the user in the profile, but not store any other information about the user. In addition, the profile describes the biometric key and/or key authority. For the biometric key, the profile can store a value indicating the status of the key, such as whether the key is in-service, out-of-service, abandoned, lost, stolen etc. For the key authority, the profile can store a value identifying the key authority.

The agent also collects and persistently stores **520** biometric data from the user. To do so, a fingerprint or eye retina can be scanned and converted to data which is then persistently stored in the biometric key. In one embodiment, the agent does not retain the biometric data. Since this step occurs under control of the agent, the agent can be certain that the biometric data stored within the key matches the user who presented the identification. The agent also obtains the code (e.g., device ID) from the biometric key in which the biometric data was stored. The agent associates the code and the profile using a table and/or other data structure.

FIG. **6** is a flow chart illustrating a method **600** for verifying a subject presenting the biometric key according to one embodiment of the present invention. In response to an authentication request, a user scan is requested **610** (e.g., by a blinking LED). Once the subject provides a fingerprint, scan data is received **620**. Scan data is compared for a match **630** to previously-stored biometric data. If there is no match, then verification fails **650**.

If there is a match, the subject is verified **640** as the user. The code indicating a successful verification is wirelessly sent **650** from the biometric key (e.g., by RF communication module **230**).

FIG. **7** is a flow chart illustrating a method **700** for authenticating a biometric key according to one embodiment of the present invention. The code is wirelessly received **710**. A request for authentication of the code is sent to the trusted key authority **720**. The trusted key authority determines whether the code is authentic **730** (i.e., it was created through an established enrollment process) and has a valid status (e.g., has not expired). If authentication is successful, the trusted key authority sends an access message to the application to allow user access and/or provide additional information from the profile **740** (such as the user's age). If authentication is not successful, authentication fails **750** and the message to the application indicates that the user should be denied access.

In some embodiments, the biometric key provides multiple codes and/or other data values. For example, the key can provide a device ID code that the authentication module can provide to the trusted key authority in order to authenticate the key, and the key can provide a secret decryption value that can be used to communicate with the biometric key. As used herein, the term "code" is intended to include one or more of these values, depending upon the specific embodiment.

The order in which the steps of the methods of the present invention are performed is purely illustrative in nature. The steps can be performed in any order or in parallel, unless otherwise indicated by the present disclosure. The methods of the present invention may be performed in hardware, firmware, software, or any combination thereof operating on a single computer or multiple computers of any type. Software embodying the present invention may comprise computer instructions in any form (e.g., source code, object code, interpreted code, etc.) stored in any computer-readable storage medium (e.g., a ROM, a RAM, a magnetic media, a compact disc, a DVD, etc.). Such software may also be in the form of an electrical data signal embodied in a carrier wave propagating on a conductive medium or in the form of light pulses that propagate through an optical fiber.

While particular embodiments of the present invention have been shown and described, it will be apparent to those skilled in the art that changes and modifications may be made without departing from this invention in its broader aspect and, therefore, the appended claims are to encompass within their scope all such changes and modifications, as fall within the true spirit of this invention.

In the above description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the invention. It will be apparent, however, to one skilled in the art that the invention can be practiced without these specific details. In other instances, structures and devices are shown in block diagram form in order to avoid obscuring the invention.

Reference in the specification to "one embodiment" or "an embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the invention. The appearances of the phrase "in one embodiment" in various places in the specification are not necessarily all referring to the same embodiment.

Some portions of the detailed description are presented in terms of algorithms and symbolic representations of operations on data bits within a computer memory. These algorith-

mic descriptions and representations are the means used by those skilled in the data processing arts to most effectively convey the substance of their work to others skilled in the art. An algorithm is here, and generally, conceived to be a self-consistent sequence of steps leading to a desired result. The steps are those requiring physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and otherwise manipulated. It has proven convenient at times, principally for reasons of common usage, to refer to these signals as bits, values, elements, symbols, characters, terms, numbers, or the like.

It should be borne in mind, however, that all of these and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities. Unless specifically stated otherwise as apparent from the discussion, it is appreciated that throughout the description, discussions utilizing terms such as "processing" or "computing" or "calculating" or "determining" or "displaying" or the like, refer to the action and processes of a computer system, or similar electronic computing device, that manipulates and transforms data represented as physical (electronic) quantities within the computer system's registers and memories into other data similarly represented as physical quantities within the computer system memories or registers or other such information storage, transmission or display devices.

The present invention also relates to an apparatus for performing the operations herein. This apparatus can be specially constructed for the required purposes, or it can comprise a general-purpose computer selectively activated or reconfigured by a computer program stored in the computer. Such a computer program can be stored in a computer readable storage medium, such as, but is not limited to, any type of disk including floppy disks, optical disks, CD-ROMs, and magnetic-optical disks, read-only memories (ROMs), random access memories (RAMs), EPROMs, EEPROMs, magnetic or optical cards, or any type of media suitable for storing electronic instructions, and each coupled to a computer system bus.

The algorithms and modules presented herein are not inherently related to any particular computer or other apparatus. Various general-purpose systems can be used with programs in accordance with the teachings herein, or it may prove convenient to construct more specialized apparatuses to perform the method steps. The required structure for a variety of these systems will appear from the description below. In addition, the present invention is not described with reference to any particular programming language. It will be appreciated that a variety of programming languages can be used to implement the teachings of the invention as described herein. Furthermore, as will be apparent to one of ordinary skill in the relevant art, the modules, features, attributes, methodologies, and other aspects of the invention can be implemented as software, hardware, firmware or any combination of the three. Of course, wherever a component of the present invention is implemented as software, the component can be implemented as a standalone program, as part of a larger program, as a plurality of separate programs, as a statically or dynamically linked library, as a kernel loadable module, as a device driver, and/or in every and any other way known now or in the future to those of skill in the art of computer programming. Additionally, the present invention is in no way limited to implementation in any specific operating system or environment.

It will be understood by those skilled in the relevant art that the above-described implementations are merely exemplary, and many changes can be made without departing from the true spirit and scope of the present invention. Therefore, it is intended by the appended claims to cover all such changes and modifications that come within the true spirit and scope of this invention.

What is claimed is:

1. A method comprising:

persistently storing biometric data of a legitimate user and an ID code on an integrated device;

responsive to receiving a request for a biometric verification of a user, receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor;

comparing the scan data to the biometric data to determine whether the scan data matches the biometric data;

responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and

responsive to receiving an access message from the third-party trusted authority-indicating that the third-party trusted authority successfully authenticated the ID code, allowing the user to complete a financial transaction.

2. The method of claim **1**, further comprising:

registering an age verification for the user in association with the ID code.

3. The method of claim **1**, wherein an indication that the biometric verification was successful is sent with the ID code.

4. The method of claim **1**, wherein the biometric data includes data from one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition.

5. The method of claim **1**, wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

6. The method of claim **1**, wherein completing the financial transaction includes accessing an application.

7. The method of claim **1**, wherein completing the financial transaction includes accessing one or more of a casino machine, a keyless lock, an ATM machine, a web site, a file and a financial account.

8. The method of claim **1**, further comprising:

responsive to determining the action does not require biometric verification, receiving a request for the ID code without a request for biometric verification; and

responsive to receiving the request for the ID code without a request for biometric verification, sending the ID code for authentication without requesting the scan data.

9. An integrated device comprising:

a persistent storage media that persistently stores biometric data of a user and an ID code;

a validation module, coupled to communicate with the persistent storage media, that receives scan data from a biometric scan for comparison against the biometric data, and that sends the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and

a radio frequency communication module that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code sent to the third-party

trusted authority based on the comparison of the ID code and allowing the user to—complete a financial transaction.

10. The integrated device of claim **7**, wherein the ID code is transmitted to the third-party trusted authority over a network.

11. The integrated device of claim **7**, wherein an age verification is registered in association with the ID code.

12. The integrated device of claim **7**, wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

13. A system, comprising:

an integrated hardware device that persistently stores biometric data of a legitimate user and an ID code in the integrated hardware device, and that wirelessly sends the—ID code; an authentication circuit that receives the ED code and sends the ID code to a third-party trusted authority for authentication, and that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code and allows the user to complete a financial transaction; and

the third-party trusted authority operated by a third party, the third-party trusted authority storing a list of legitimate codes and determining the authentication of the ID code received based on a comparison of the ID code received and the legitimate codes included in the list of the legitimate codes.

14. The system of claim **11** wherein the integrated hardware device receives an authentication request from the authentication circuit, and in response, requests a biometric scan from a user to generate scan data and, when the integrated hardware device cannot verify the scan data as being from the legitimate user, the integrated hardware device does not send the ID code.

15. The system of claim **11**, wherein the integrated hardware device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

16. The system of claim **11**, wherein the biometric data includes data based on one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition.

17. The system of claim **11**, wherein completing the financial transaction includes accessing one or more of a casino machine, a keyless lock, an ATM machine, a web site, a file and a financial account.

18. The system of claim **11**, wherein completing the financial transaction includes accessing an application.

* * * * *

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY.DOCKET NO./TITLE	REQUEST ID
14/521,982	10/23/2014	John J. Giobbi	10001-04540 US	157942

Acknowledgement of Loss of Entitlement to Entity Status Discount

The entity status change request below filed through Private PAIR on 02/02/2022 has been accepted.

CERTIFICATIONS:

Change of Entity Status:

X Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be notification of loss of entitlement to small or micro entity status, as applicable.

This portion must be completed by the signatory or signatories making the entity status change in accordance with 37 CFR 1.4(d)(4).

Signature:	/Greg T. Sueoka/
Name:	Greg T. Sueoka
Registration Number:	33800

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 **Director of the U.S. Patent and Trademark Office** **P.O. Box 1450** **Alexandria, VA 22313-1450**	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Western District of Texas on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
6:21-cv-00210	3/5/2021	Western District of Texas

PLAINTIFF	DEFENDANT
PROXENSE,LLC,	SAMSUNG ELECTRONICS,CO., LTD. and SAMSUNG ELECTRONICSAMERICA, INC,

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	8,352,730	1/8/2013	Proxense, LLC
2	9,298,905	3/29/2016	Proxense, LLC
3	10,698,989	6/30/2020	Proxense, LLC
4	9,049,188	6/2/2015	Proxense, LLC
5	9,235,700	1/12/2016	Proxense, LLC

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/521,982	03/29/2016	9298905	10001-04540 US	8239

89194 7590 03/09/2016

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ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/521,982	10/23/2014	John J. Giobbi	10001-04540 US	8239

89194 7590 02/22/2016

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ART UNIT	PAPER NUMBER
2438	

NOTIFICATION DATE	DELIVERY MODE
02/22/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Response to Rule 312 Communication	Application No.	Applicant(s)
	14/521,982	GIOBBI, JOHN J.
	Examiner	Art Unit
	PHY ANH VU	2438

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

1. ☒ The amendment filed on *04 February 2016* under 37 CFR 1.312 has been considered, and has been:

a) ☒ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.
Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

Please enter amendments filed 02/04/2016, and disregard amendments filed 01/20/2016. Thank you.

/TAGHI ARANI/ Supervisory Patent Examiner, Art Unit 2438	/PHY ANH VU/ Examiner, Art Unit 2438

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

89194 7590 12/16/2015
Patent Law Works/Proxense
Greg Sueoka
201 South Main Street, Suite 250
Salt Lake City, UT 84111

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/521,982	10/23/2014	John J. Giobbi	10001-04540 US	8239

TITLE OF INVENTION: Biometric Personal Data Key (PDK) Authentication

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	03/16/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
VU, PHY ANH TRAN	2438	713-186000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Patent Law Works LLP
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Proxense, LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Bend, OR

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ☒ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ☒ Payment by credit card. ~~Form PTO-2038 is attached.~~ XXXXXXXXXXXXXXXX
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29
  NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27
  NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status.
  NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Paige Alsbury/ Date February 19, 2016

Typed or printed name Paige M. Alsbury Registration No. 72,965

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Electronic Patent Application Fee Transmittal

Application Number:	14521982
Filing Date:	23-Oct-2014
Title of Invention:	Biometric Personal Data Key (PDK) Authentication
First Named Inventor/Applicant Name:	John J. Giobbi
Filer:	Paige McDede Alsbury/Cynthia Kersey
Attorney Docket Number:	10001-04540 US

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**480**

Electronic Acknowledgement Receipt	
EFS ID:	24968986
Application Number:	14521982
International Application Number:	
Confirmation Number:	8239
Title of Invention:	Biometric Personal Data Key (PDK) Authentication
First Named Inventor/Applicant Name:	John J. Giobbi
Customer Number:	89194
Filer:	Paige McDede Alsbury
Filer Authorized By:	
Attorney Docket Number:	10001-04540 US
Receipt Date:	19-FEB-2016
Filing Date:	23-OCT-2014
Time Stamp:	16:45:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$480
RAM confirmation Number	3830
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	04540US2016-02-19-IssueFeeTransmittal.pdf	95723 2390c8657c485ce4523058c7186f63caae2c10a1	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30517 f8d9d51ece875e57daa7527ab3071f274611ee02	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	126240		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Response to Rule 312 Communication	Application No.	Applicant(s)
	14/521,982	GIOBBI, JOHN J.
	Examiner	Art Unit
	PHY ANH VU	2438

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

1. ☒ The amendment filed on *04 February 2016* under 37 CFR 1.312 has been considered, and has been:

a) ☒ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.
Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

Please enter claim set dated 02/04/2016, and disregard the claim set filed 01/20/2015. Thank you.

/PHY ANH VU/
Examiner, Art Unit 2438

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

APPLICANT:	John J. Giobbi
APPLICATION NO:	14/521,982
FILING DATE:	October 23, 2014
TITLE:	Biometric Personal Data Key (PDK) Authentication
EXAMINER:	Phy Anh Tran Vu
GROUP ART UNIT:	2438
ATTY. DKT. NO:	10001-04540 US
CONFIRMATION NO:	8239

CERTIFICATE OF EFS-WEB TRANSMISSION

Pursuant to 240 OG 45 and the Legal Framework For EFS-Web, I hereby certify that this follow-on correspondence is being officially submitted through the USPTO EFS-Web system from the Mountain Time Zone of the United States on the local date shown below:

Dated: February 4, 2016 By: /Matthew M. Holmes/
Matthew M. Holmes, Reg. No. 65,160

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312
AND COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE

Sir/Madam:

In response to the Notices of Allowance and Allowability dated December 16, 2015, please amend the above-identified application as indicated in the present Amendment and disregard the Amendment filed January 20, 2016, which included errors in the numbers identifying the dependencies of dependent claims:

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 7 of this paper.

IN THE CLAIMS

All pending claims are reproduced below.

1. (Canceled)

2. (Currently Amended) A method comprising:

persistently storing biometric data of a legitimate user and an ID code on an integrated device;

responsive to receiving a request for a biometric verification of a user, receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor;

comparing the scan data to the biometric data to determine whether the scan data matches the biometric data;

responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and

responsive to receiving an access message from the third-party trusted authority-

indicating that the third-party trusted authority successfully authenticated the ~~user as the legitimate user based on the comparison of the~~ ID code, allowing the user to complete a financial transaction.

3. (Previously Presented)The method of claim 2, further comprising:

registering an age verification for the user in association with the ID code.

4. (Previously Presented) The method of claim 2, wherein an indication that the biometric verification was successful is sent with the ID code.

5. (Previously Presented) The method of claim 2, wherein the biometric data includes data from one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition;

6. (Previously Presented) The method of claim 2, wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

7. (Currently Amended) The method of claim 2, wherein ~~the complete a~~ completing the financial transaction includes accessing an application.

8. (Canceled)

9. (Currently Amended) The method of claim 2, wherein ~~the complete a~~ completing the financial transaction includes accessing one or more of a casino machine, a keyless lock, an ATM machine, a web site, a file and a financial account.

10. (Previously Presented) The method of claim 2, further comprising:

responsive to determining the action does not require biometric verification, receiving a request for the ID code without a request for biometric verification; and

responsive to receiving the request for the ID code without a request for biometric verification, sending the ID code for authentication without requesting the scan data.

11. (Previously Presented) An integrated device comprising:

a persistent storage media that persistently stores biometric data of a user and an ID code;

a validation module, coupled to communicate with the persistent storage media, that receives scan data from a biometric scan for comparison against the biometric data, and that sends the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and

a radio frequency communication module that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code sent to the third-party trusted authority based on the comparison of the ID code and allowing the user to-complete a financial transaction.

12. (Previously Presented) The integrated device of claim 11, wherein the ID code is transmitted to the third-party trusted authority over a network.

13. (Previously Presented) The integrated device of claim 11, wherein an age verification is registered in association with the ID code.

14. (Previously Presented) The integrated device of claim 11, wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

15. (Currently Amended) A system, comprising:

an integrated hardware device that persistently stores biometric data of a legitimate user and an ID code in the integrated hardware device, and that wirelessly sends the-ID code; an authentication circuit that receives the ID code and sends the ID code to a third-party trusted authority for authentication, and that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code and allows the user to complete a financial transaction; and

the third-party trusted authority operated by a third party, the third-party trusted authority storing a list of legitimate codes and determining the authentication of the ID code received ~~a user~~ based on a comparison of the ID code received and the legitimate codes included in the list of the legitimate codes.

16. (Previously Presented) The system of claim 15 wherein the integrated hardware device receives an authentication request from the authentication circuit, and in response, requests a biometric scan from a user to generate scan data and, when the integrated hardware device cannot verify the scan data as being from the legitimate user, the integrated hardware device does not send the ID code.

17. (Previously Presented) The system of claim 15, wherein the integrated hardware device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

18. (Previously Presented) The system of claim 15, wherein the biometric data includes data based on one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition.

19. (Currently Amended) The system of claim 15, wherein ~~the complete a~~ completing the financial transaction includes accessing one or more of a casino machine, a keyless lock, an ATM machine, a web site, a file and a financial account.

20. (Currently Amended) The system of claim 15, wherein ~~the complete a~~ completing the financial transaction includes accessing an application.

REMARKS/ARGUMENTS

Regarding the present Amendment, entry of this Amendment is respectfully requested since the Amendment does not add new matter and does not require a new search.

With regard to the amendments to claims 1 and 15, during the final review of the allowed claim language prior to paying the issue fee, Applicant's Representative noticed inconsistencies between the language of claims 1, 11 and 15. The amendments to claims 1 and 15 are needed to make the claim language of claims 1 and 15 more consistent with the language of claim 11. Since claim 11 recites "receiving an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code sent to the third-party trusted authority based on the comparison of the ID code and allowing the user to-complete a financial transaction" and claim 11 is allowed, neither the amendment of claim 1 to recite "responsive to receiving an access message from the third-party trusted authority-indicating that the third-party trusted authority successfully authenticated the ID code, allowing the user to complete a financial transaction" nor the amendment of claim 15 to recite "the third-party trusted authority storing a list of legitimate codes and determining the authentication of the ID code received based on a comparison of the ID code received and the legitimate codes included in the list of the legitimate codes" require a new search and claims 1 and 15 as amended herein are allowable.

With regard to the amendments to claims 7, 9, 19 and 20, the amendments are intended to enhance readability as the language "the complete a financial transaction" is awkward and to address an antecedent basis issue since the independent claims recite "a financial transaction." The amendment was not presented previously because the portions of claims 7, 9, 19 and 20

amended includes language that was entered by the Examiner's Amendment that accompanied the Notice of Allowability.

With regard to the Examiner's statement for reasons of allowance, the Examiner's statement is based on claim elements of independent claim 1. It should be noted that the claim language of independent claims 11 and 15 may differ from that of claim 1, and that claims 11 and 15 are patentable for the elements they recite, which may differ from claim 1.

Respectfully submitted,
JOHN J. GIOBBI

Dated: February 4, 2016 By: /Matthew M. Holmes/

Matthew M. Holmes, Reg. No. 65,160
Attorney for Applicant
PATENT LAW WORKS LLP
201 South Main Street, Suite 250
Salt Lake City, UT 84111
Tel.: (385) 232-7853
Fax: (801) 355-0160
Email: mholmes@patentlawworks.net

Electronic Acknowledgement Receipt

EFS ID:	24822283
Application Number:	14521982
International Application Number:	
Confirmation Number:	8239
Title of Invention:	Biometric Personal Data Key (PDK) Authentication
First Named Inventor/Applicant Name:	John J. Giobbi
Customer Number:	89194
Filer:	Matthew M. Holmes
Filer Authorized By:	
Attorney Docket Number:	10001-04540 US
Receipt Date:	04-FEB-2016
Filing Date:	23-OCT-2014
Time Stamp:	16:24:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		04540US2016-02-04-ReplacementAfterAllowance312Amendment.pdf	84617 28343d59048e9a5ad758d2e18e581b117e8983d3	yes	8

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment after Notice of Allowance (Rule 312)	1	1
	Claims	2	6
	Applicant Arguments/Remarks Made in an Amendment	7	8
Warnings:			
Information:			
	Total Files Size (in bytes):	84617	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/521,982	10/23/2014	John J. Giobbi	10001-04540 US	8239

89194 7590 02/01/2016

Patent Law Works/Proxense
Greg Sueoka
201 South Main Street, Suite 250
Salt Lake City, UT 84111

EXAMINER	
VU, PHY ANH TRAN	

ART UNIT	PAPER NUMBER
2438	

NOTIFICATION DATE	DELIVERY MODE
02/01/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@patentlawworks.net
patents@patentlawworks.net

Response to Rule 312 Communication	Application No.	Applicant(s)
	14/521,982	GIOBBI, JOHN J.
	Examiner	Art Unit
	PHY ANH VU	2438

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

1. ☒ The amendment filed on *20 January 2016* under 37 CFR 1.312 has been considered, and has been:

a) ☐ entered.

b) ☒ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.
Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

/TAGHI ARANI/ Supervisory Patent Examiner, Art Unit 2438	/PHY ANH VU/ Examiner, Art Unit 2438

OK TO ENTER: /P.V./

01/21/2016

IN THE CLAIMS

All pending claims are reproduced below.

1. (Canceled)

2. (Currently Amended) A method comprising:

persistently storing biometric data of a legitimate user and an ID code on an integrated device;

responsive to receiving a request for a biometric verification of a user, receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor;

comparing the scan data to the biometric data to determine whether the scan data matches the biometric data;

responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and

responsive to receiving an access message from the third-party trusted authority-indicating that the third-party trusted authority successfully authenticated the ~~user as the legitimate user based on the comparison of the~~ ID code, allowing the user to complete a financial transaction.

3. (Previously Presented)The method of claim 1, further comprising:

registering an age verification for the user in association with the ID code.

4. (Previously Presented) The method of claim 1, wherein an indication that the biometric verification was successful is sent with the ID code.

5. (Previously Presented) The method of claim 1, wherein the biometric data includes data from one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition;

6. (Previously Presented) The method of claim 1, wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

7. (Currently Amended) The method of claim 1, wherein ~~the complete a~~ completing the financial transaction includes accessing an application.

8. (Canceled)

9. (Currently Amended) The method of claim 1, wherein ~~the complete a~~ completing the financial transaction includes accessing one or more of a casino machine, a keyless lock, an ATM machine, a web site, a file and a financial account.

10. (Previously Presented) The method of claim 1, further comprising:

responsive to determining the action does not require biometric verification, receiving a request for the ID code without a request for biometric verification; and

responsive to receiving the request for the ID code without a request for biometric verification, sending the ID code for authentication without requesting the scan data.

11. (Previously Presented) An integrated device comprising:

a persistent storage media that persistently stores biometric data of a user and an ID code;

a validation module, coupled to communicate with the persistent storage media, that receives scan data from a biometric scan for comparison against the biometric data, and that sends the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and

a radio frequency communication module that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code sent to the third-party trusted authority based on the comparison of the ID code and allowing the user to-complete a financial transaction.

12. (Previously Presented) The integrated device of claim 9, wherein the ID code is transmitted to the third-party trusted authority over a network.

13. (Previously Presented) The integrated device of claim 9, wherein an age verification is registered in association with the ID code.

14. (Previously Presented) The integrated device of claim 9, wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

15. (Currently Amended) A system, comprising:

an integrated hardware device that persistently stores biometric data of a legitimate user and an ID code in the integrated hardware device, and that wirelessly sends the-ID code; an authentication circuit that receives the ID code and sends the ID code to a third-party trusted authority for authentication, and that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code and allows the user to complete a financial transaction; and

the third-party trusted authority operated by a third party, the third-party trusted authority storing a list of legitimate codes and determining the authentication of the ID code received ~~a user~~ based on a comparison of the ID code received and the legitimate codes included in the list of the legitimate codes.

16. (Previously Presented) The system of claim 13 wherein the integrated hardware device receives an authentication request from the authentication circuit, and in response, requests a biometric scan from a user to generate scan data and, when the integrated hardware device cannot verify the scan data as being from the legitimate user, the integrated hardware device does not send the ID code.

17. (Previously Presented) The system of claim 13, wherein the integrated hardware device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

18. (Previously Presented) The system of claim 13, wherein the biometric data includes data based on one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition.

19. (Currently Amended) The system of claim 13, wherein ~~the complete a~~ completing the financial transaction includes accessing one or more of a casino machine, a keyless lock, an ATM machine, a web site, a file and a financial account.

20. (Currently Amended) The system of claim 13, wherein ~~the complete a~~ completing the financial transaction includes accessing an application.

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

APPLICANT:	John J. Giobbi
APPLICATION NO:	14/521,982
FILING DATE:	October 23, 2014
TITLE:	Biometric Personal Data Key (PDK) Authentication
EXAMINER:	Phy Anh Tran Vu
GROUP ART UNIT:	2438
ATTY. DKT. NO:	10001-04540 US
CONFIRMATION NO:	8239

CERTIFICATE OF EFS-WEB TRANSMISSION

Pursuant to 240 OG 45 and the Legal Framework For EFS-Web, I hereby certify that this follow-on correspondence is being officially submitted through the USPTO EFS-Web system from the Mountain Time Zone of the United States on the local date shown below:

Dated: January 20, 2016 By: /Matthew M. Holmes/

Matthew M. Holmes, Reg. No. 65,160

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312
AND COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE

Sir/Madam:

In response to the Notices of Allowance and Allowability dated December 16, 2015, please amend the above-identified application as indicated in the present Amendment:

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 7 of this paper.

IN THE CLAIMS

All pending claims are reproduced below.

1. (Canceled)

2. (Currently Amended) A method comprising:

persistently storing biometric data of a legitimate user and an ID code on an integrated device;

responsive to receiving a request for a biometric verification of a user, receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor;

comparing the scan data to the biometric data to determine whether the scan data matches the biometric data;

responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and

responsive to receiving an access message from the third-party trusted authority-indicating that the third-party trusted authority successfully authenticated the ~~user as the legitimate user based on the comparison of the~~ ID code, allowing the user to complete a financial transaction.

3. (Previously Presented)The method of claim 1, further comprising:

registering an age verification for the user in association with the ID code.

4. (Previously Presented) The method of claim 1, wherein an indication that the biometric verification was successful is sent with the ID code.

5. (Previously Presented) The method of claim 1, wherein the biometric data includes data from one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition;

6. (Previously Presented) The method of claim 1, wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

7. (Currently Amended) The method of claim 1, wherein ~~the complete a~~ completing the financial transaction includes accessing an application.

8. (Canceled)

9. (Currently Amended) The method of claim 1, wherein ~~the complete a~~ completing the financial transaction includes accessing one or more of a casino machine, a keyless lock, an ATM machine, a web site, a file and a financial account.

10. (Previously Presented) The method of claim 1, further comprising:

responsive to determining the action does not require biometric verification, receiving a request for the ID code without a request for biometric verification; and

responsive to receiving the request for the ID code without a request for biometric verification, sending the ID code for authentication without requesting the scan data.

11. (Previously Presented) An integrated device comprising:

a persistent storage media that persistently stores biometric data of a user and an ID code;

a validation module, coupled to communicate with the persistent storage media, that receives scan data from a biometric scan for comparison against the biometric data, and that sends the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and

a radio frequency communication module that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code sent to the third-party trusted authority based on the comparison of the ID code and allowing the user to-complete a financial transaction.

12. (Previously Presented) The integrated device of claim 9, wherein the ID code is transmitted to the third-party trusted authority over a network.

13. (Previously Presented) The integrated device of claim 9, wherein an age verification is registered in association with the ID code.

14. (Previously Presented) The integrated device of claim 9, wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

15. (Currently Amended) A system, comprising:

an integrated hardware device that persistently stores biometric data of a legitimate user and an ID code in the integrated hardware device, and that wirelessly sends the-ID code; an authentication circuit that receives the ID code and sends the ID code to a third-party trusted authority for authentication, and that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code and allows the user to complete a financial transaction; and

the third-party trusted authority operated by a third party, the third-party trusted authority storing a list of legitimate codes and determining the authentication of the ID code received ~~a user~~ based on a comparison of the ID code received and the legitimate codes included in the list of the legitimate codes.

16. (Previously Presented) The system of claim 13 wherein the integrated hardware device receives an authentication request from the authentication circuit, and in response, requests a biometric scan from a user to generate scan data and, when the integrated hardware device cannot verify the scan data as being from the legitimate user, the integrated hardware device does not send the ID code.

17. (Previously Presented) The system of claim 13, wherein the integrated hardware device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

18. (Previously Presented) The system of claim 13, wherein the biometric data includes data based on one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition.

19. (Currently Amended) The system of claim 13, wherein ~~the complete a~~ completing the financial transaction includes accessing one or more of a casino machine, a keyless lock, an ATM machine, a web site, a file and a financial account.

20. (Currently Amended) The system of claim 13, wherein ~~the complete a~~ completing the financial transaction includes accessing an application.

REMARKS/ARGUMENTS

Regarding the present Amendment, entry of this Amendment is respectfully requested since the Amendment does not add new matter and does not require a new search.

With regard to the amendments to claims 1 and 15, during the final review of the allowed claim language prior to paying the issue fee, Applicant's Representative noticed inconsistencies between the language of claims 1, 11 and 15. The amendments to claims 1 and 15 are needed to make the claim language of claims 1 and 15 more consistent with the language of claim 11. Since claim 11 recites "receiving an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code sent to the third-party trusted authority based on the comparison of the ID code and allowing the user to-complete a financial transaction" and claim 11 is allowed, neither the amendment of claim 1 to recite "responsive to receiving an access message from the third-party trusted authority-indicating that the third-party trusted authority successfully authenticated the ID code, allowing the user to complete a financial transaction" nor the amendment of claim 15 to recite "the third-party trusted authority storing a list of legitimate codes and determining the authentication of the ID code received based on a comparison of the ID code received and the legitimate codes included in the list of the legitimate codes" require a new search and claims 1 and 15 as amended herein are allowable.

With regard to the amendments to claims 7, 9, 19 and 20, the amendments are intended to enhance readability as the language "the complete a financial transaction" is awkward and to address an antecedent basis issue since the independent claims recite "a financial transaction." The amendment was not presented previously because the portions of claims 7, 9, 19 and 20

amended includes language that was entered by the Examiner's Amendment that accompanied the Notice of Allowability.

With regard to the Examiner's statement for reasons of allowance, the Examiner's statement is based on claim elements of independent claim 1. It should be noted that the claim language of independent claims 11 and 15 may differ from that of claim 1, and that claims 11 and 15 are patentable for the elements they recite, which may differ from claim 1.

Respectfully submitted,
JOHN J. GIOBBI

Dated: January 20, 2016 By: /Matthew M. Holmes/

Matthew M. Holmes, Reg. No. 65,160
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Electronic Acknowledgement Receipt

EFS ID:	24668668
Application Number:	14521982
International Application Number:	
Confirmation Number:	8239
Title of Invention:	Biometric Personal Data Key (PDK) Authentication
First Named Inventor/Applicant Name:	John J. Giobbi
Customer Number:	89194
Filer:	Matthew M. Holmes
Filer Authorized By:	
Attorney Docket Number:	10001-04540 US
Receipt Date:	20-JAN-2016
Filing Date:	23-OCT-2014
Time Stamp:	16:45:08
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		04540US2016-01-20-312Amendment.pdf	91265 9e12ada93bec3628c2f5e37f7971112 8a891b937	yes	8

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment after Notice of Allowance (Rule 312)	1	1
	Claims	2	6
	Applicant Arguments/Remarks Made in an Amendment	7	8
Warnings:			
Information:			
	Total Files Size (in bytes):	91265	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

89194 7590 12/16/2015

Patent Law Works/Proxense
Greg Sueoka
201 South Main Street, Suite 250
Salt Lake City, UT 84111

EXAMINER
VU, PHY ANH TRAN

ART UNIT	PAPER NUMBER
2438	

DATE MAILED: 12/16/2015

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/521,982	10/23/2014	John J. Giobbi	10001-04540 US	8239

TITLE OF INVENTION: Biometric Personal Data Key (PDK) Authentication

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	03/16/2016

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

89194 7590 12/16/2015
Patent Law Works/Proxense
Greg Sueoka
201 South Main Street, Suite 250
Salt Lake City, UT 84111

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/521,982	10/23/2014	John J. Giobbi	10001-04540 US	8239

TITLE OF INVENTION: Biometric Personal Data Key (PDK) Authentication

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	03/16/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
VU, PHY ANH TRAN	2438	713-186000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
❑ Issue Fee
❑ Publication Fee (No small entity discount permitted)
❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): (**Please first reapply any previously paid issue fee shown above**)
❑ A check is enclosed.
❑ Payment by credit card. Form PTO-2038 is attached.
❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
❑ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
❑ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
❑ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/521,982	10/23/2014	John J. Giobbi	10001-04540 US	8239

89194 7590 12/16/2015

Patent Law Works/Proxense
Greg Sueoka
201 South Main Street, Suite 250
Salt Lake City, UT 84111

EXAMINER	
VU, PHY ANH TRAN	
ART UNIT	**PAPER NUMBER**
2438	

DATE MAILED: 12/16/2015

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Examiner-Initiated Interview Summary	Application No.	Applicant(s)	
	14/521,982	GIOBBI, JOHN J.	
	Examiner	Art Unit	
	PHY ANH VU	2438	

All participants (applicant, applicant's representative, PTO personnel):

(1) *PHY ANH VU*. (3)_____.

(2) *Matthew Holmes*. (4)_____.

Date of Interview: *24 November 2015*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *7, 9, 13, and 19-20*.

Identification of prior art discussed: *n/a*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Per SPE's approval, Examiner contacted Applicant's representative, Mr. Matthew Holmes to suggest filing a Terminal Disclaimer (TD) in order to move the case forward. Amendments to claims 7, 9, 13 and 19-20 were also suggested so that they can be consistent with their independent claims.

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/PHY ANH VU/ Examiner, Art Unit 2438	

Notice of Allowability	Application No. 14/521,982	Applicant(s) GIOBBI, JOHN J.	
	Examiner PHY ANH VU	Art Unit 2438	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *09/14/2015*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *2-7 and 9-20*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 06/07/2015; 11/02/2015
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☒ Interview Summary (PTO-413), Paper No./Mail Date *11/24/2015* .
5. ☒ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/PHY ANH VU/
Examiner, Art Unit 2438

DETAILED ACTION

This Office Action is in response to the Amendment filed 09/14/2015 and the Terminal Disclaimer filed 11/23/2015.

Authorization for this Examiner's Amendment was given in an interview with Mr. Matthew Holmes on 11/25/2015.

Notice of Pre-AIA or AIA Status

The present application is being examined under the pre-AIA first to invent provisions.

Response to Arguments

The 101 rejections made the previous Office Action is hereby withdrawn due to the amendment filed.

EXAMINER'S AMENDMENTS

Amend claims 7, 9, 13 and 19-20 as follow:

Claim 7:

The method of claim 2, wherein the ~~**action**~~ **complete a financial transaction** includes accessing an application.

Claim 9:

The method of claim 2, wherein the ~~**action**~~ **complete a financial transaction** includes accessing one or more of a casino machine, a keyless lock, ~~**a garage door opener,**~~ an ATM machine, ~~**a hard drive, computer software,**~~ a web site, a file and a financial account.

Claim 13:

The integrated device of claim 11, wherein an age verification is registered in association with the ~~**device**~~ ID code.

Claim 19:

The system of claim 15, wherein the ~~**action**~~ **complete a financial transaction** includes accessing one or more of a casino machine, a keyless lock, ~~**a garage door opener,**~~ an ATM machine, ~~**a hard drive, computer software,**~~ a web site, a file and a financial account.

Claim 20:

The system of claim 15, wherein the ~~**action**~~ **complete a financial transaction** includes accessing an application.

ALLOWABLE SUBJECT MATTER

Claims 2-7 and 9-20 are allowed while claims 1 & 8 are cancelled.

The following is an examiner's statement of reasons for allowance:

The present invention is directed to method, device and system for authenticating user using biometric information.

The closest prior arts cited are generally directed to various aspects of authenticating users using biometric information. However, none of the cited arts found alone or in combination suggests or teaches all the elements of the independent claims. For instance, no parts of the cited arts teach or suggest limitations such as persistently storing biometric data of a legitimate user and an ID code on an integrated device; responsive to receiving a request for a biometric verification of a user, receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor;

comparing the scan data to the biometric data to determine whether the scan data matches the biometric data; responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third- party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and responsive to receiving an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the user as the legitimate user based on the comparison of the ID code, allowing the user to complete a financial transaction.

Therefore, the claims are allowable for the above reason.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHY ANH VU whose telephone number is (571)270-7317. The examiner can normally be reached on Wed 7:00-5:30, TH-F 7-5:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Taghi Arani can be reached on 571-272-3787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PHY ANH VU/
Examiner, Art Unit 2438
/TAGHI ARANI/
Supervisory Patent Examiner, Art Unit 2438

Examiner-Initiated Interview Summary	**Application No.** 14/521,982	**Applicant(s)** GIOBBI, JOHN J.	
	Examiner PHY ANH VU	**Art Unit** 2438	

All participants (applicant, applicant's representative, PTO personnel):

(1) *PHY ANH VU*. (3)_____.

(2) *Matthew Holmes*. (4)_____.

Date of Interview: *24 November 2015*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *7, 9, 13, and 19-20*.

Identification of prior art discussed: *n/a*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Per SPE's approval, Examiner contacted Applicant's representative, Mr. Matthew Holmes to suggest filing a Terminal Disclaimer (TD) in order to move the case forward. Amendments to claims 7, 9, 13 and 19-20 were also suggested so that they can be consistent with their independent claims.

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/PHY ANH VU/ Examiner, Art Unit 2438	

Notice of References Cited	Application/Control No. 14/521,982	Applicant(s)/Patent Under Reexamination GIOBBI, JOHN J.	
	Examiner PHY ANH VU	Art Unit 2438	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6,256,737 B1	07-2001	Bianco; Peter Garrett	G07C9/00158	713/186
*	B	US-2002/0056043 A1	05-2002	Glass, Randal W.	G06F21/32	713/179
*	C	US-2002/0091646 A1	07-2002	Lake, Lawrence L.	G06Q20/04	705/67
*	D	US-6,657,538 B1	12-2003	Ritter; Rudolf	G06F21/32	340/5.8
*	E	US-6,853,988 B1	02-2005	Dickinson; Alexander G.	G06F21/32	380/277
*	F	US-2013/0019295 A1	01-2013	PARK; Sung-Jin	H04L9/3213	726/7
*	G	US-2013/0111543 A1	05-2013	Brown; Jeremy Ray	H04L63/0884	726/1
*	H	US-2013/0276140 A1	10-2013	COFFING; Dan	H04L12/5895	726/27
*	I	US-2013/0331063 A1	12-2013	CORMIER; Jean-Philippe Paul	H04L63/0272	455/411
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

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*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14521982	GIOBBI, JOHN J.
	Examiner	**Art Unit**
	PHY ANH VU	2438

CPC								
Symbol							**Type**	**Version**
G06F		21	/	35			F	2013-01-01
G06F		21	/	32			I	2013-01-01
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CPC Combination Sets								
Symbol							**Type**	**Set**	**Ranking**	**Version**
			/							
			/							

/PHY ANH VU/ Examiner.Art Unit 2438	11/25/2015	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	18	
/TAGHI ARANI/ Supervisory Patent Examiner.Art Unit 2438	11/27/2015	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	6

U.S. Patent and Trademark Office — Part of Paper No. 20151125

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14521982	GIOBBI, JOHN J.
	Examiner	**Art Unit**
	PHY ANH VU	2438

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
713	186	H	0	4	L	63 / 0861						
CROSS REFERENCE(S)												
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											

/PHY ANH VU/ Examiner.Art Unit 2438 (Assistant Examiner)	11/25/2015 (Date)	**Total Claims Allowed:** 18	
/TAGHI ARANI/ Supervisory Patent Examiner.Art Unit 2438 (Primary Examiner)	11/27/2015 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 6

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14521982	GIOBBI, JOHN J.
	Examiner	**Art Unit**
	PHY ANH VU	2438

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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13	15														
14	16														

/PHY ANH VU/ Examiner.Art Unit 2438	11/25/2015	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	18	
/TAGHI ARANI/ Supervisory Patent Examiner.Art Unit 2438	11/27/2015	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	6

U.S. Patent and Trademark Office Part of Paper No. 20151125

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14521982
Filing Date	2014-10-23
First Named Inventor	John J. Giobbi
Art Unit	2437
Examiner Name	Phy Anh Tran Vu
Attorney Docket Number	10001-4540 US

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/P.V./	1	20040123127		2004-06-24	Teicher, et al.	
/P.V./	2	20070159301		2007-07-12	Hirt, et al.	
/P.V./	3	20070219926		2007-09-20	Korn, Stanley	
/P.V./	4	20070213048		2007-09-13	Trauberg, Markus	
/P.V./	5	20080008359		2008-01-10	Beenau, et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14521982
	Filing Date	2014-10-23
	First Named Inventor	John J. Giobbi
	Art Unit	2437
	Examiner Name	Phy Anh Tran Vu
	Attorney Docket Number	10001-4540 US

/P.V./	6	20010026619		2001-05-30	Howard et al.		

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
/P.V./	1	Simon Liu and Mark Silverman. 2001. "A Practical Guide to Biometric Security Technology". IT Professional 3, 1 (January 2001). 27-32. DOI=10. 1109/6294.899930 http://dx.doi.org/10.1109/6294.899930	☐
/P.V./	2	Smart Card Alliance Report, "Contactless Technology for Secure Physical Access: Technology and Standards Choices", Smart Card Alliance, 10/2002, pg. 1-48.	☐

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Examiner Signature	/Phy Anh Vu/	Date Considered	11/25/2015

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
		device near4 ID or identification identifier) with third near4(party agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:30
L1	0	"14521982"	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:21
L2	0	"14521982"	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:21
L3	273	(biometric with authenticat$3) same (third with trust$4) near5 (agent or party)	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:33
L4	7	l3 and @ad<"20011220"	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:34
L5	676	g06f21/32.cpc. and (authenticat$3 same (third near5 (party or agent)))	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:37
L6	439	g06f21/32.cpc. and (authenticat$3 with (third near5 (party or agent)))	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:37
L7	196	g06f21/32.cpc. and (authenticat$3 with (third near5 (party or agent))) same (biometric)	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:37
L8	13	l7 and @ad<"20011220"	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:37
L9	134	h04l63/0861.cpc. and (authenticat$3 with (third near5 (party or agent))) same (biometric)	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:42
L10	4	l9 and @ad<"20011220"	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:42
L14	10	"34940790".FMID.	US-PGPUB; USPAT; FPRS	OR	OFF	2015/11/25 17:44
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S2	33	(transmit$3 or send$3) with (ID or code identifier identification) with (third) with (agent employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:04
S3	560	(transmit$3 or send$3) with (ID or code identifier identification) with (third) with (party) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:13
S4	522	(transmit$3 or send$3) with (ID or code	US-	OR	OFF	2015/05/31

		identifier identification) with (third near4 party) with authenticat$3	PGPUB; USPAT			21:14
S5	549	(transmit$3 or send$3) with (ID or code identifier identification) with (agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:14
S6	14	(transmit$3 or send$3) with (ID or code identifier identification) with third near5 (agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:15
S7	1	(transmit$3 or send$3) with (device near4 ID) with third near5 (agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:16
S8	21	(transmit$3 or send$3) with (device near4 ID) with (agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:17
S9	1315	(device near4 ID or identification identifier) with third near4(party agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:30
S10	43	(device near4 ID or identification identifier) with third near4 (agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:30
S11	39	(device near4 ID or identification identifier) with third near4 (agent) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:33
S12	4	transmit$4 with (ID or code or identifier identification) with (attendant or guard) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/06/01 09:25
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S14	1	"20040128162".pn.	US-PGPUB; USPAT	OR	OFF	2015/06/01 09:46
S15	1	"6041410".pn.	US-PGPUB; USPAT	OR	OFF	2015/06/01 10:01
S16	1	"13710109"	US-PGPUB; USPAT	OR	OFF	2015/06/01 10:32
S17	1140	("4759060" "4993068" "5187352" "5296641" "5416780" "5422632" "5450489")	US-PGPUB; USPAT	OR	OFF	2015/06/01 12:38
S18	7	("4759060" "4993068" "5187352" "5296641" "5416780" "5422632" "5450489").pn.	US-PGPUB; USPAT	OR	OFF	2015/06/01 12:38
S19	11	("5619251" "5629980" "5644354" "5666412" "5784464" "5825876" "5857020" "5892825" "5894551" "5894551" "5898880" "5917913").pn.	US-PGPUB; USPAT	OR	OFF	2015/06/01 12:43
S20	10	("5928327" "5991399" "5991749" "6016476" "6018739" "6035329" "6038334" "6041410" "6042006" "6055314").pn.	US-PGPUB; USPAT	OR	OFF	2015/06/01 12:45
S21	34	g06f21/32.cpc. and (authenticat$3 with biometric with fob)	US-PGPUB; USPAT	OR	OFF	2015/06/01 12:51
S22	15	h04l63/0861.cpc. and (authenticat$3 with biometric with fob)	US-PGPUB; USPAT	OR	OFF	2015/06/01 12:59

S23	76	(john near5 giobbi).in.	US-PGPUB; USPAT	OR	OFF	2015/06/01 13:00
S24	47	(john near5 giobbi).in. and biometric	US-PGPUB; USPAT	OR	OFF	2015/06/01 13:00

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L11	253	g06f21/32.cpc. and (authenticat$3 same (third near5 (party or agent)))	USPAT	OR	OFF	2015/11/25 17:43
L12	79	g06f21/32.cpc. and (authenticat$3 same (third near5 (party or agent))) with biometric	USPAT	OR	OFF	2015/11/25 17:43
L13	57	g06f21/32.cpc. and (authenticat$3 with (third near5 (party or agent))) with biometric	USPAT	OR	OFF	2015/11/25 17:43
L15	35	(authenticat$3 with (third near5 (party or agent))) with biometric.clm.	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:45
L16	51	(authenticat$3 with (third near5 (party or agent))) with (ID).clm.	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:46
L17	7	(authenticat$3 with (third near5 (party or agent))) with (device near10 ID).clm.	US-PGPUB; USPAT	OR	OFF	2015/11/25 17:48
L18	145	h04l63/0861.cpc. and (authenticat$3 same (third near5 (party or agent)))	USPAT	OR	OFF	2015/11/25 17:50
L19	26	h04l63/0861.cpc. and (authenticat$3 same (third near5 (party or agent))).clm.	USPAT	OR	OFF	2015/11/25 17:50

11/25/2015 5:51:32 PM
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14521982
Filing Date	2014-10-23
First Named Inventor	John J. Giobbi
Art Unit	2438
Examiner Name	Phy Anh Tran Vu
Attorney Docket Number	10001-04540 US

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/P.V./	1	20020091646		2002-07-11	Lake et al.	
/P.V./	2	20020116615		2002-08-22	Nguyen et al	
/P.V./	3	20050054431		2005-03-10	Walker et al.	
/P.V./	4	20060058102		2006-03-16	Nguyen et al	
/P.V./	5	20060063575		2006-03-23	Gatto et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14521982
	Filing Date	2014-10-23
	First Named Inventor	John J. Giobbi
	Art Unit	2438
	Examiner Name	Phy Anh Tran Vu
	Attorney Docket Number	10001-04540 US

/P.V./	6	20060076401		2006-04-13	Frerking	
/P.V./	7	20070032288		2007-02-08	Nelson et al.	
/P.V./	8	20070060319		2007-03-15	Block et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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EXAMINER SIGNATURE

Examiner Signature	/Phy Anh Vu/	Date Considered	11/25/2015

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14521982	GIOBBI, JOHN J.
	Examiner	Art Unit
	PHY ANH VU	2438

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner
G06F 21/32	6/1/2015; 11/25/2015	PVU
H04L 63/0861	6/1/2015; 11/25/2015	PVU

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor name search for double patening issuest	6/1/2015	PVU
Keywords search	6/1/2015; 11/25/2015	PVU
Consulted with SPE regarding allowable subject matters	11/25/2015	PVU

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
G06F	21/32	11/25/2015	PVU
H04L	63/0861	11/25/2015	PVU

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14521982	GIOBBI, JOHN J.
	Examiner	Art Unit
	PHY ANH VU	2438

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/01/2015	11/25/2015							
	1	-	-							
1	2	✓	=							
2	3	✓	=							
3	4	✓	=							
4	5	✓	=							
5	6	✓	=							
6	7	✓	=							
	8	✓	-							
7	9	✓	=							
8	10	✓	=							
9	11	✓	=							
10	12	✓	=							
11	13	✓	=							
12	14	✓	=							
13	15	✓	=							
14	16	✓	=							
15	17	✓	=							
16	18	✓	=							
17	19		=							
18	20		=							

Doc Code: DIST.E.FILE **Document Description: Electronic Terminal Disclaimer - Filed**	PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	14521982
Filing Date	23-Oct-2014
First Named Inventor	John Giobbi
Attorney Docket Number	10001-04540 US
Title of Invention	Biometric Personal Data Key (PDK) Authentication

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
Proxense, LLC	100%

The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)

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8886954

as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

◉ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request. ○ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.	
Applicant claims the following fee status: ◉ Small Entity ○ Micro Entity ○ Regular Undiscounted I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.	
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application Registration Number 65160 ○ A sole inventor ○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ○ A joint inventor; all of whom are signing this request	
Signature	/Matthew Holmes/
Name	Matthew Holmes

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	14521982
Filing Date:	23-Oct-2014
Title of Invention:	Biometric Personal Data Key (PDK) Authentication
First Named Inventor/Applicant Name:	John J. Giobbi
Filer:	Matthew M. Holmes
Attorney Docket Number:	10001-04540 US

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Statutory or Terminal Disclaimer	1814	1	160	160
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**160**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 14521982

Filing Date: 23-Oct-2014

Applicant/Patent under Reexamination: Giobbi et al.

Electronic Terminal Disclaimer filed on November 23, 2015

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt	
EFS ID:	24163190
Application Number:	14521982
International Application Number:	
Confirmation Number:	8239
Title of Invention:	Biometric Personal Data Key (PDK) Authentication
First Named Inventor/Applicant Name:	John J. Giobbi
Customer Number:	89194
Filer:	Matthew M. Holmes
Filer Authorized By:	
Attorney Docket Number:	10001-04540 US
Receipt Date:	23-NOV-2015
Filing Date:	23-OCT-2014
Time Stamp:	18:45:08
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$160
RAM confirmation Number	6341
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Electronic Terminal Disclaimer-Filed	eTerminal-Disclaimer.pdf	33447 db55097ba0af815baf377ab7d00877f1bac7374f	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30366 53292d2de3991b656884e16978f7d4a8108ad5b2	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	63813		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14521982
Filing Date	2014-10-23
First Named Inventor	John J. Giobbi
Art Unit	2438
Examiner Name	Phy Anh Tran Vu
Attorney Docket Number	10001-04540 US

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020091646		2002-07-11	Lake et al.	
	2	20020116615		2002-08-22	Nguyen et al	
	3	20050054431		2005-03-10	Walker et al.	
	4	20060058102		2006-03-16	Nguyen et al	
	5	20060063575		2006-03-23	Gatto et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14521982
	Filing Date	2014-10-23
	First Named Inventor	John J. Giobbi
	Art Unit	2438
	Examiner Name	Phy Anh Tran Vu
	Attorney Docket Number	10001-04540 US

	6	20060076401		2006-04-13	Frerking	
	7	20070032288		2007-02-08	Nelson et al.	
	8	20070060319		2007-03-15	Block et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14521982
	Filing Date	2014-10-23
	First Named Inventor	John J. Giobbi
	Art Unit	2438
	Examiner Name	Phy Anh Tran Vu
	Attorney Docket Number	10001-04540 US

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14521982
	Filing Date	2014-10-23
	First Named Inventor	John J. Giobbi
	Art Unit	2438
	Examiner Name	Phy Anh Tran Vu
	Attorney Docket Number	10001-04540 US

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Paige Alsbury/	Date (YYYY-MM-DD)	2015-11-02
Name/Print	Paige M. Alsbury	Registration Number	72,965

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	23963059
Application Number:	14521982
International Application Number:	
Confirmation Number:	8239
Title of Invention:	Biometric Personal Data Key (PDK) Authentication
First Named Inventor/Applicant Name:	John J. Giobbi
Customer Number:	89194
Filer:	Paige McDede Alsbury
Filer Authorized By:	
Attorney Docket Number:	10001-04540 US
Receipt Date:	02-NOV-2015
Filing Date:	23-OCT-2014
Time Stamp:	17:30:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	04540US20151102_IDS.pdf	612456 f0ca54e7b856d0c3b1c5189b58db851c0a126a4a	no	5

Warnings:	
Information:	

Total Files Size (in bytes):	612456

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

APPLICANT:	John J. Giobbi
APPLICATION NO:	14/521,982
FILING DATE:	October 23, 2014
TITLE:	Biometric Personal Data Key (PDK) Authentication
EXAMINER:	Phy Anh Tran Vu
GROUP ART UNIT:	2438
ATTY. DKT. NO:	10001-04540 US
CONFIRMATION NO:	8239

CERTIFICATE OF EFS-WEB TRANSMISSION

Pursuant to 240 OG 45 and the Legal Framework For EFS-Web, I hereby certify that this follow-on correspondence is being officially submitted through the USPTO EFS-Web system from the Mountain Time Zone of the United States on the local date shown below:

Dated: September 14, 2015 By: /Matthew M. Holmes/

Matthew M. Holmes, Reg. No. 65,160

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

AMENDMENT A

Responsive to the Non-Final Office Action mailed on June 12, 2015, which sets a shortened statutory period for response that expires on September 12, 2015, please enter the following amendment and consider the following remarks.

IN THE CLAIMS

All pending claims are reproduced below.

1. (Canceled)

2. (Currently Amended) A method comprising:

persistently storing biometric data of a legitimate user and an ID code on[[the]] an integrated device;

responsive to receiving a request for a biometric verification of a user, receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor;

comparing the scan data to the biometric data to determine whether the scan data matches the biometric data;

responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for ~~authentication by an agent that is~~ comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and

responsive to receiving an access message from the third-party trusted authority ~~agent~~ indicating that the third-party trusted authority ~~agent~~ successfully authenticated the user as the legitimate user based on the comparison of the ID code, allowing the user to ~~perform an action~~ complete a financial transaction.

3. (Currently Amended) The method of claim[[1]] 2, further comprising:

registering an age verification for the user in association with the ID code.

4. (Currently Amended) The method of claim[[1]] 2, wherein an indication that the biometric verification was successful is sent with the ID code.

5. (Currently Amended) The method of claim[[1]] 2, wherein the biometric data includes data from one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition;

6. (Currently Amended) The method of claim[[1]] 2, wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

7. (Currently Amended) The method of claim[[1]] 2, wherein the action includes accessing an application.

8. (Cancelled).

9. (Currently Amended) The method of claim[[1]] 2, wherein the action includes accessing one or more of a casino machine, a keyless lock, a garage door opener, an ATM machine, a hard drive, computer software, a web site, a file and a financial account.

10. (Currently Amended) The method of claim[[1]] 2, further comprising:

responsive to determining the action does not require biometric verification, receiving a request for the ID code without a request for biometric verification; and

responsive to receiving the request for the ID code without a request for biometric verification, sending the ID code for authentication without requesting the scan data.

11. (Currently Amended) An integrated device comprising:

a persistent storage media that persistently stores biometric data of a user and an ID code;

a validation module, coupled to communicate with the persistent storage media, that receives scan data from a biometric scan for comparison against the biometric data, and that sends the ID code for ~~authentication by a third party that operates a trusted authority~~ comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and

a radio frequency communication module that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code sent to the third-party trusted authority based on the comparison of the ID code and allowing the user to ~~perform an action~~ complete a financial transaction.

12. (Currently Amended) The integrated device of claim 11, wherein the ID code is transmitted to the third-party trusted authority over a network.

13. (Previously Presented) The integrated device of claim 11, wherein an age verification is registered in association with the device ID code.

14. (Previously Presented) The integrated device of claim 11, wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

15. (Currently Amended) A system, comprising:

an integrated hardware device that persistently stores biometric data of a legitimate user and an ID code in the integrated hardware device, and that wirelessly sends the ~~device~~ ID code;[[and]]

an authentication circuit that receives ~~the one or more codes and other data values~~ the ID code and sends ~~the one or more codes and other data values~~ the ID code to a third-party ~~that operates a~~ trusted authority for authentication, and that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code and allows the user to ~~perform an action~~ complete a financial transaction; and

the third-party trusted authority operated by a third party, the third-party trusted authority storing a list of legitimate codes and determining the authentication of a user based on a comparison of the ~~device~~ ID code received and ~~the list~~ the legitimate codes included in the list of the legitimate codes.

16. (Currently Amended) The system of claim 15, wherein the integrated hardware device receives an authentication request from the authentication circuit, and in response, requests a biometric scan from a user to generate scan data and, when the integrated hardware device cannot verify the scan data as being from the legitimate user, the integrated hardware device does not send the ID code.

17. (Previously Presented) The system of claim 15, wherein the integrated hardware device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob.

18. (Previously Presented) The system of claim 15, wherein the biometric data includes data based on one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition;

19. (New) The system of claim 15, wherein the action includes accessing one or more of a casino machine, a keyless lock, a garage door opener, an ATM machine, a hard drive, computer software, a web site, a file and a financial account.

20. (New) The system of claim 15, wherein the action includes accessing an application.

REMARKS

Claims 2-18 were presented for examination.[1] Claims 2-18 stand rejected in the Office Action dated June 12, 2015 (herein, "OA"). Claims 19 and 20 are new. Claim 8 is cancelled. Claims 2-12, 15 and 16 are amended without acquiescing to the propriety of the rejection. Support for these amendments can be found in at least paragraphs [0027], [0031], [0032], [0035], [0041], [0043] and [0052] of the original disclosure. Claims 2-7 and 9-20 are pending upon entry of this amendment. No new matter is added.

Summary of Office Action

1. Claims 3-10, and 15 are objected to because of alleged informalities.

2. Claims 11 and 15 are rejected on the ground of non-statutory double patenting as allegedly being unpatentable over claims 12 and 22 of U.S. Patent No. 8,886,954.

3. Claims 2-10 are rejected under 35 U.S.C. § 101 for allegedly being directed to non-statutory subject matter.

4. Claims 2-10 are rejected under pre-AIA 35 U.S.C. § 103(a) as allegedly being unpatentable over Hsu et al. (U.S. Patent No. 6,041,410, hereinafter "Hsu") and in view of Stanko (U.S. Publication No. 2005/0074126, hereinafter "Stanko").

5. Claims 3 and 13 are rejected under pre-AIA 35 U.S.C. § 103(a) as allegedly being unpatentable over Hsu, Stanko and further in view of Schlotterbeck (U.S. Publication No. 2004/0128162, hereinafter "Schlotterbeck").

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[1] Preliminary Amendment included claims 2-21; however, because claims 19-21 were on the same page as the remarks, claims 19-21 do not appear to have been entered or considered. Accordingly, claims 19 and 20, which correspond to claims 19 and 21, respectively, in the preliminary amendment, are identified as new herein. Claim 1 is amended to include elements similar to claim 20 of the previous filed Preliminary Amendment.

6. Claims 11-12, and 14-18 are rejected under pre-AIA 35 U.S.C. § 103(a) as allegedly being unpatentable over Hsu, Stanko and further in view of Lake et al. (U.S. Publication No. 2002/0091646, hereinafter "Lake").

Response to Objections for Claims

Claims 3-10 and 15 are objected to because of alleged informalities.

In particular, claims 3-10 recite the limitation "The method of claim 1" which should be "The method of claim 2." Claims 3-10 are amended to recite "The method of claim 2" as suggested by the Examiner. Accordingly, Applicants respectfully request that the objection of claims 3-10 be withdrawn.

Claim 15 recites "the one or more codes and other data values" which should be "the ID code." Claim 15 is amended to recite "the ID code" as suggested by the Examiner. Accordingly, Applicants respectfully request that the objection of claim 15 be withdrawn.

Response to Double Patenting Rejection

Claims 11 and 15 are rejected on the ground of non-statutory double patenting as being allegedly unpatentable over claims 12 and 22 of U.S. Patent No. 8,886,954. Applicant respectfully requests that the double patenting rejection be held in abeyance until it is determined that there is allowable subject matter, at which time Applicant will respond to the rejection or file a terminal disclaimer.

Response to Rejections under 35 U.S.C. § 101

Claims 2-10 are rejected under 35 U.S.C. § 101 for allegedly being directed to non-statutory subject matter.

Here, the OA asserts that the independent claim 2 is directed to "*an abstract idea of biometric personal data key authentication. The steps of storing biometric data, receiving a request for biometric data, comparing the scan data, sending the ID code, receiving an access message, and allowing user to perform an action are all mental processes, that describe the abstract idea*."

Applicants respectfully disagree and submit that at least the following elements of claim 2, when considered with the other elements of claim 2, are not directed to an abstract idea.

> *... persistently storing biometric data of a legitimate user and an ID code on an integrated device;*
> *responsive to receiving a request for a biometric verification of a user, receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor;*
> *... responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and*
> *responsive to receiving an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the user as the legitimate user based on the comparison of the ID code, allowing the user to complete a financial transaction.*

In particular, the element of "*responsive to receiving an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the user as the legitimate user based on the comparison of the ID code, allowing the user to complete a financial transaction*" is not merely an "abstract idea of biometric personal data key authentication" but rather "*authenticat[ing] the user as the legitimate user*" in a certain concrete way, which is dependent upon several concrete computer-implemented acts being performed

including "*persistently storing biometric data of a legitimate user and an ID code on an integrated device*," "*responsive to receiving a request for a biometric verification of a user, receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor*" and "*responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority*."

Accordingly, Applicant respectfully requests that the rejection under 35 U.S.C. § 101 of claim 2, and all claims depending therefrom, be withdrawn.

Response to Rejections under 35 U.S.C. § 103

The rejection of the claims will be addressed by reference to the independent claims.

Independent claim 2

As amended, independent claim 2 recites in part:

> *... persistently storing biometric data of a legitimate user and an ID code on an integrated device;*
> *responsive to receiving a request for a biometric verification of a user, receiving, from a biometric sensor, scan data from a biometric scan performed by the biometric sensor*
> *... responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and*
> *responsive to receiving an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the user as the legitimate user based on the comparison of the ID code, allowing the user to complete a financial transaction.*

The cited portions of the references, and the proposed combination thereof, fail to disclose or render obvious, among other things, "*responsive to receiving an access message from*

the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the user as the legitimate user based on the comparison of the ID code, allowing the user to complete a financial transaction" as recited by amended claim 2.

The Examiner, on page 9 of the OA, cites Hsu at Figure 4, col. 5 line 65 – col. 6 line 9, and col. 6 lines 24-34 as disclosing "*wherein the action includes accessing an application*" and "*wherein the action includes completing a transaction*." In particular, on page 9 of the OA, the Examiner argues:

> Regarding claim 7, Hsu and Stanko disclose the method of claim 1. Hsu further discloses wherein the action includes accessing an application *(figure 4, column 5, line 65-colum 6, line 9, access to an application of a financial institution)*.
>
> Regarding claim 8, Hsu and Stanko disclose the method of claim 1. Hsu further discloses wherein the action includes completing a transaction *(Figure 4, column 6, 24-34, ATM)*.

Respectfully, Applicants disagree. Figure 4, col. 5 line 65 – col. 6 line 9, and col. 6 lines 24-34 of Hsu disclose:

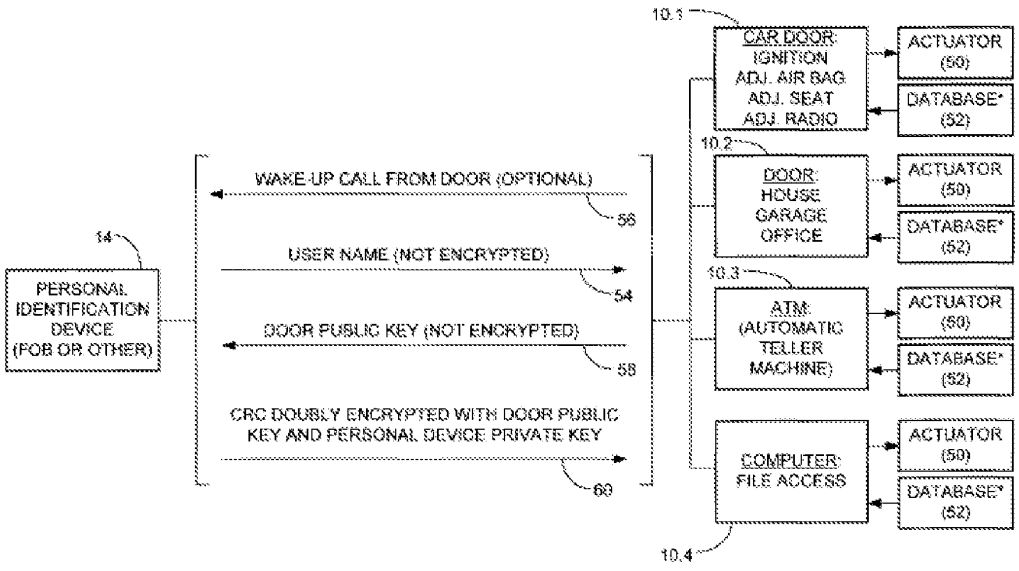


FIG. 4

CRC as derived from the user's reference fingerprint. If the door **10** provides access to a financial institution, for example, the user will register by bringing his or her fob **14** to the institution, and transmitting the fingerprint CRC from the fob to the door receiver **15**. In the registration mode, the door receiver **15** will store the user's CRC in association with the user's name or other identifying information. As part of the registration process, the user **12** will normally be required to present some form of identification other than the fob **14**, to prove to the institution that the user is, in fact, the one whose name or other identifying information is presented and will be stored in the door **10**.

FIG. **4** shows the communications that pass between the fob **14** or other personal identification device and a door **10**, four different forms of which are shown, including a car door **10.1**, a building door **10.2**, an automatic teller machine (ATM) **10.3**, and a computer **10.4**. Each door **10** has an actuator **50**, to perform some desired operation, such as opening the door, and each door also has a database **52** in which is stored the user name, the user fob public encryption key and the user CRC, for each user registered to use the door.

The cited portions of Hsu disclose at most that "[i]f the door 10 provides access to a financial institution … the user will register by bringing his or her fob 14 to the institution, and

transmitting the fingerprint CRC from the fob to the door receiver 15" at col. 5 line 65 – col. 6 line 2. "[O]pen[ing]" "the door for the user"[2] in which "the door 10 provides access to a financial institution" as disclosed by Hsu is not similar to "allowing the user to complete a transaction" much less "allowing the user to *complete a financial transaction*" as recited by amended claim 2.

The cited portions of Hsu also disclose at most that "[i]f there is a match, the door is opened for the user" and "a door 10, four different forms of which are shown, including a car door 10.1, a building door 10.2, an automatic teller machine (ATM) 10.3, and a computer 10.4." *See* Hsu, col. 6 lines 23-24 and lines 26-29. "[O]pen[ing]" "a door … different forms of which … including … an automatic teller machine (ATM)" "for the user" as disclosed by Hsu does not disclose "a financial transaction" much less "allowing the user to *complete a financial transaction*" as recited by amended claim 2. Accordingly, the cited portions of Hsu do not teach, disclose or suggest "*responsive to receiving an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the user as the legitimate user based on the comparison of the ID code, allowing the user to complete a financial transaction*" as recited by amended claim 2.

The deficiencies of the cited portions of Hsu are not remedied by the cited portions of Stanko, Schlotterbeck and Lake. The cited portions of Stanko, Schlotterbeck and Lake do not teach, disclose or suggest, among other things, "*responsive to receiving an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the user as the legitimate user based on the comparison of the ID code, allowing the user to complete a financial transaction,*" as recited by amended claim 2, nor does the

[2] Hsu, col. 6 lines 23-24.

Examiner contend that they do. Thus, Applicants respectfully submit that the proposed combinations of the cited portions of Hsu, Stanko, Schlotterbeck and Lake fail to disclose or render obvious each and every element of amended claim 2.

Claims 3-7, 9 and 10 depend from claim 2 and are therefore patentable for at least similar reasons as amended claim 2 as well as because of the additional features they recite.

Independent claim 11

As amended, independent claim 11 recites in part:

> "*... a persistent storage media that persistently stores biometric data of a user and an ID code;*
> *a validation module, coupled to communicate with the persistent storage media, that receives scan data from a biometric scan for comparison against the biometric data, and that sends the ID code for comparison by a third-party trusted authority against one or more previously registered ID codes maintained by the third-party trusted authority; and*
> *a radio frequency communication module that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code sent to the third-party trusted authority based on the comparison of the ID code and allowing the user to complete a financial transaction*."

Accordingly, the cited portions of Hsu, Stanko, Schlotterbeck and Lake in the proposed combinations set forth in the OA fail to disclose or render obvious each and every limitation of amended claim 11, and amended claim 11 is therefore patentable over the cited portions of the references for at least reasons analogous to those discussed above with reference to claim 2.

Claims 12-14 depend from claim 11 and are therefore patentable for at least similar reasons as amended claim 11 as well as because of the additional features they recite.

Independent claim 15

As amended, independent claim 15 recites in part:

"*...an integrated hardware device that persistently stores biometric data of a legitimate user and an ID code in the integrated hardware device, and responsive to scan data matches the stored biometric data, wirelessly sends the ID code;*

an authentication circuit that receives the ID code and sends the ID code to a third-party trusted authority for authentication, and that receives an access message from the third-party trusted authority indicating that the third-party trusted authority successfully authenticated the ID code and allows the user to complete a financial transaction; and

the third-party trusted authority operated by a third party, the third-party trusted authority storing a list of legitimate codes and determining the authentication of a user based on a comparison of the ID code received and the legitimate codes included in the list of the legitimate codes."

Accordingly, the cited portions of Hsu, Stanko, Schlotterbeck and Lake in the proposed combinations set forth in the OA fail to disclose or render obvious each and every limitation of amended claim 15, and amended claim 15 is therefore patentable over the cited portions of the references for at least reasons analogous to those discussed above with reference to claim 2.

Claims 16-20 depend from claim 15 and are therefore patentable for at least similar reasons as amended claim 15 as well as because of the additional features they recite.

CONCLUSION

Allowance of all claims is requested. If the Examiner believes that direct contact with Applicant's attorney will advance the prosecution of this case, the Examiner is encouraged to contact the undersigned as indicated below.

Respectfully submitted,
JOHN J. GIOBBI

Dated: September 14, 2015 By: /Matthew M. Holmes/

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MMH:kkt

Electronic Acknowledgement Receipt

EFS ID:	23480533
Application Number:	14521982
International Application Number:	
Confirmation Number:	8239
Title of Invention:	Biometric Personal Data Key (PDK) Authentication
First Named Inventor/Applicant Name:	John J. Giobbi
Customer Number:	89194
Filer:	Matthew M. Holmes
Filer Authorized By:	
Attorney Docket Number:	10001-04540 US
Receipt Date:	14-SEP-2015
Filing Date:	23-OCT-2014
Time Stamp:	18:37:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		04540US_AmendmentA.pdf	212665 bb6d7392009e7f5d7a0b202b83f6f1d6f555daff	yes	16

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	6
	Applicant Arguments/Remarks Made in an Amendment	7	16
Warnings:			
Information:			
	Total Files Size (in bytes):	212665	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/521,982	Filing Date 10/23/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	09/14/2015	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 18	Minus	** 20	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/PAMELA YOUNG/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/521,982	10/23/2014	John J. Giobbi	10001-04540 US	8239

89194 7590 06/12/2015

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EXAMINER
VU, PHY ANH TRAN

ART UNIT	PAPER NUMBER
2438	

NOTIFICATION DATE	DELIVERY MODE
06/12/2015	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@patentlawworks.net
patents@patentlawworks.net
mfurubayashi@patentlawworks.net

Office Action Summary	Application No. 14/521,982	Applicant(s) GIOBBI, JOHN J.	
	Examiner PHY ANH VU	Art Unit 2438	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/12/2014*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *2-18* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *2-18* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *10/23/2014* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *02/12/2015*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

The present application having Application No. 14/521,982 filed on 12/12/2014, is being presented for examination by the examiner.

The present application is being examined under the pre-AIA first to invent provisions.

Claim Objections

Claims 3-10 are objected to because of the following informalities:

Claim 3 recites "The method of claim 1…" which should be "The method of claim ~~1~~ **2**…"

Claims 4-10 are objected for the same rationale as claim 3 above.

an authentication circuit that receives the one or more codes and other data values and

Claim 15 recites "…an authentication circuit that receives the one or more codes and other data values and sends the one or more codes and other data values…" which should be "…..an authentication circuit that receives the **ID code** ~~**one or more codes and other data values**~~ and sends the **ID code** ~~**the one or more codes and other data values**~~…" Appropriate correction is required.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent

and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit http://www.uspto.gov/forms/. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 11 and 15 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 12 and 22 of U.S. Patent No. 8,886,954. Although the claims at issue are not identical, they are not patentably distinct from each other because the scopes of the claims are the same.

Application 14/521,982	Patent 8,886,954
Claims 11: An integrated device comprising: a persistent storage media that stores biometric data of a user and an ID code; a validation module, coupled to communicate with the persistent storage media, that receives scan data from a biometric scan for comparison against the biometric data, and that sends the ID code for authentication by a third party that operates a trusted authority; and a radio frequency communication module that receives an access message from the trusted authority indicating that the trusted authority successfully authenticated the ID code sent to the third party and allowing the user to perform an action.	Claim 12: An integrated device comprising: **a persistent storage media that stores biometric data of a user and a plurality of codes and other data values comprising a device ID code** uniquely identifying the integrated device and a secret decryption value in a tamper proof format written to the persistent storage media and not capable of being subsequently altered; a validation module, coupled to communicate with the persistent storage media, **that receives scan data from a biometric scan for comparison against the biometric data, and that sends one or more codes and other data values from the plurality of codes and other data values for authentication by a third party that operates a trusted authority,** wherein the one or more codes and other data values includes the device ID code; and a radio frequency communication module that **receives an access message from the trusted authority indicating that the trusted authority successfully authenticated the one or more codes and other data values to the third party and allowing the user access to an application.**

Claim 15: A system, comprising: an integrated hardware device that stores biometric data of a legitimate user and an ID code in the integrated hardware device, and that wirelessly sends the device ID code; and an authentication circuit that receives the one or more codes and other data values and sends the one or more codes and other data values to a third party that operates a trusted authority for authentication, and that receives an access message from the trusted authority indicating that the trusted authority successfully authenticated the ID code and allows the user to perform an action; and the trusted authority operated by a third party, the trusted authority storing a list of legitimate codes and determining the authentication of a user based on a comparison of the device ID received and the list.	Claim 22: A system, comprising: **an integrated hardware device that stores biometric data of a user and a plurality of codes and other data values comprising a device ID code** uniquely identifying the integrated hardware device and a secret decryption value in a tamper proof format written to a storage element in the integrated hardware device that is not capable of being subsequently altered, **and that wirelessly sends one or more codes and other data values from the plurality of codes and other data values,** wherein the one or more codes and other data values include the device ID code; and an authentication circuit that **receives the one or more codes and other data values and sends the one or more codes and other data values to a third party that operates a trusted authority for authentication, and that receives an access message from the trusted authority indicating that the trusted authority successfully authenticated the one or more codes and other data values to the third party and allows the user to access an application.**

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 2-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 2 is rejected under 35 U.S.C. 101 because the claimed invention is directed to a judicial exception (i.e: a law of nature, a natural phenomenon, or an abstract idea) without significant more. Claim 2 is an abstract idea of biometric personal data key authentication. The steps of storing biometric data, receiving a request for biometric data, comparing the scan data, sending the ID code, receiving an access message, and allowing user to perform an action are all mental processes, that describe the abstract idea.

The claim does not include additional elements that are sufficient to amount to significantly more than the judicial exception. Based upon consideration of all of the relevant factors with respect to the claim as a whole, the claim simply instructs the practitioner to implement the abstract idea with routine conventional activity.

Claims 3-10 depend on claim 2, thus inherit the same 101 rejection as their independent claim 2 above.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-10 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Hsu et al. (US Patent 6,041,410 B1-hereinafter Hsu) and in view of Stanko (US 2005/0074126 A1-hereinafter Stanko).

Regarding claim 2, Hsu discloses a method comprising:

persistently storing biometric data of a legitimate user and an ID code on the integrated device *(Figure 3, element 32; column 4, lines 15-25; column 7, lines 6-9, and 63-65, user's name, account number, fob's public and private key pair are stored in fob)*;

responsive to receiving a request for a biometric verification of a user, receiving scan data from a biometric scan *(column 4, lines 40-45, column 6, lines 29-41; column 7, lines 17-34, fingerprint from sensor is received)*;

comparing the scan data to the biometric data to determine whether the scan data matches the biometric data*(column 4, lines 40-45, received fingerprint is compared to a reference fingerprint image)* ;

responsive to a determination that the scan data matches the biometric data, wirelessly sending the ID code for authentication by an agent that is a third-party trusted authority *(Figure 4, step 60; column 7, lines 20-30, account number and fob's key information are transmitted)*; and

successfully authenticated the user as the legitimate user based on the ID code, allowing the user to perform an action *(column 6, lines 16-24, column 7, lines 25-34, user's account number and key are successfully authenticated)*.

Hsu does not explicitly disclose receiving an access message from the agent indicating that the agent successfully authenticated the user.

However, Stanko discloses receiving a grant message after successful authentication *([0055][0069], grant message is sent)*.

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the feature discloses by Stanko into the method of Hsu to provide a clear and effective method of communication.

Regarding claim 4, Hsu and Stanko disclose the method of claim 2. Hsu further discloses an indication that the biometric verification was successful is sent with the ID code *(Figure 4, step 60; column 7, lines 20-30, at least account number, fob's key information and CRC are transmitted)*.

Regarding claim 5, Hsu and Stanko disclose the method of claim 2. Hsu further discloses wherein the biometric data includes data from one or more of a fingerprint, palm print, a retinal scan, an iris scan, a hand geometry, a facial recognition, a signature recognition and a voice recognition *(column 4, lines 31-39, print patter, iris patter)*;

Regarding claim 6, Hsu and Stanko disclose the method of claim 1. Hsu further discloses wherein the integrated device comprises one or more of a mobile phone, tablet, laptop, mp3 player, mobile gaming device, watch and a key fob *(column 2, lines 15-29 and 27-40, fob)*.

Regarding claim 7, Hsu and Stanko disclose the method of claim 1. Hsu further discloses wherein the action includes accessing an application *(figure 4, column 5, line 65-colum 6, line 9, access to an application of a financial institution)*.

Regarding claim 8, Hsu and Stanko disclose the method of claim 1. Hsu further discloses wherein the action includes completing a transaction *(Figure 4, column 6, 24-34, ATM)*.

Regarding claim 9, Hsu and Stanko disclose the method of claim 1. Hsu further discloses wherein the action includes accessing one or more of a casino machine, a keyless lock, a garage door opener, an ATM machine, a hard drive, computer software, a web site, a file and a financial account *(figure 4, column 5, line 65-column 6, lines 9, 24-34, car door, building door, ATM)*.

Regarding claim 10, Hsu and Stanko disclose the method of claim 1. Hsu further discloses responsive to determining the action does not require biometric verification, receiving a request for the ID code without a request for biometric verification *(column 5, lines 60-65; column 6, lines 9-23, for subsequent use of fob, only user's account number and CRC are required)*; and responsive to receiving the request for the ID code without a request for biometric verification, sending the ID code for authentication without requesting the scan data *(column 6, lines 9-23, user's account number an CRC are transmitted)*.

Claims 3 and 13 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Hsu, Stanko and further in view of Schlotterbeck et al. (US 2004/0128162 A1-hereinafter Schlotterbeck).

Regarding claim 3, Hsu and Stanko disclose the method of claim 2.

Hsu and Stanko do not disclose registering age verification for the user in association with the ID code.

However, Schlotterbeck discloses registering an age verification for a user in association with a patient ID card *([0057], age of patient).*

One of ordinary skill in the art the time the invention was made would have been motivated to incorporate the feature discloses by Schlotterbeck into the method Hsu and Stanko to include a wider selection of identifying information into the method.

Claim 13 is rejected for the same rationale as claim 3 above.

Claims 11-12 and 14-18 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Hsu, Stanko and further in view of Lake et al. (US 2002/0091646 A1-hereinafter Lake).

Regarding claim 11, Hsu discloses an integrated device comprising:

a persistent storage media that stores biometric data of a user and an ID code *(Figure 3, element 32; column 4, lines 15-25; column 7, lines 6-9, and 63-65, fob stores user's name, account number, and fob's public and private key pair)*;

a validation module, coupled to communicate with the persistent storage media, that receives scan data from a biometric scan for comparison against the biometric data *(column 4, lines 40-45, column 6, lines 29-41; column 7, lines 17-34, fingerprint from sensor is received, received fingerprint is compared to a reference fingerprint image)*, and that sends the ID code for authentication by a trusted authority *(Figure 4, step 60; column 7, lines 20-30, account number and fob's key information are transmitted to the door)*; and

the trusted authority indicating that the trusted authority successfully authenticated the ID code sent to the third party and allowing the user to perform an action *(column 6, lines 16-24, column 7, lines 25-34, door is open after user's account number and key are successfully authenticated)*.

Hsu does not explicitly disclose authentication is done by a third party that operates the trusted authority and receiving an access message from the trusted authority indicating that the trusted authority successfully authenticated the user.

However, Lake discloses a concept of having a third party that works for a trusted server to authenticate users *([0006][0011], identity verification agent)*.

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the feature discloses by Lake into the method of Hsu to add another layer of protection to ensure users are who they claim to be.

Hsu and Lake do not disclose receiving an access message from the trusted authority indicating that the trusted authority successfully authenticated the user.

However, Stanko discloses receiving a grant message after successful authentication *([0055][0069], grant message is sent)*.

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the feature discloses by Stanko into the method of Hsu and Lake to provide a clear and effective method of communication.

Regarding claim 12, Hsu, Lake and Stank disclose the integrated device of claim 11. Hsu further discloses wherein the ID code is transmitted to the trusted authority over a network *(figure 4, column 7, lines 24-34, account number and key information are transmitted)*.

Claim 14 is rejected for the same rationale as claim 6 above.

Regarding claim 15, Hsu discloses a system, comprising:

an integrated hardware device that stores biometric data of a legitimate user and an ID code in the integrated hardware device *(Figure 3, element 32; column 4, lines 15-25; column 7, lines 6-9, and 63-65, fob stores user's name, account number, and fob's public and private key pair)*, and that wirelessly sends the device ID code *(Figure 4, step 60; column 7, lines 20-30, account number and fob's key information are transmitted to the door)*; and

an authentication circuit that receives the one or more codes and other data values *(column 4, lines 40-45, column 6, lines 29-41; column 7, lines 17-34, fingerprint*

from sensor is received, received fingerprint is compared to a reference fingerprint image) and sends the one or more codes and other data values to a trusted authority for authentication *(Figure 4, step 60; column 7, lines 20-30, account number and fob's key information are transmitted to the door)*, and allows the user to perform an action*(column 6, lines 16-24, column 7, lines 25-34, door is open after user's account number and key are successfully authenticated)*; and

the trusted authority storing a list of legitimate codes and determining the authentication of a user based on a comparison of the device ID received and the list *(column 6, lines 2-9, and 16-34 user's registration information such as CRC and use's account number are stored, and the registration information will be used for authentication).*

Hsu does not disclose the trusted authority operated by a third party, and receiving an access message from the trusted authority indicating that the trusted authority successfully authenticated the user.

However, Lake discloses a concept of having a third party that works for a trusted server to authenticate users *([0006][0011], identity verification agent)*.

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the feature discloses by Lake into the method of Hsu to add another layer of protection to ensure users are who they claim to be.

Hsu and Lake do not disclose receiving an access message from the trusted authority indicating that the trusted authority successfully authenticated the user.

However, Stanko discloses receiving a grant message after successful authentication *([0055][0069], grant message is sent)*.

One of ordinary skill in the art at the time the invention was made would have been motivated to incorporate the feature discloses by Stanko into the method of Hsu and Lake to provide a clear and effective method of communication.

Regarding claim 16, Hsu, Lake and Stanko discloses the system of claim 15. Hsu further discloses wherein the integrated hardware device receives an authentication request from the authentication circuit, and in response, requests a biometric scan from a user to generate scan data and, when the integrated hardware device cannot verify scan data as being from the legitimate user, the integrated hardware device does not send the ID code *(column 5, lines 42-47, if the biometric comparison result in a no match, then no further processing is performed).*

Claim 17 is rejected for the same rationale as claims 6 and 14 above.

Claim 18 is rejected for the same rationale as claim 5 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHY ANH VU whose telephone number is (571)270-7317. The examiner can normally be reached on Wed 7:00-5:30, TH-F 7-5:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Taghi Arani can be reached on 571-272-3787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PHY ANH VU/
Examiner, Art Unit 2438
/TAGHI ARANI/
Supervisory Patent Examiner, Art Unit 2438

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	Examiner PHY ANH VU	Art Unit 2438	Page 1 of 1

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14521982
Filing Date	2014-10-23
First Named Inventor	John J. Giobbi
Art Unit	~~2437~~ 2438
Examiner Name	~~Not Yet Known~~ Phy Anh Vu
Attorney Docket Number	10001-04540 US

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	Application Number	14521982
	Filing Date	2014-10-23
	First Named Inventor	John J. Giobbi
	Art Unit	2437
	Examiner Name	Not Yet Known
	Attorney Docket Number	10001-04540 US

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	Art Unit	2437
	Examiner Name	Not Yet Known
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	Filing Date	2014-10-23
	First Named Inventor	John J. Giobbi
	Art Unit	2437
	Examiner Name	Not Yet Known
	Attorney Docket Number	10001-04540 US

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	Attorney Docket Number	10001-04540 US

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Examiner Signature	/Phy Anh Vu/	Date Considered	06/01/2015

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
		device near4 ID or identification identifier) with third near4(party agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:30
L1	1140	("4759060" "4993068" "5187352" "5296641" "5416780" "5422632" "5450489")	US-PGPUB; USPAT	OR	OFF	2015/06/01 12:38
L2	7	("4759060" "4993068" "5187352" "5296641" "5416780" "5422632" "5450489").pn.	US-PGPUB; USPAT	OR	OFF	2015/06/01 12:38
L3	11	("5619251" "5629980" "5644354" "5666412" "5784464" "5825876" "5857020" "5892825" "5894551" "5894551" "5898880" "5917913").pn.	US-PGPUB; USPAT	OR	OFF	2015/06/01 12:43
L4	10	("5928327" "5991399" "5991749" "6016476" "6018739" "6035329" "6038334" "6041410" "6042006" "6055314").pn.	US-PGPUB; USPAT	OR	OFF	2015/06/01 12:45
L5	34	g06f21/32.cpc. and (authenticat$3 with biometric with fob)	US-PGPUB; USPAT	OR	OFF	2015/06/01 12:51
L6	15	h04l63/0861.cpc. and (authenticat$3 with biometric with fob)	US-PGPUB; USPAT	OR	OFF	2015/06/01 12:59
L7	76	(john near5 giobbi).in.	US-PGPUB; USPAT	OR	OFF	2015/06/01 13:00
L8	47	(john near5 giobbi).in. and biometric	US-PGPUB; USPAT	OR	OFF	2015/06/01 13:00
S1	549	(transmit$3 or send$3) with (ID or code identifier identification) with (agent employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:04
S2	33	(transmit$3 or send$3) with (ID or code identifier identification) with (third) with (agent employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:04
S3	560	(transmit$3 or send$3) with (ID or code identifier identification) with (third) with (party) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:13
S4	522	(transmit$3 or send$3) with (ID or code identifier identification) with (third near4 party) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:14
S5	549	(transmit$3 or send$3) with (ID or code identifier identification) with (agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:14
S6	14	(transmit$3 or send$3) with (ID or code identifier identification) with third near5 (agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:15
S7	1	(transmit$3 or send$3) with (device near4 ID)	US-	OR	OFF	2015/05/31

		with third near5 (agent or employee) with authenticat$3	PGPUB; USPAT			21:16
S8	21	(transmit$3 or send$3) with (device near4 ID) with (agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:17
S9	1315	(device near4 ID or identification identifier) with third near4(party agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:30
S10	43	(device near4 ID or identification identifier) with third near4 (agent or employee) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:30
S11	39	(device near4 ID or identification identifier) with third near4 (agent) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/05/31 21:33
S12	4	transmit$4 with (ID or code or identifier identification) with (attendant or guard) with authenticat$3	US-PGPUB; USPAT	OR	OFF	2015/06/01 09:25
S13	1	"20050074126".pn.	US-PGPUB; USPAT	OR	OFF	2015/06/01 09:34
S14	1	"20040128162".pn.	US-PGPUB; USPAT	OR	OFF	2015/06/01 09:46
S15	1	"6041410".pn.	US-PGPUB; USPAT	OR	OFF	2015/06/01 10:01
S16	1	"13710109"	US-PGPUB; USPAT	OR	OFF	2015/06/01 10:32

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14521982	GIOBBI, JOHN J.
	Examiner	Art Unit
	PHY ANH VU	2438

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
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Final	Original	06/01/2015								
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SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/521,982	10/23/2014	713	2438	10001-04540 US

APPLICANTS
Proxense, LLC, Bend, OR

INVENTORS
John J. Giobbi, Bend, OR;

**** CONTINUING DATA ***************************
This application is a CON of 13/710,109 12/10/2012 PAT 8886954
which is a CON of 11/314,199 12/20/2005 PAT 8352730
which claims benefit of 60/652,765 02/14/2005
and claims benefit of 60/637,538 12/20/2004

**** FOREIGN APPLICATIONS ***************************

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10/31/2014

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /PHY ANH TRAN VU/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
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TITLE
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CPC- SEARCHED		
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CPC COMBINATION SETS - SEARCHED		
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G06F 21/32	6/1/2015	PVU
H04L 63/0861	6/1/2015	PVU

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor name search for double patening issues	6/1/2015	PVU
Keywords search	6/1/2015	PVU

INTERFERENCE SEARCH			
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14521982
	Filing Date	2014-10-23
	First Named Inventor	John J. Giobbi
	Art Unit	2437
	Examiner Name	Phy Anh Tran Vu
	Attorney Docket Number	10001-4540 US

	6	20010026619		2001-05-30	Howard et al.	

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	1	Simon Liu and Mark Silverman. 2001. "A Practical Guide to Biometric Security Technology". IT Professional 3, 1 (January 2001). 27-32. DOI=10. 1109/6294.899930 http://dx.doi.org/10.1109/6294.899930	☐
	2	Smart Card Alliance Report, "Contactless Technology for Secure Physical Access: Technology and Standards Choices", Smart Card Alliance, 10/2002, pg. 1-48.	☐

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	First Named Inventor	John J. Giobbi
	Art Unit	2437
	Examiner Name	Phy Anh Tran Vu
	Attorney Docket Number	10001-4540 US

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☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

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A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Paige Alsbury/	Date (YYYY-MM-DD)	2015-06-07
Name/Print	Paige M. Alsbury	Registration Number	72965

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EFS ID:	22557827
Application Number:	14521982
International Application Number:	
Confirmation Number:	8239
Title of Invention:	Biometric Personal Data Key (PDK) Authentication
First Named Inventor/Applicant Name:	John J. Giobbi
Customer Number:	89194
Filer:	Paige McDede Alsbury
Filer Authorized By:	
Attorney Docket Number:	10001-04540 US
Receipt Date:	07-JUN-2015
Filing Date:	23-OCT-2014
Time Stamp:	20:08:01
Application Type:	Utility under 35 USC 111(a)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	04540US_IDS.pdf	612358 188d592b901d4070dd90884a7eb88197c7e9ad9f	no	4

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2	Non Patent Literature	04540_PracticalGuidetoBiometricSecurity.pdf	1011821 0479da4d7e51cc0b05071d0a60c30572fac09c83	no	6
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3	Non Patent Literature	04540_SmartCardAllianceReport.pdf	2297926 ffb4067a429f5ceea29fee094d592d249f9aba1d	no	48
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(Not for submission under 37 CFR 1.99)

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First Named Inventor	John J. Giobbi
Art Unit	2437
Examiner Name	Not Yet Known
Attorney Docket Number	10001-04540 US

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14521982
	Filing Date	2014-10-23
	First Named Inventor	John J. Giobbi
	Art Unit	2437
	Examiner Name	Not Yet Known
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(51) International Patent Classification 7 : H04L 29/06, 12/28

A1

(11) International Publication Number: WO 00/62505

(43) International Publication Date: 19 October 2000 (19.10.00)

(21) International Application Number: PCT/EP00/02918

(22) International Filing Date: 31 March 2000 (31.03.00)

(30) Priority Data:
99/04767 13 April 1999 (13.04.99) FR

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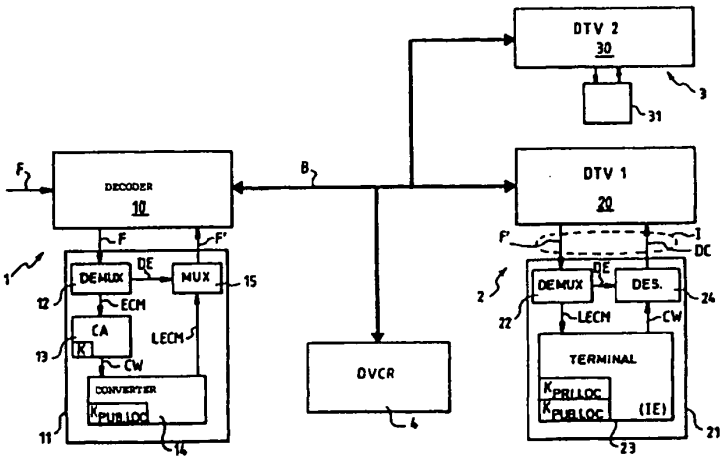
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(81) Designated States: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(54) Title: DIGITAL HOME NETWORK AND METHOD FOR CREATING AND UPDATING SUCH A NETWORK



(57) Abstract

The local digital network comprises: access devices (1), for receiving data originating from outside the network and transmitting them at a point of the network; and presentation devices (2, 3) for receiving the data flowing in the network and presenting them at a point of the network. The data flow in the network in encrypted form and all the devices of the network use a single key, the local key of the network, for the encryption and decryption of the data. Preferably, the local key of the network is formed by a pair of public and private keys. The purpose of this network is to make it possible to copy data in the local network whilst preventing pirate copies destined for other local networks.

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DIGITAL HOME NETWORK AND METHOD FOR CREATING AND UPDATING SUCH A NETWORK

The present invention relates generally to the field of local digital networks and more particularly to the field of digital home networks.

Such a network consists of a set of devices interlinked by a digital bus, for example a bus according to the IEEE 1394 standard. It comprises two main types of devices:

- access devices capable of receiving data originating from outside the local network and of transmitting them at a point of the network to which the devices are connected, and
- presentation devices, adapted to receive the data flowing in the network so as to present them at another point of the network to which these devices are connected. This second type of device has no link with the outside of the local network.

Thus, if one takes the example of a digital home network intended for conveying audio and/or video data into various rooms of a house, the access devices are for example digital decoders or set-top boxes receiving video programmes from outside the network, via a satellite antenna or via a cable connection, or else readers of optical disks broadcasting on the network, in digital form, data (audio and/or video) read from a disk (in this case the disk contains data originating from outside the network). The presentation devices are for example television receivers making it possible to view video programmes received from the network or, more generally, any type of apparatus capable of converting digital information received into an analogue signal so as to broadcast this signal to an end user.

A home network of the type mentioned hereinabove can also comprise a third type of device having no link

with the outside of the network and having the function of recording the data flowing in the network. By way of example of apparatuses of this third type, mention may in particular be made of digital video recorders or apparatuses capable of recording optical disks, of the DVD type (the abbreviation "DVD" standing for "Digital Versatile Disk").

It should be noted that one and the same apparatus can belong to two, or even three different categories of devices mentioned hereinabove. For example, an apparatus for recording optical disks can also be capable of reading commercial prerecorded disks and thus of belonging at the same time to the first and to the third categories of devices mentioned above.

If one considers the viewpoint of the content providers who provide the data originating from outside the local network, especially providers of services broadcasting pay-televised programmes or else publishers of optical disks for example, it is necessary to prevent these transmitted data from being copied and from being able to flow easily (for example by being copied onto an optical disk or any other recording medium) from one local network to the other.

To do this, it is known practice to transmit the data in secret form by encrypting them with the aid of cryptography algorithms using keys which are known beforehand to the devices authorized to receive these data or else which are exchanged according to particular secure protocols between the content provider and these devices.

If one now considers the viewpoint of a user who possesses a digital home network, it is desirable for these data to be able to be transmitted to all the other devices of the network when one of the devices of the network is authorized to receive data from a content provider. Thus, a user who is a subscriber to a pay-television service and receives programmes (transmitted

in encrypted form) on a set-top box located in his lounge (authorized to decrypt them), will wish to be able to watch these programmes for example on a television located in his bedroom. Moreover, the user is interested in recording programmes received and in being able subsequently to view them on several devices of the network even when he no longer subscribes to the pay-television service.

To take into account the wishes of content providers and also of users, it is an object of the invention to provide a means such that data received by a local digital network can flow freely between the various devices of the network whilst preventing them from flowing from one local network to another.

To this end, the invention proposes a local digital network, in particular a digital home network, comprising at least one access device, capable of receiving data originating from outside the network and of transmitting them at a point of the network; and at least one presentation device, adapted to receive data flowing in the network so as to present them at a point of the network; in which the data are adapted to flow only in encrypted form. According to the invention, all the devices of the network use for the encryption and decryption of the data flowing in the network a single encryption key specific to the network: the local key of the network.

Since each local network possesses its own local key which is different from that of the other local networks, any information which enters the said network will be readable equally by all the devices of the network but will not be copiable for being read onto another local network. More exactly, the information will be copiable, in its encrypted form, but it will not be possible to replay it in a local network different from that to which it was copied. Thus, the invention meets the wishes of content providers and also of users.

According to a preferred aspect of the invention, the data are encrypted using a cryptographic system with public keys, also known as asymmetric cryptographic system. The local key of the network is in this case formed by a pair of public and private keys: the local public key and the local private key of the network.

Preferably, only the presentation devices connected to the network know the local private key.

According to a particular embodiment, at a given instant, a single presentation device of the network is authorized to transmit the local private key to a new presentation device apt to be connected to the network. This device will subsequently be referred to as the genitor of the network.

Thus, if this genitor is removed from the local network, especially to create a pirate local network possessing the same local key as the initial local network, the latter will no longer be able to alter since no device of the initial network will any longer be capable of transmitting the local private key of the network to a new presentation device apt to be connected to the initial local network.

According to another aspect of the invention, at a given instant, a presentation device can be in only one of the following states:

i) a first state, the virgin state, when the presentation device is connected for the first time to the network;

ii) a second state, the genitor state, in which the presentation device is authorized to transmit the local private key of the network to any new presentation device apt to be connected to the network;

iii) a third state, the sterile state, in which the presentation device is no longer authorized to transmit the local private key of the network to any new presentation device apt to be connected to the said network.

A presentation device can change state only so as to pass to a state of higher rank, that is to say from the virgin state to the genitor state or from the genitor state to the sterile state, or else from the virgin state to the sterile state.

According to a preferred aspect of the invention, a single presentation device of the network is in the second state, the genitor state: the genitor of the network.

According to a particular embodiment, at a given instant, the genitor of the network is the presentation device which was connected last to the network.

Thus, the title of "genitor" of the network is transmitted to each new apparatus connected to the local network. This prevents a pirate from being able, starting from a single genitor presentation device, to create in series local networks all having the same local keys.

The invention also relates to a presentation device adapted to be connected to a digital network such as described hereinabove and which, at a given instant, can be in only one of the states which were mentioned above, namely: the virgin state, the genitor state or the sterile state, the said presentation device being adapted to change state only so as to go to a state of higher rank.

According to one aspect of the invention, when the presentation device is in the virgin state, it possesses its own pair of public and private keys and it is authorized to receive the pair of local keys of a network to which it is apt to be connected so as to store them instead of its own pair of keys.

According to another aspect of the invention, when the presentation device is in the sterile state, it is no longer authorized to receive the pair of local keys of a network to which it is apt to be connected.

According to another aspect of the invention, the presentation device comprises a means for storing the

state which said presentation device occupies, this storage means being integrated into a smart card.

According to yet another aspect of the invention, the pair of local keys of the network is contained in a smart card with which said device is furnished.

The invention also relates to a process for creating and for updating a network such as hereinabove, which will be described subsequently.

Other characteristics and advantages of the invention will become apparent on reading the following description of a particular, nonlimiting embodiment of the invention, given with reference to the appended drawings in which:

- Figure 1 represents a local digital network according to the invention;
- Figure 2 illustrates a process for creating a digital network such as that of Figure 1; and
- Figure 3 illustrates a process for connecting a new presentation device to a local digital network created according to the process of Figure 2 for example.

In the figures, only the elements which are vital to the understanding of the invention and of the particular embodiment which will be described have been represented.

Represented in Figure 1 is a digital home network comprising an access device 1, two presentation devices 2 and 3 as well as a digital video recorder 4, commonly referred to as a DVCR (the abbreviation DVCR standing for "Digital Video Cassette Recorder"). The assembly of devices 1, 2, 3 and 4 is connected to a domestic digital bus B which is for example a bus according to the IEEE 1394 standard.

The access device 1 comprises a digital decoder 10 equipped with a smart card reader furnished with a smart card 11. This digital decoder 10 is connected, either to a satellite antenna, or to a cable network, so as to receive video programmes distributed by a service

provider. These programmes are received in a stream F of data for example in the MPEG-2 format. In a manner known per se, they are transmitted in scrambled form, the content being scrambled by control words CW. These control words are themselves transmitted, in the data stream F, in a form encrypted using a key K according to a given enciphering algorithm in such a way as to remain secret during transmission.

Thus, only the users authorized by the service provider are empowered to descramble the data transmitted (against payment of a subscription for example). To do this, the provider supplies the authorized users with the key K serving to decrypt the control words CW. Very often, authorization to receive the programmes is only temporary, so long as the user pays his subscription. The key K is therefore modified regularly by the service provider.

By virtue of the invention, and as will be seen hereinbelow, the user will nevertheless be able to record programmes transmitted while he is subscribing and to replay them as often as he wishes on his own network, even if he is no longer a subscriber. On the other hand, since the data are recorded in scrambled form, it will only be possible to replay them on the network of the user who recorded them.

In Figure 1, the network is represented in the state which it occupies when all the apparatuses have been connected according to the processes which will be described subsequently in conjunction with Figures 2 and 3.

We shall now describe how the data which are transmitted in the stream F received by the decoder 10 are processed. As is known to the person skilled in the art, in the case of data transmitted according to the MPEG-2 format, the data stream F comprises a succession of video data packets, of audio data packets and of management data packets. The management data packets

comprise in particular control messages denoted ECM (the abbreviation "ECM" standing for "Entitlement Control Message") in which are transmitted, in a form encrypted using a key K, the control words CW which served to scramble the data transmitted in the video and audio data packets.

This data stream F is transmitted to the smart card 11 so as to be processed therein. It is received by a demultiplexer circuit (DEMUX) 12, which circuit transmits, on the one hand to an access control circuit (CA) 13 the ECMs and, on the other hand, to a multiplexing circuit (MUX) 15 the packets, denoted DE, of scrambled video and audio data. The circuit CA contains the key K and can thus decrypt the control words CW which are contained in the ECMs. The circuit CA transmits these control words CW to a converter circuit 14 which contains, according to the invention, the local public key of the network $K_{PUB.LOC}$. The converter 14 uses the key $K_{PUB.LOC}$ to encrypt the control words CW and transmits these control words, encrypted using the local public key, to the multiplexing circuit 15 in control messages denoted LECM. These messages LECM have the same function as the messages ECM received in the initial data stream F, namely of transmitting the control words CW, but in the messages LECM, the control words CW are encrypted therein using the local public key $K_{PUB.LOC}$ instead of being encrypted using the key K of the service provider.

The multiplexing circuit 15 then transmits the data packets DE and the converted control messages LECM in a data stream F' which is received by the decoder 10. It is this data stream F' which will then flow around the domestic bus B so as to be received, either by one of the presentation devices 2 or 3, or by the digital video recorder 4 so as to be recorded. According to the invention, the data therefore always flow in encrypted form in the bus B, and only the apparatus containing the private local key $K_{PRI.LOC}$ of the network are capable of

decrypting the control words CW and hence of decrypting the data DE. This therefore prevents the broadcasting to other local networks of any copy made in the domestic network of Figure 1.

In the example of Figure 1, the circuits 12 to 15 are integrated into the smart card 11 but in a variant embodiment, it is possible to place the circuits DEMUX and MUX in the decoder 10, only the circuits 13 and 14 remaining integrated into the smart card. Specifically, since the circuit CA 13 and the converter 14 contain decryption and encryption keys, they must be integrated into a secure medium such as a smart card.

The presentation device 2 comprises a digital television receiver (DTV1) 20 equipped with a smart card reader furnished with a smart card 21. The receiver 20 receives the data stream F' originating, either from the decoder 10, or from the digital video recorder 4, through the bus B. The data stream F' is transmitted to the smart card 21. It is received by a demultiplexer circuit (DEMUX) 22, which transmits, on the one hand the scrambled video and audio data packets DE to a descrambling circuit (DES.) 24, and on the other hand the converted control messages LECM to a terminal module 23. The terminal module contains the pair of public ($K_{PUB.LOC}$) and private ($K_{PRI.LOC}$) keys of the network. Since the control messages LECM contain the control words CW which have been encrypted using the local public key $K_{PUB.LOC}$ of the network, the terminal module can decrypt these control words using the local private key $K_{PRI.LOC}$ so as to obtain the control words CW in clear. These control words CW are then transmitted to the descrambling circuit 24 which uses them to descramble the data packets DE and to output clear data packets DC to the television receiver 20.

In order to secure the transmission lastly of the clear data DC between the smart card 21 and the display circuits of the television receiver 20, the interface I

between said smart card and the card reader of the receiver 20 is for example made secure according to the American NRSS standard (NRSS being the acronym for National Renewable Security Standard) for securing smart cards.

The second presentation device 3, comprising a digital television receiver (DTV2) 30 equipped with a smart card reader furnished with a smart card 31 operates in exactly the same way as the presentation device 2 and will not be described further.

By virtue of the local digital network just described, the data stream F originating from a content provider is transformed by the access device which receives it into a data stream F' by virtue of the local public key of the network $K_{PUB.LOC}$. This data stream F' thus contains data having a format specific to the local network, which data cannot be decrypted other than by the presentation devices of the local network which all contain the local private key of the network.

We shall now describe how the local digital network of Figure 1 is created and how the connecting of new apparatuses to the said network is managed so as to guarantee that all the apparatuses of the network all share the unique local pair of keys of the network.

In Figure 2, the process for creating the digital network represented in Figure 1 is illustrated diagrammatically.

To create a digital network according to the invention, it is necessary to connect together an access device and a presentation device.

In Figure 2, it is assumed that at the outset the network is created by connecting the access device 1 and the presentation device 2 by way of the digital bus B. The various steps of the process for creating the network have been represented along a time axis t which is doubled up in such a way as to illustrate the exchanges which take place between the two devices.

In the first step 100 of the process, when the two devices are connected together, the presentation device contains a pair of public K_{PUB2} and private K_{PRI2} keys and is, according to the invention, in the virgin state.

The state of the device is stored preferably by a state indicator IE which is a 2-bit register located in the terminal module 23 (Figure 1) of the presentation device. By convention, it is assumed that when the device is in the virgin state, the state indicator IE is equal to 00; when the device is in the genitor state, IE = 01 and when the device is in the sterile state, IE = 10.

The state indicator IE is contained in an integrated circuit in a smart card so as to guarantee that it is tamper-proof.

When a presentation device is sold by a manufacturer, it must be able to be connected to any existing local digital network, of the type of the invention. It must also be capable of being connected to an access device so as to create a new network. This is why any presentation device which is manufactured according to the invention routinely comprises a pair of public and private keys, this pair of keys being unique and different from one device to another, so as to guarantee the fact that each local network created according to the invention also possesses a unique pair of keys. Moreover, to guarantee the security of the exchanges, all the pairs of private/public keys used are certified according to a method known to the person skilled in the art.

The access devices, on the other hand, are manufactured and sold without containing any encryption/decryption key. They nevertheless preferably contain a converter circuit (contained in a smart card) according to the invention and such as described previously in conjunction with Figure 1, which is capable

of storing a local key of a network to which they are apt to be connected.

Referring again to Figure 2, step 101 of the process consists, for the presentation device 2, in dispatching over the bus B its public key K_{PUB2} destined for all the access devices apt to be connected to the bus B, in this instance the access device 1.

Step 102 consists, for the access device 1, in receiving the public key K_{PUB2} and in storing it as the new local public key of the network ($K_{PUB.LOC} = K_{PUB2}$).

In step 103, the access device 1 dispatches over the bus B a change of state signal destined for the presentation device 2. This step has the objective of indicating to the presentation device 2 that it is the first to be connected to the network and that it must therefore become the genitor of the network, that is to say the only presentation device authorized to transmit its private key K_{PRI2} (which becomes the local private key of the network $K_{PRI.LOC}$) to any new presentation device apt to be connected to the network.

Step 104 therefore consists, for the presentation device 2, in receiving the change of state signal and modifying its state indicator so as to pass to the genitor state (IE = 01).

At the end of the process, one therefore has a local digital network in accordance with the invention which comprises a unique local public key $K_{PUB.LOC}$ (equal to the initial public key K_{PUB2} of the presentation device 2) which is known to both devices of the network, and a unique local private key $K_{PRI.LOC}$ which is known only to the presentation device 2. The network also comprises, in accordance with the invention, a genitor presentation device which is capable of altering it by allowing the connection of new presentation devices.

The process for connecting a new presentation device, in this instance the presentation device 3, to the network created in accordance with the process of

Figure 2, will now be described in conjunction with Figure 3.

In the first step 200, 200' 200" of the process, which consists in connecting the presentation device 3 to the existing local network by way of the digital bus B, the presentation device 3 contains its own pair of public K_{PUB3} and private K_{PRI3} keys and it is in the virgin state (IE = 00). The access device 1 and presentation device 2 are respectively in the same state as at the end of the process of Figure 2, that is to say the access device 1 contains the local public key of the network $K_{PUB.LOC}$ and the presentation device is the genitor of the network (IE = 01) and contains the pair of local keys ($K_{PUB.LOC}$, $K_{PRI.LOC}$) of the network.

The second step 201 consists, for the presentation device 3, in dispatching over the bus B its public key K_{PUB3} destined for all the access devices apt to be connected to the bus B, in this instance the access device 1. This step is the same as step 101 (Figure 2) of the creation process.

Step 202 consists, for the access device 1, in receiving the public key K_{PUB3} and in verifying whether it already contains a public key or not (VERIF. PRESENCE $K_{PUB.LOC}$).

In the event of a positive verification, this being the case in this instance, the next step 203 consists, for the access device 1, in dispatching the local public key $K_{PUB.LOC}$ over the bus B destined for the new presentation device 3.

In step 204, the presentation device 3 receives the local public key $K_{PUB.LOC}$ and stores it, preferably in its terminal module.

The next step 205 consists, for the presentation device 3, in dispatching a signal over the bus B, addressed to all the presentation devices of the network, in the form of a message (GENITOR?) requesting the genitor device of the network to respond to it.

In step 206, the genitor device of the network, in this instance the presentation device 2, receives this message and, once the communication has been established in a dependable manner between the presentation devices 2 and 3, it changes state so as to pass to the sterile state (IE = 10).

Step 207 then consists, for the presentation device 2, in dispatching the local private key of the network in encrypted form ($E(K_{PRI.LOC})$) which can be decrypted by the presentation device 3. In particular, this secure transmission of the local private key between the presentation devices 2 and 3 can be performed using the initial public key K_{PUB3} of the presentation device 3 to encrypt the local private key, the presentation device 3 being capable of decrypting this message using its private key K_{PRI3}. The key K_{PUB3} is for example transmitted to the presentation device 2 during step 205.

In step 208, the presentation device 3 receives and decrypts the local private key and stores it, preferably in its terminal module, integrated into the smart card 31 (Figure 1).

Step 209 consists, for the presentation device 3, in dispatching a signal acknowledging receipt of the local private key (ACKNOWLEDGE-RECEIPT ($K_{PRI.LOC}$)) over the bus B destined for the presentation device 2.

In step 210, the presentation device 2 receives this acknowledgement of receipt signal and dispatches, in response, a change of state signal to the new presentation device 3 and in step 211, the presentation device 3 receives this signal and changes state so as to become the new genitor of the network (IE = 01).

Since the presentation device 2 is henceforth in the sterile state, it is no longer authorized to transmit the local public key of the network to another presentation device. This makes it possible to prevent this device 2 from being removed from the network so as

to create another pirate local network possessing the same pair of local keys as the network just described.

At the end of the process, there are therefore two presentation devices 2 and 3 and one access device 1 which are connected to the local network. They all share the local key pair of the network $K_{PUB.LOC}$, $K_{PRI.LOC}$. There is always a unique genitor in the network which is the presentation device which was connected last to the network.

The connecting of a new access device to the local network is for its part much simpler since any access device in accordance with the invention is sold without containing a key. It is in particular possible to envisage that when a new access device is plugged into the network, it dispatches a message over the bus B requesting to receive the public key of the network. It is then possible to make provision for either the first network device which receives this message, or only the genitor device, to dispatch, in response to this message, the public key of the network to the new access device.

CLAIMS

1. Local digital network, in particular digital home network, comprising:

- at least one access device (1), capable of receiving data originating from outside said network and of transmitting them at a point of said network; and
- at least one presentation device (2, 3), adapted to receive data flowing in the network so as to present them at a point of the network;

in which the data are adapted to flow only in encrypted form, characterized in that all the devices of said network use for the encryption and decryption of the data flowing in the network a single encryption key specific to the network: the local key ($K_{PUB.LOC}$, $K_{PRI.LOC}$) of the network.

2. Digital network according to Claim 1, in which the data are encrypted using a public keys cryptographic system, characterized in that said local key of the network is formed by a pair of public and private keys: the local public key ($K_{PUB.LOC}$) and the local private key ($K_{PRI.LOC}$) of the network.

3. Digital network according to Claim 2, characterized in that only the presentation devices (2, 3) connected to the said network contain the local private key ($K_{PRI.LOC}$).

4. Digital network according to Claim 3, characterized in that at a given instant, a single presentation device of the network is authorized to transmit the local private key ($K_{PRI.LOC}$) to a new presentation device apt to be connected to said network.

5. Digital network according to Claim 3, characterized in that at a given instant, a presentation device can be in only one of the following states:

i) a first state, the virgin state (IE = 00), when the presentation device is connected for the first time to said network;

ii) a second state, the genitor state (IE = 01), in which the presentation device is authorized to transmit the local private key of the network to any new presentation device apt to be connected to said network;

iii) a third state, the sterile state (IE = 10), in which the presentation device is no longer authorized to transmit the local private key of the network to any new presentation device apt to be connected to the said network,

a presentation device being adapted to change state only so as to pass to a state of higher rank.

6. Digital network according to Claim 5, characterized in that a single presentation device of the network is in the second state, the genitor state: the genitor of the network.

7. Digital network according to Claim 6, characterized in that at a given instant, the genitor of the network is the presentation device which was connected last to the said network.

8. Presentation device adapted to be connected to a digital network according to one of Claims 2 to 7, characterized in that at a given instant, said presentation device can be in only one of the following states:

i) a first state, the virgin state (IE = 00), when the presentation device is connected for the first time to a network;

ii) a second state, the genitor state (IE = 01), in which the presentation device is authorized to transmit the local private key of the network to any new presentation device apt to be connected to said network;

iii) a third state, the sterile state (IE = 10), in which the presentation device is no longer authorized to transmit the local private key of the network to any new presentation device apt to be connected to said network,

said presentation device being adapted to change state only so as to pass to a state of higher rank.

9. Presentation device according to Claim 8, characterized in that when said presentation device is in the virgin state, it contains its own pair of public and private keys and it is authorized to receive the pair of local keys of a network to which it is apt to be connected so as to store them instead of its own pair of keys.

10. Presentation device according to one of Claims 8 or 9, characterized in that when said presentation device is in the sterile state, it is no longer authorized to receive the pair of local keys of a network to which it is apt to be connected.

11. Presentation device according to one of Claims 8 to 10, characterized in that it comprises a means (IE) for storing the state which said presentation device occupies, this storage means being integrated into a smart card (21, 31).

12. Presentation device according to one of Claims 8 to 11, characterized in that the pair of local keys of the network is contained in a smart card (21, 31) with which said device is furnished.

13. Process for creating a local digital network according to one of Claims 5 to 7, characterized in that it comprises the steps consisting successively:

a) in connecting together by way of a digital bus (B) an access device (1) and a presentation device (2) in the virgin state and containing a pair of public (K_{PUB2}) and private (K_{PRI2}) keys;

b) for the presentation device (2), in dispatching over said bus (B) its public key (K_{PUB2});

c) for the access device (1), in receiving said public key (K_{PUB2}), in storing it as a new local public key of the network ($K_{PUB.LOC} = K_{PUB2}$) and in dispatching over said bus a signal of change of state of the presentation device;

d) for the presentation device (2), in receiving said change of state signal and in passing to the genitor state (IE = 01).

14. Process for connecting a new presentation device (3) in the virgin state (IE = 00) and containing a pair of public (K_{PUB3}) and private (K_{PRI3}) keys to a local digital network according to one of Claims 5 to 7, characterized in that it comprises the steps consisting successively:

e) in connecting the new presentation device (3) to the said local network by way of a digital bus (B);

f) for the new presentation device (3), in dispatching over said bus its public key (K_{PUB3});

g) for at least one of the access devices (1) of said network, in receiving the public key (K_{PUB3}) of the new presentation device, in verifying that said access device already contains a public key, the local public key ($K_{PUB.LOC}$) of the network, and, in the event of a positive verification, in dispatching over the bus (B) the local public key of the network;

h) for the new presentation device (3), in receiving the local public key ($K_{pub,LOC}$) of the network, in storing it and in dispatching over said bus a signal, addressed to all the presentation devices of the network, requesting response from the presentation device in the genitor state;

i) for the genitor presentation device of the network (2), in receiving said response request signal, in passing to the sterile state (IE = 10), and in dispatching in response to the new presentation device (3) the local private key ($K_{PRI.LOC}$) of the network in an encrypted form which can be decrypted by the new presentation device (3);

j) for the new presentation device (3), in receiving said local private key ($K_{PRI.LOC}$) of the network, in storing it and in dispatching an acknowledgement of

receipt signal to the presentation device which was formerly the genitor of the network (2);

k) for the presentation device which was formerly the genitor of the network (2), in receiving said acknowledgement of receipt signal and in dispatching to the new presentation device (3) a change of state signal;

l) for the new presentation device (3), in receiving said change of state signal and in passing to the genitor state (IE = 01).

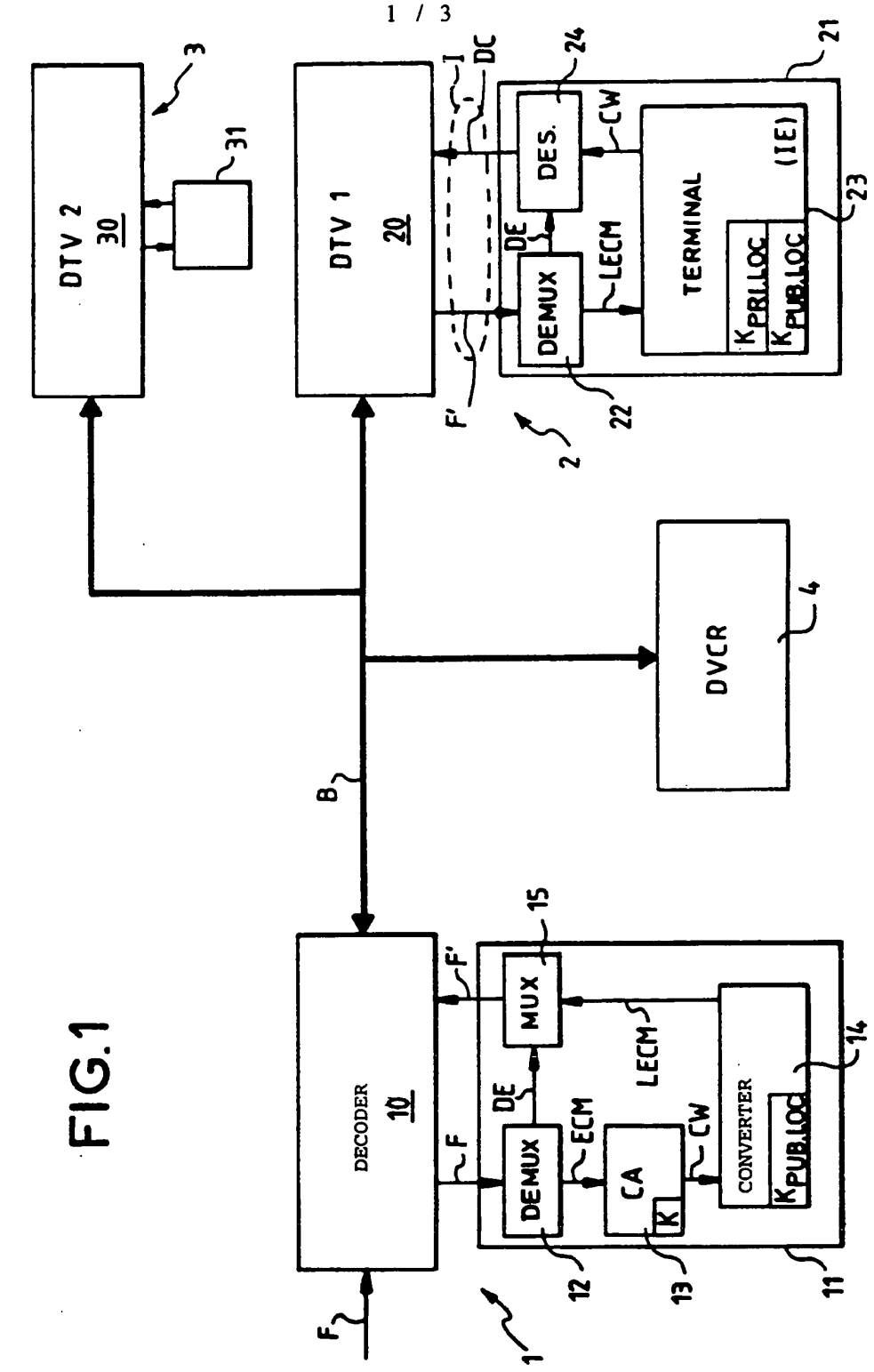

DTV 2
30
31
3
DTV 1
20
DC
I
24
DES.
CW
21
TERMINAL
(IE)
23
DE
DEMUX
LECM
K PRI.LOC
K PUB.LOC
F'
22
2
DVCR
4
B
DECODER
10
F
15
MUX
DE
ECM
LECM
CW
CA
K
CONVERTER
K PUB.LOC
14
12
13
11
1
F

FIG.1

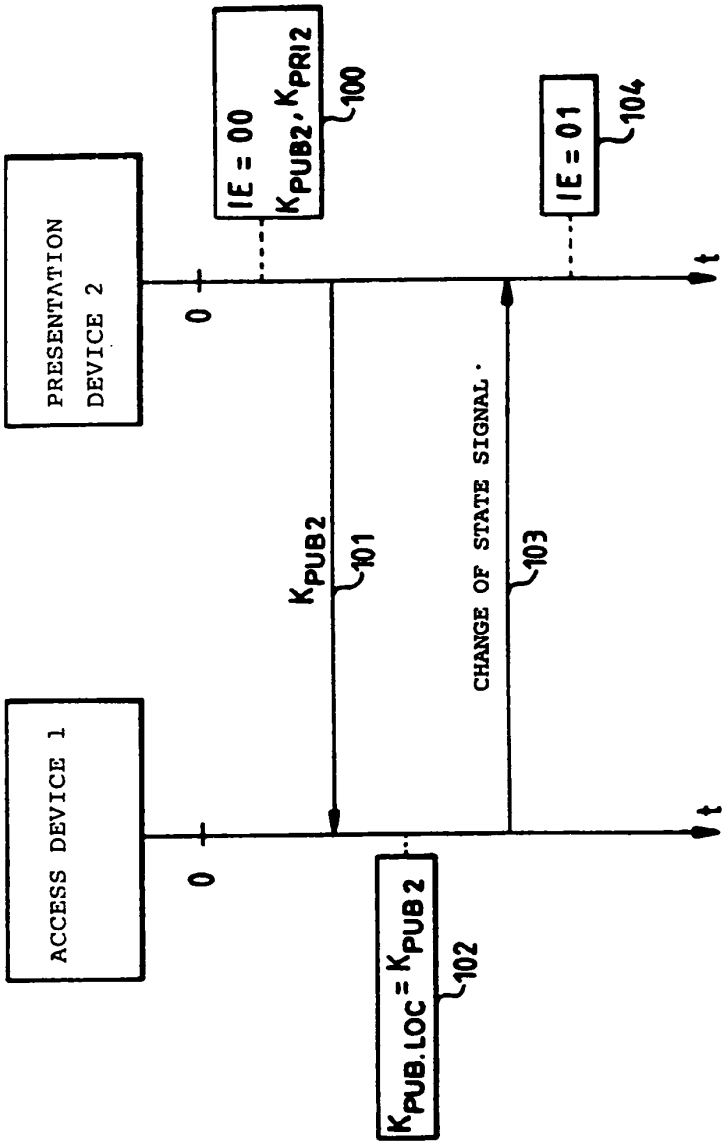

PRESENTATION DEVICE 2
ACCESS DEVICE 1
0
0
t
t
IE = 00
K_{PUB2}, K_{PRI2}
100
IE = 01
104
K_{PUB2}
101
CHANGE OF STATE SIGNAL
103
$K_{PUB.LOC} = K_{PUB2}$
102

FIG. 2

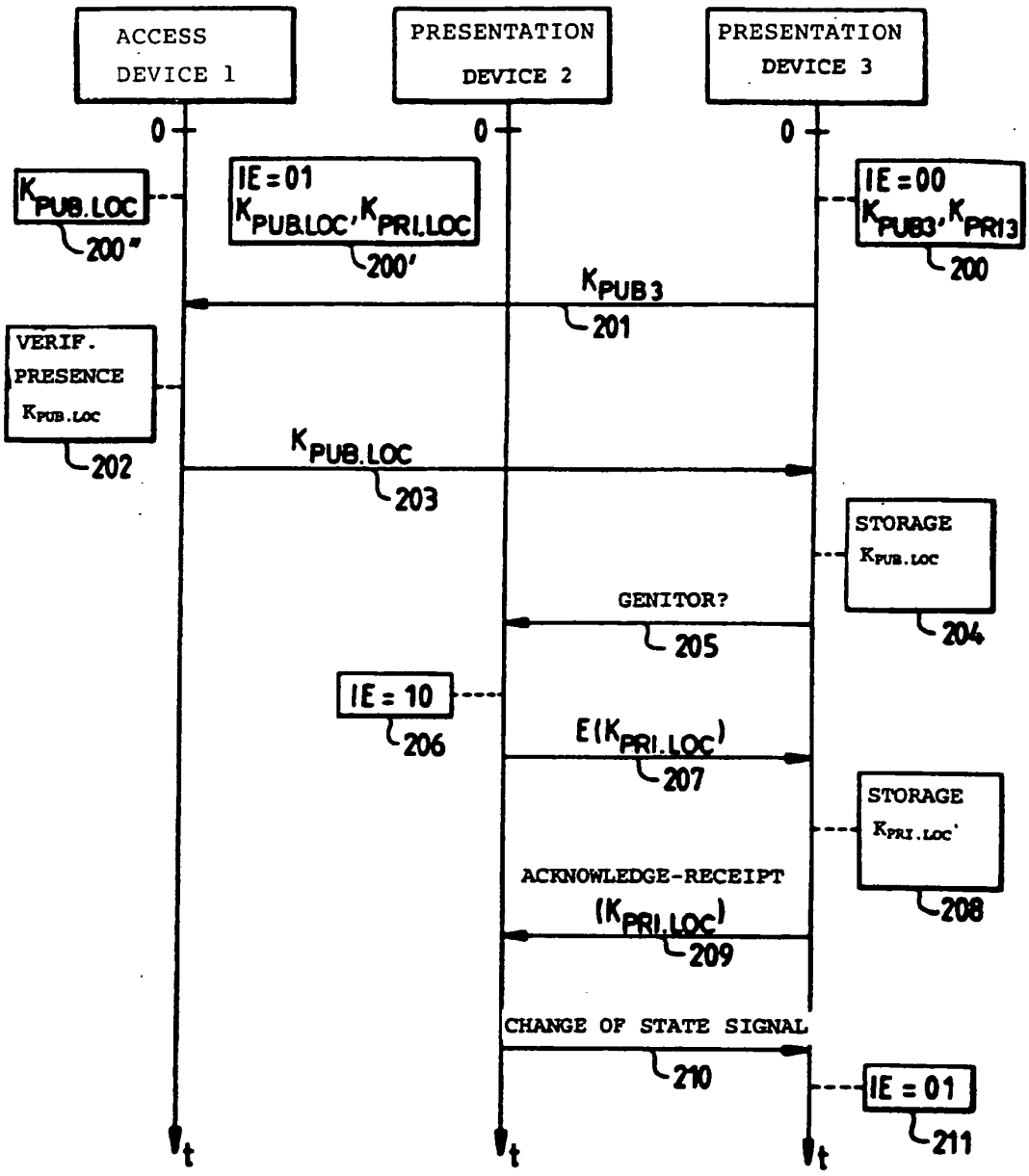

ACCESS DEVICE 1
PRESENTATION DEVICE 2
PRESENTATION DEVICE 3
0
0
0
$K_{PUB.LOC}$
200"
IE = 01
$K_{PUB.LOC}$, $K_{PRI.LOC}$
200'
IE = 00
K_{PUB3}, K_{PRI3}
200
K_{PUB3}
201
VERIF. PRESENCE $K_{PUB.LOC}$
202
$K_{PUB.LOC}$
203
STORAGE $K_{PUB.LOC}$
204
GENITOR?
205
IE = 10
206
$E(K_{PRI.LOC})$
207
STORAGE $K_{PRI.LOC}$
208
ACKNOWLEDGE-RECEIPT ($K_{PRI.LOC}$)
209
CHANGE OF STATE SIGNAL
210
IE = 01
211
t
t
t

FIG.3

INTERNATIONAL SEARCH REPORT

Inter xnal Application No
PCT/EP 00/02918

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04L29/06 H04L12/28

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04L H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ, INSPEC, IBM-TDB, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	EP 0 382 296 A (N.V. PHILIPS GLOEILAMPENFABRIEKEN) 16 August 1990 (1990-08-16)	1
A	column 2, line 2-37 column 3, line 12-29 column 4, line 40-44 column 4, line 55 -column 5, line 34 column 6, line 57 -column 7, line 5 column 8, line 56 -column 9, line 42	2-14
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☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 July 2000	21/07/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Lázaro Lõpez, M.L.

1

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INTERNATIONAL SEARCH REPORT

information on patent family members

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PCT/EP 00/02918

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Form PCT/ISA/210 (patent family annex) (July 1992)

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
29 March 2001 (29.03.2001)

PCT

(10) International Publication Number
WO 01/22724 A1

(51) International Patent Classification[7]: H04N 5/00, 7/16, 7/167

(21) International Application Number: PCT/EP00/08439

(22) International Filing Date: 30 August 2000 (30.08.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
99/11901 23 September 1999 (23.09.1999) FR

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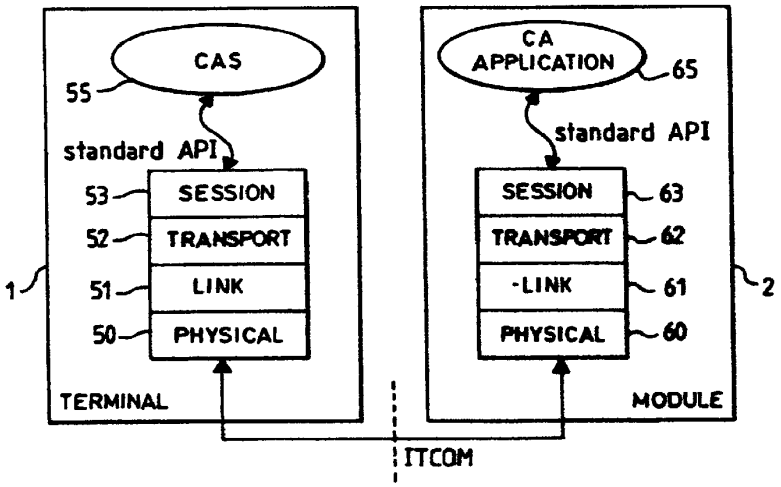
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MULTIMEDIA DIGITAL TERMINAL AND DETACHABLE MODULE COOPERATING WITH THE TERMINAL COMPRISING AN INTERFACE PROTECTED AGAINST COPYING



(57) Abstract: The terminal (1) receives a scrambled data stream (TS(D.EMB.)) in which the control words (CW) having served to scramble the data are transmitted in encrypted form. It transmits, via a first interface (ITTS), this stream to a detachable module (2) containing the conditional access system specific to the service provider supplying the data. The module (2) extracts from the stream and decrypts the control words (CW) before transmitting them to the terminal, via a second interface (ITCOM). These control words are used by a descrambler (16) of the terminal to descramble the data. The data stream leaving the module (TS'(D.EMB.)) contains only scrambled data, thus guaranteeing better protection against copying.

WO 01/22724 A1

Multimedia digital terminal and detachable module cooperating with the terminal comprising an interface protected against copying

The present invention relates to the field of conditional access systems for multimedia digital terminals. It relates more particularly to a multimedia digital terminal as well as to a detachable module associated with this terminal for implementing a conditional access system, in which the interface between the terminal and the module is protected against illicit copying.

The invention has been embodied within the context of the so-called DVB-CI interface (the initials standing for "Digital Video Broadcasting - Common Interface" which is described in particular in European Standard EN 50221 published by CENELEC (Comité Européen de Normalisation Electrotechnique).

This DVB-CI common interface has been defined by the DVB group so as to allow standardization of digital receiving equipment whilst allowing service providers supplying the data, (for example suppliers of Pay TV programmes) to remain proprietors of the conditional access system and of the corresponding security elements. This is because a conditional access system must be envisaged whenever it is necessary to control access to broadcast data. However, the service providers supplying the data wish to preserve a specific conditional access system. By virtue of the DVB-CI interface, the specific proprietary elements can be integrated into a module which is separate from the standardized parts of the terminal which receive and decode the digital video data or the service data. Thus, the proprietary elements can be manufactured and sold separately from the terminals, thereby making their distribution easier. The module is referred to as a "DVB-CI module" by extension.

The aforesaid European standard describes in particular the hardware and software architecture of the common interface between a server (the host) and one or more DVB-CI modules connected to the server.

We have represented this architecture in Figure 1. The host server 1 is a multimedia digital terminal such as a decoder of programmes broadcast by satellite or by cable, a video recorder or a personal computer, to which may be connected one or more modules 2. The module 2 is a detachable device which cannot operate alone but which is intended to execute certain specific tasks in association with the host server, in particular the implementation of a conditional access system or of an electronic programme guide. To do this, the module can access resources, that is to say software or hardware functional units, of the host server. The aforesaid common interface standard defines for this purpose a certain number of objects able to be exchanged between the module and the host server and allowing the module to use the resources of the host server.

Within the framework of the standards defined by the DVB group, the digital data are transmitted in the form of an information stream coded according to the MPEG 2 standard (ISO/IEC 13818-1), but naturally any other data transport standard can be used within the framework of the invention.

The digital terminal 1 of Figure 1 comprises a tuner/demodulator 10 which receives a signal S, emanating from a satellite antenna or from a cable network, and which outputs a digital data stream transmitted in the form of packets, and referred to as the TS (standing for "Transport Stream") in the aforesaid MPEG 2 standard, and containing the services supplied by providers.

The data stream TS comprises, in a known manner, packets of data supplied by various service providers and, so as to guarantee that the data reach only those users having acquired the right to receive them (for

example by means of a subscription to the service), these data are transmitted whilst being scrambled by control words CW.

In order to descramble the data, the service provider also supplies the users with the control words having served to scramble the data. So as to keep the control words secret, they are supplied after having been encrypted with an algorithm with key K. The various encrypted control words are sent to the users in control messages, commonly denoted ECMs (the abbreviation ECM standing for "Entitlement Control Message") transmitted in the data stream TS. The control words are thereafter decrypted in a secure processor containing the key K, the secure processor being included within a security element, for example a smart card, which is supplied to the users.

Returning to Figure 1, TS(D.EMB.) therefore denotes the data stream TS containing the data in scrambled form. In accordance with the principle defined in the aforesaid standard EN 50221, all the elements of the conditional access system which are specific to the service provider are contained in the detachable module 2 which receives the data stream TS(D.EMB.) from the digital terminal 1 across the DVB-CI common interface.

The module 2 comprises a microcontroller 21, in which the access control software application CA specific to the service provider is executed. It furthermore comprises a component 22 referred to as demultiplexer which receives the data stream TS(D.EMB.) so as to extract therefrom the video or audio data packets corresponding to a service which the user wishes to view or so as to extract therefrom data packets containing so-called "service" information, such as control messages ECM. The video or audio data packets are sent to a descrambler 23 contained in the module 2 whilst the messages ECM are sent to a smart card 3 which has been inserted into the module 2 and which contains, in a

secure processor 30, the key K having served to encrypt the control words. The decryption of the control words contained in the messages ECM is performed by the secure processor 30 which outputs the control words CW unenciphered to the descrambler 23 situated in the module 2. The descrambler 23 is thus in a position to descramble the video or audio data packets received from the demultiplexer 22 by virtue of the control words CW which it receives from the smart card 3. It outputs a digital data stream TS(D.DES.) in which the data packets corresponding to the service which has been selected by the user are descrambled.

The data stream TS(D.DES.) is transmitted to the digital terminal 1 via the DVB-CI common interface. It is more particularly transmitted to an MPEG decoder 14 of the terminal which supplies the audio and video outputs of the terminal which can be read directly by an apparatus such as a television.

The terminal 1 also comprises a microcontroller 11 in which the various software applications of the terminal are executed.

The DVB-CI common interface in fact comprises two logic interfaces:

- the first, the interface of the data stream ITTS, constitutes a bi-directional bus and transports the digital data packets of the TS stream in both directions between the terminal 1 and the module 2 according to the MPEG 2 transport standard. From the terminal to the module, the stream TS(D.EMB.) transmitted via the ITTS interface is a scrambled data stream whilst in the other direction stream TS(D.DES)), and on condition that the module 2 allows access to the data selected by the user (that is to say that it contains the elements of the conditional access system of the service provider which are necessary for descrambling the said data), the packets containing the selected data are returned

descrambled whilst the remainder of the TS stream remains unchanged;

- the second, the command interface ITCOM, transmits commands in both directions between the terminal 1 and the module 2 (more particularly between the microcontrollers 11 and 21) by way of the objects (or primitive functionalities) defined in the standard and which were mentioned above.

A notable drawback of the system just described is that certain data flow unenciphered at the DVB-CI common interface level (in the stream TS(D.DES.). In actual fact, data broadcasters are becoming increasingly preoccupied by illicit copies which may be made from the data which these broadcasters transmit, all the more so when these data are transmitted in digital form as is the case in the present instance, and they are asking for means of protection against copying to be set in place.

The current DVB-CI common interface cannot guarantee this protection against copying since, the module 2 being detachable, it is possible for a pirate to connect a digital recorder to a connection port across which the stream TS(D.DES.) travels and to record the data packets which flow unenciphered.

A purpose of the present invention is to solve the aforesaid problems by providing means of ensuring protection against copying at the level of the common interface between a digital terminal and a module which are linked together by an interface of the DVB-CI type.

The invention therefore relates to a multimedia digital terminal intended for receiving a stream of digital data scrambled by control words, the control words being contained in the stream in encrypted form, and intended to cooperate with a detachable module for descrambling the data stream. The terminal is able to transmit the scrambled data stream to the detachable module. According to the invention, the terminal is furthermore capable of receiving from the detachable

module the decrypted control words, and it comprises a descrambler capable of descrambling the digital data stream by using the control words received from the detachable module.

The descrambling of the data is therefore performed solely in the decoder and no data item now travels unenciphered at the level of the interface between the terminal and the detachable module. The risks of illicit copies are therefore considerably reduced by virtue of the invention.

According to a preferred embodiment of the invention, the digital terminal is furthermore able to receive from the detachable module the scrambled digital data stream, wherein the data stream received by the terminal is not modified relative to the data stream transmitted by the terminal.

According to another embodiment, the digital terminal is able to receive from the detachable module the scrambled digital data stream from which, relative to the data stream transmitted by the terminal, the data packets containing the control words have been removed.

According to another aspect of the invention, the terminal is able to transmit the scrambled data stream to the detachable module across a first interface with the detachable module, and it is furthermore capable of receiving from the detachable module the decrypted control words across a second interface with said module.

According to another particular characteristic of the invention, the terminal is furthermore able to receive from the detachable module, across the first interface, the scrambled digital data stream.

The invention also relates to a multimedia digital terminal intended for receiving a stream of digital data scrambled by control words, the stream of data containing the control words encrypted using a first key, and intended to cooperate with a detachable module for descrambling the data stream. The terminal is able to

transmit the scrambled data stream to the detachable module across a first interface with the detachable module. According to the invention, the terminal is furthermore capable of receiving from the detachable module the decrypted control words which are encrypted using a second key before being transmitted across a second interface with the module. The terminal also comprises means for decrypting the control words received from the detachable module using the second key; and a descrambler capable of descrambling the digital data stream by using the decrypted control words.

Thus, in addition to the data which travel at the level of the first interface between the module and the terminal only in scrambled form, the control words are also encrypted so as to travel at the level of the second interface, thereby further increasing the security of the assembly.

The invention also relates to a module intended for cooperating with a digital terminal as described above, this module being able to receive from the terminal a scrambled digital data stream. According to another aspect of the invention, the module is furthermore capable of extracting from the data stream the control words having served to scramble the digital data; of decrypting the control words; and of transmitting the decrypted control words (CW) to the terminal.

According to another aspect of the invention, the module is furthermore adapted for returning the scrambled digital data stream to the terminal without modifying the stream.

According to yet another aspect of the invention, the module is furthermore adapted for returning the scrambled digital data stream to the terminal by removing, relative to the data stream transmitted by the terminal, the data packets containing the control words.

According to another characteristic of the invention, the module is able to receive the digital data stream across a first interface with the terminal, and it is furthermore capable of transmitting the decrypted control words to the terminal across a second interface with the terminal.

According to a particular embodiment of the invention, the module is able to cooperate with a detachable security element for decrypting the control words, the module being capable of extracting from the digital data stream messages containing the encrypted control word; of transmitting the messages to a security element inserted into the module; of receiving from the security element the decrypted control words; and of transmitting the decrypted control words to the digital terminal with which it cooperates.

The invention also relates to a module intended for cooperating with a digital terminal as described above, the module being able to receive from the terminal a scrambled digital data stream across a first interface with the terminal. According to the invention, the module is furthermore capable of extracting from the data stream the control words having served to scramble the digital data; of decrypting the control words and encrypting the control words using a second key; and of transmitting the encrypted control words to the terminal across a second interface with said terminal.

The invention also relates to a method for descrambling a stream of digital data, scrambled by control words, which is received by a multimedia digital terminal, the control words being contained in the stream in encrypted form. The method comprises a first step consisting in transmitting the scrambled data stream to a detachable module. It furthermore comprises the steps consisting, for the detachable module, in extracting from the data stream the control words having served to scramble the digital data; in decrypting said control

words; and in transmitting the decrypted control words to the terminal.

The invention also relates to a method for descrambling a stream of digital data, scrambled by control words, which is received by a multimedia digital terminal, the stream of data containing the control words encrypted using a first key. The method comprises a first step consisting in transmitting the scrambled data stream to a detachable module. According to the invention, it furthermore comprises the steps consisting, for the detachable module, in extracting from the data stream the control words having served to scramble the digital data; in decrypting the control words; in encrypting the control words with using a second key; and in transmitting the encrypted control words to the terminal. The method furthermore comprises the steps consisting, for the terminal, in decrypting the control words using the second key; and in descrambling the digital data stream by using said decrypted control words.

The invention also relates to a method for transferring control words between a module as described above and a digital terminal also described above. This method consists essentially:

- for the module, in sending a first identification object to the terminal;
- for the terminal, in sending, in response to the first object, a second identification object indicating whether the terminal is or is not able to receive the control words from the module; and
- for the module, in the event of a positive response with the second object, in sending the control words enclosed in a third object.

Other characteristics and advantages of the invention will become apparent on reading a particular, non-limiting embodiment of the invention given with reference to Figures 1 to 4, among which:

- Figure 1, described above, represents a digital terminal into which is plugged a DVB-CI module according to the prior art;

- Figure 2 represents a digital terminal into which is plugged a module according to the principle of the invention;

- Figure 3 diagrammatically represents a part of the common interface between a digital terminal and a module such as those of Figure 2;

- Figure 4 illustrates a protocol for communication across the part of the common interface represented in Figure 3.

Represented in Figure 2 are a digital terminal 1 together with a module 2 connected to the terminal via an interface which is improved relative to the DVB-CI interface so as ensure better protection against copying at the level of this interface.

The elements which are similar to those of Figure 1 described earlier bear the same reference numbers and will not be described further.

In the embodiment of the invention illustrated in Figure 2, it will be considered that the digital terminal 1 is a decoder receiving programmes from various service providers via cable or via a satellite antenna.

A module 2 containing the specific elements of the conditional access system of a first service provider is connected to this decoder.

According to the principle of the invention, the data stream TS'(D.EMB.) leaving the module 2 via the interface ITTS contains only data in scrambled form. The module 2 extracts only the control words CW from the stream TS(D.EMB.) received so as to transmit them, once decrypted, to the decoder. The descrambling of the data is performed only in the decoder 1 by virtue of a descrambler 16 contained in the decoder. Thus, the digital data are no longer available unenciphered at the level of the ITTS interface and illicit copying is, if

not eliminated, at least made much more complex than in the prior art.

To do this, as in the prior art, the module 2 comprises a demultiplexer 22 which extracts the ECM control messages from the data stream TS(D.EMB.) received and which transmits them to a smart card 3 inserted into the module. The secure processor 30 of the smart card decrypts the control words CW contained in the ECM messages and it transmits them to the module 2.

According to a preferred embodiment of the invention, the control words CW are transmitted from the module 2 to the decoder 1 across the control interface ITCOM. The details of the transmission of the control words via the ITCOM interface will be explained later in conjunction with Figures 3 and 4.

Preferably, the data stream TS(D.EMB.) which is received by the module 2 is retransmitted as is to the decoder (link 29) without being modified (TS'(D.EMB) = TS(D.EMB.)). It is received in the decoder by a demultiplexer 15 which extracts the video or audio data packets corresponding to the programme which the user wishes to view and which transmits them to the descrambler 16 so as to be descrambled before being transmitted to the MPEG decoder 14. For this purpose the descrambler 16 receives the control words CW from the module 2 via the ITCOM interface.

According to a first variant embodiment, the module 2 extracts the ECM control messages from the data stream TS(D.EMB.) and replaces them, in the data stream TS'(D.EMB.) transmitted to the decoder, with stuffing packets. This variant is represented diagrammatically via the link 28 shown dashed.

According to a second variant embodiment, the demultiplex 22, contained in the module 2, extracts the video or audio data packets corresponding to the programme which the user wishes to view and it transmits them in the data stream TS'(D.EMB.) so that they are

received directly by the descrambler 16 of the decoder. This variant is represented diagrammatically by the link 27 shown dashed.

Also represented dashed in Figure 2 is a smart card 4 which can be inserted into the decoder 1 and which belongs to the conditional access system of a second service provider. Indeed, the decoder can comprise an integrated conditional access system for accessing the services of the second provider and furthermore comprise several connectors for modules 2 so as to access the services of several other providers.

It is for this reason that the decoder comprises a demultiplexer 15 and a descrambler 16. The access control software application CA' of the second provider is executed in the microcontroller 11. When the user selects a service of the second provider, the stream TS(D.EMB.) is transmitted directly to the demultiplexer 15 via a link 19. This demultiplexer extracts the control messages ECM' and transmits them to the secure processor 40 of the smart card 4 which, with the aid of the key K', decrypts the control words CW' contained in the messages ECM' and sends them unenciphered to the descrambler 16, so as to descramble the services selected by the user.

According to a third variant embodiment of the invention, the data stream TS(D.EMB.) is transmitted from the decoder 1 to the module 2 so that the latter extracts the control words CW and retransmits them unenciphered to the decoder, but unlike the variants mentioned earlier, the stream TS(D.EMB.) is not returned via the ITTS interface to the decoder. Only the control words are transmitted to the decoder after having been decrypted by the module. The stream TS(D.EMB.) is for its part sent directly to the demultiplexer 15 of the decoder via the link 19 inside the decoder.

According to a fourth variant embodiment of the invention, the control words CW are not transmitted unenciphered across the ITCOM interface. They are

encrypted by the microcontroller 21 of the module 2 using a second key, different from the key K used to encrypt the control words upon their transmission in the data stream TS(D.EMB.), before being transmitted over the ITCOM interface. This variant thus offers increased security since now no element travels unenciphered via the interface between the module and the decoder.

The microcontroller 11 of the decoder 1 will therefore have to decrypt, using this second key, the control words received by the ITCOM interface before transmitting them to the descrambler 16.

In a first embodiment of this variant, the module 2 and the decoder 1 generate, before a single control word travels through the ITCOM interface, a session key SSK by using the Diffie Hellman protocol, which is well known to the person skilled in the art. Thereafter, all the control words are encrypted in the module using the session key SSK, then are transmitted to the decoder in this encrypted form across the ITCOM interface before being decrypted, using the session key, in the decoder.

In this embodiment, a different session key is generated each session, that is to say each time the user selects a programme which needs to be descrambled in the module 2.

In a second embodiment of this variant, the decoder 1 and the module 2 each contain a secret key K2 which is stored in a secure area of the decoder or of the module, for example in a secure processor. This secret key is unique for each decoder and if several modules are plugged into the decoder, they all contain the secret key of the decoder.

In this embodiment, the control words are therefore encrypted with the secret key K2 in the module before being transmitted to the decoder via the ITCOM interface; they are then decrypted in the decoder using the key K2.

The principle of the invention is particularly advantageous since it makes it possible to harness the demultiplexer and the descrambler which are already contained in the decoder so as to use them even when the conditional access system of another provider, contained in a detachable module, is used.

It should be stated in this regard that the demultiplexer and the descrambler components have been standardized within the framework of the DVB digital broadcasting standard in particular. Only the conditional access system (access control software, decryption algorithm and key, smart card, etc.) remains a proprietary system of the service provider.

We shall now describe in greater detail, in conjunction with Figures 3 and 4, how the control words CW are transmitted via the command interface ITCOM.

The ITCOM interface between the terminal (decoder) 1 and the module 2 uses a communication protocol which is represented diagrammatically in Figure 3 and which comprises several layers:

- a "Physical" layer (50, 60) which comprises the physical connector and low-level software for initializing the communication;
- a "Link" layer (51, 61) which forms the link between the Physical layer which deals only with bytes (8 bits of data) and the higher layer which can deal with much larger packets of data;
- a "Transport" layer (52, 62) which optimizes the occupation of the data stream by the various session in progress and which conveys the messages from the higher layer to the "Link" layer;
- a "Session" layer (53, 63) which opens, closes and manages the sessions in which the messages of the applications using the ITCOM interface are transmitted.

Represented in Figure 3 are on the one hand the access control application CA 65 which is executed in the microcontroller 21 (cf. Fig. 2) of the module 2 and on

the other hand a software resource 55 called CAS (standing for "Conditional Access Support") of the terminal 1.

This resource CAS defines a certain number of specific objects intended for use by the access control applications of the modules connected to the terminal. It communicates with the four layers of the ITCOM interface across a " Standard API " (the abbreviation API standing for "Application Programming Interface"), the standard API defining other objects which are used by all the resources of the system.

Likewise, the access control application 65 of the module uses the objects defined by the resources of the terminal through a standard API.

It was seen earlier that, according to the principle of the invention, the control words which are decrypted in the module 2 are thereafter transmitted to the terminal 1 across the ITCOM interface. In order that the control words may "cross" the various layers of the ITCOM interface, they must be enclosed in specific objects, comprehensible both to the application CA and to the resource CAS, which will be called "CPTS_CW()" hereinafter. Of course, when the control words are transmitted encrypted with the aid of a second key (SSK or K2) as in the fourth variant set forth above, they are enclosed, in this encrypted form, in the objects CPTS_CW().

Figure 4 illustrates the protocol for communication between the access control application CA of the module and the resource CAS of the terminal which allows, according to the invention, protection against copying.

The time scale has been represented by two downward vertical arrows.

After a first session-opening phase (not represented), the application CA of the module checks that the resource CAS of the terminal does indeed support

protection against copying over the ITCOM interface. To do this, the application CA sends during a step 100 an object "CPTS_identification()" which will be defined later. The resource CAS responds by sending, in step 101, an object "CPTS_identification_answer()" which indicates whether the resource CAS does or does not support protection, against copying. In the event of a positive response, the application CA of the module then regularly sends (steps 102a, 102b, 102i) the control words enclosed in the objects "CPTS_CW()" as and when they are decrypted by the module.

Conversely, in the event of a negative response, the terminal is not considered reliable. Consequently, the control words are not sent to the terminal and the data of the stream TS(D.EMB.) are not descrambled in the terminal. Any appropriate action can be envisaged at that moment (displaying of a message destined for the user by way of the User Interface resource of the terminal for example).

As seen above, it is necessary, in order to implement the protocol of Figure 4, to define additional objects over and above those already envisaged in the existing standards.

Identification objects

The function of the identification objects is to allow an access control application CA of a module supporting protection against copying to check whether the terminal to which the module is connected also supports protection against copying. That is to say, whether the resource CAS of the terminal possesses the functionality of protection against copying.

The first object used is the following:

```
CPTS_identification() {
    CPTS_identification_tag        24 bits   uimsbf
    Length_field() = 0             8 bits    uimsbf
    }
```

The notation used here corresponds to that used in the aforesaid standard EN 50221 in which the objects are generally defined by means of a tag (here the "CPTS_identification_tag"), of a length field ("Length_field()") and of parameters which can take various values.

The CPTS_identification_tag tag is a number defined on 24 bits and the notation "uimsbf" (stemming from "unsigned integer most significant bit first") signifies that this pertains to an unsigned integer whose most significant bits (highest order bits) are always situated first.

The "Length_field()" field defines the length in terms of number of bytes of the parameters forming part of the object. Since here the object "CPTS_identification()" contains no parameter, the length field is equal to zero.

The second object used is the following:

```
CPTS_identification_answer() {
     CPTS_identification_answer_tag     24 bitsuimsbf
     Length_field() = 1
     Identification_result               8 bits  uimsbf
}
```

This "CPTS_identification_answer()" object is used to indicate whether the resource CAS of the terminal does or does not support protection against copying according to the invention. It comprises a "CPTS_identification_answer_tag()" tag and a length field which is equal to 1 since the object also comprises an "Identification_result" parameter defined on 8 bits. This parameter is for example a Boolean indicating whether or not protection against copying is supported by the resource CAS.

Other parameters can be envisaged, for example to indicate a version number of the copy protection.

Contro- word transmission objects

These objects enclose the control words which are decrypted in the module. They allow the access control application CA of the module to send them, across the various layers of the ITCOM interface, to the resource CAS of the terminal which can thereafter utilize them by transmitting them to the descrambler 16 (Fig. 2).

These objects have the following format:

```
CPTS_CW()  {
    CPTS_CW_tag                  24 bits uimsbf
    Length_field()
    MPEG2_stream_type             8 bits uimsbf
    MPEG2_pid                    16 bits uimsbf
    Odd_CW                      128 bits uimsbf
    Even_CW                     128 bits uimsbf
}
```

They comprise a "CPTS_CW_tag" tag, a length field "Length_field()" and parameters identifying:

- the type of data packet transported (video, audio or other data), in "MPEG2_stream_type" defined on 8 bits;
- the PID (standing for "Programme Identifier"), that is to say the programme identifier associated with the packet transported in "MPEG2_pid", defined on 16 bits;
- the odd ("Odd_CW") and even ("Even_CW") control words defined on 128 bits each.

Indeed, it is well known that a succession of even and odd control words is transmitted in the TS data stream, each control word being transmitted in advance relative to the data packets which are scrambled with this control word. The descrambler therefore continuously memorizes the even control word serving to descramble the

current data packet and the odd control word serving to descramble the next packet (or vice versa).

The "CPTS_CW()" object comprises, in a first embodiment, parameters making it possible to send both an even control word (in "Even_CW") and an odd control word (in "Odd_CW"). It can also comprise, in another embodiment, a parameter "CW", on 128 bits, containing the control word and a parameter "Type_CW" on 8 bits, defining the type, even or odd, of the control word transmitted.

Of course, the invention is not limited to the exemplary embodiments which are mentioned hereinabove. In particular, the person skilled in the art will be able to introduce any variant into the definition of the identification objects and control-word transmission objects by adding other parameters to these objects.

Moreover, although the invention has been described with reference to the DVB-CI standard it is not limited to the framework of this standard. The invention can in particular be advantageously applied within the framework of the American NRSS (standing for "National Renewable Security Standard") standard.

CLAIMS

1. Multimedia digital terminal (1) intended for receiving a stream (TS(D.EMB.)) of digital data scrambled by control words (CW), said control words being contained in said stream (TS(D.EMB.)) in encrypted form, and intended to cooperate with a detachable module (2) for descrambling said data stream,

said terminal being able to transmit the scrambled data stream (TS(D.EMB.)) to the detachable module,

characterized in that it is furthermore capable of receiving from said detachable module the decrypted control words (CW), and

in that it comprises a descrambler (16) capable of descrambling the digital data stream by using the control words (CW) received from the detachable module (2).

2. Digital terminal according to Claim 1, characterized in that it is furthermore able to receive from the detachable module (2) the scrambled digital data stream (TS'(D.EMB.)), said data stream received by the terminal not being modified relative to the data stream (TS(D.EMB.)) transmitted by the terminal.

3. Digital terminal according to Claim 1, characterized in that it is furthermore able to receive from the detachable module (2) the scrambled digital data stream (TS'(D.EMB.)) from which, relative to the data stream (TS(D.EMB.)) transmitted by the terminal, the data packets containing the control words (CW) have been removed.

4. Digital terminal according to one of Claims 1 to 3, characterized in that said terminal is able to transmit the scrambled data stream (TS(D.EMB.)) to the

detachable module across a first interface (ITTS) with said detachable module, and

in that it is furthermore capable of receiving from said detachable module the decrypted control words (CW) across a second interface (ITCOM) with said module.

5. Terminal according to Claim 4, in combination with Claims 2 and 3, characterized in that it is furthermore able to receive from the detachable module (2), across said first interface (ITTS), the scrambled digital data stream (TS'(D.EMB.)).

6. Multimedia digital terminal (1) intended for receiving a stream (TS(D.EMB.)) of digital data scrambled by control words (CW), said stream of data (TS(D.EMB.)) containing the control words encrypted using a first key (K), and intended to cooperate with a detachable module (2) for descrambling said data stream,

said terminal being able to transmit the scrambled data stream (TS(D.EMB.)) to the detachable module across a first interface (ITTS) with said detachable module,

characterized in that it is furthermore capable of receiving from said detachable module the decrypted control words (CW) which are encrypted using a second key (SSK, K2) before being transmitted across a second interface (ITCOM) with the module (2), and

in that it comprises:

- means for decrypting said control words received from the detachable module using said second key (SSK, K2); and
- a descrambler (16) capable of descrambling the digital data stream (TS(D.EMB.)) by using said decrypted control words (CW).

7. Module (2) intended for cooperating with a digital terminal according to Claim 1, said module being

able to receive from the terminal a scrambled digital data stream (TS(D.EMB.)), characterized in that said module is furthermore capable of:

- extracting from the data stream (TS(D.EMB.)) the control words (CW) having served to scramble the digital data;
- decrypting said control words; and
- transmitting the decrypted control words (CW) to said terminal.

8. Module according to Claim 7, characterized in that it is furthermore adapted for returning the scrambled digital data stream (TS'(D.EMB.)) to the terminal without modifying said stream.

9. Module according to Claim 7, characterized in that it is furthermore adapted for returning the scrambled digital data stream (TS'(D.EMB.)) to the terminal by removing, relative to the data stream (TS(D.EMB.)) transmitted by the terminal, the data packets containing the control words.

10. Module according to one of Claims 7 to 9, characterized in that it is able to receive the digital data stream (TS(D.EMB.)) across a first interface (ITTS) with said terminal (1), and

in that it is furthermore capable of transmitting the decrypted control words to said terminal across a second interface (ITCOM) with said terminal.

11. Module according to one of Claims 7 to 10, characterized in that it is able to cooperate with a detachable security element (3) for decrypting the control words, said module being capable of:

- extracting from the digital data stream (TS(D.EMB.)) messages (ECM) containing the encrypted control words;

- transmitting said messages (ECM) to a security element (3) inserted into said module;
- receiving from said security element (3) the decrypted control words (CW); and
- transmitting the decrypted control words to the digital terminal (1) with which it cooperates.

12. Module (2) intended for cooperating with a digital terminal according to Claim 6, said module being able to receive from the terminal a scrambled digital data stream (TS(D.EMB.)) across a first interface (ITTS) with the terminal (1), characterized in that said module is furthermore capable of:
- extracting from the data stream (TS(D.EMB.)) the control words (CW) having served to scramble the digital data;
- decrypting said control words; and
- encrypting said control words using the second key (SSK, K2); and
- transmitting said encrypted control words (CW) to the terminal across a second interface (ITCOM) with said terminal.

13. Module according to one of Claims 10 or 12, characterized in that it pertains to a module according to the DVB-CI standard and in that the first interface (ITTS) of the module is the interface of the transport stream according to the MPEG-2 standard and the second interface (ITCOM) is the control interface.

14. Method for descrambling a stream (TS(D.EMB.)) of digital data, scrambled by control words (CW), which is received by a multimedia digital terminal (1), said control words (CW) being contained in said stream in encrypted form, the method comprising a first step consisting in:

transmitting the scrambled data stream (TS(D.EMB.)) to a detachable module (2),

characterized in that it furthermore comprises the steps consisting, for the detachable module (2), in:

- extracting from the data stream (TS(D.EMB.)) the control words (CW) having served to scramble the digital data;
- decrypting said control words; and
- transmitting the decrypted control words (CW) to said terminal.

15. Method for descrambling a stream (TS(D.EMB.)) of digital data, scrambled by control words (CW), which is received by a multimedia digital terminal (1), said stream of data containing said control words (CW) encrypted using a first key (K), the method comprising a first step consisting in:

transmitting the scrambled data stream (TS(D.EMB.)) to a detachable module (2),

characterized in that it furthermore comprises the steps consisting, for the detachable module (2), in:

- extracting from the data stream (TS(D.EMB.)) the control words (CW) having served to scramble the digital data;
- decrypting said control words;
- encrypting said control words using a second key (SSK, K2); and
- transmitting the encrypted control words (CW) to said terminal; and,

for the terminal (1), in:

- decrypting said control words using the second key (SSK, K2); and
- descrambling the digital data stream by using said decrypted control words.

16. Method for transferring control words (CW) between a module according to one of Claims 7 to 13 and a

digital terminal according to one of Claim 1 to 6, characterized in that it comprises the steps consisting:

- for the module (2), in sending (100) a first identification object ("CPTS_identification()") to the terminal (1);
- for the terminal (1), in sending (101), in response to said first object, a second identification object ("CPTS_identification_answer()") indicating whether the terminal is or is not able to receive the control words from the module (2); and
- for the module (2), in the event of a positive response with said second object, in sending (102a, 102b, 102i) said control words (CW) enclosed in a third object ("CPTS_CW()").

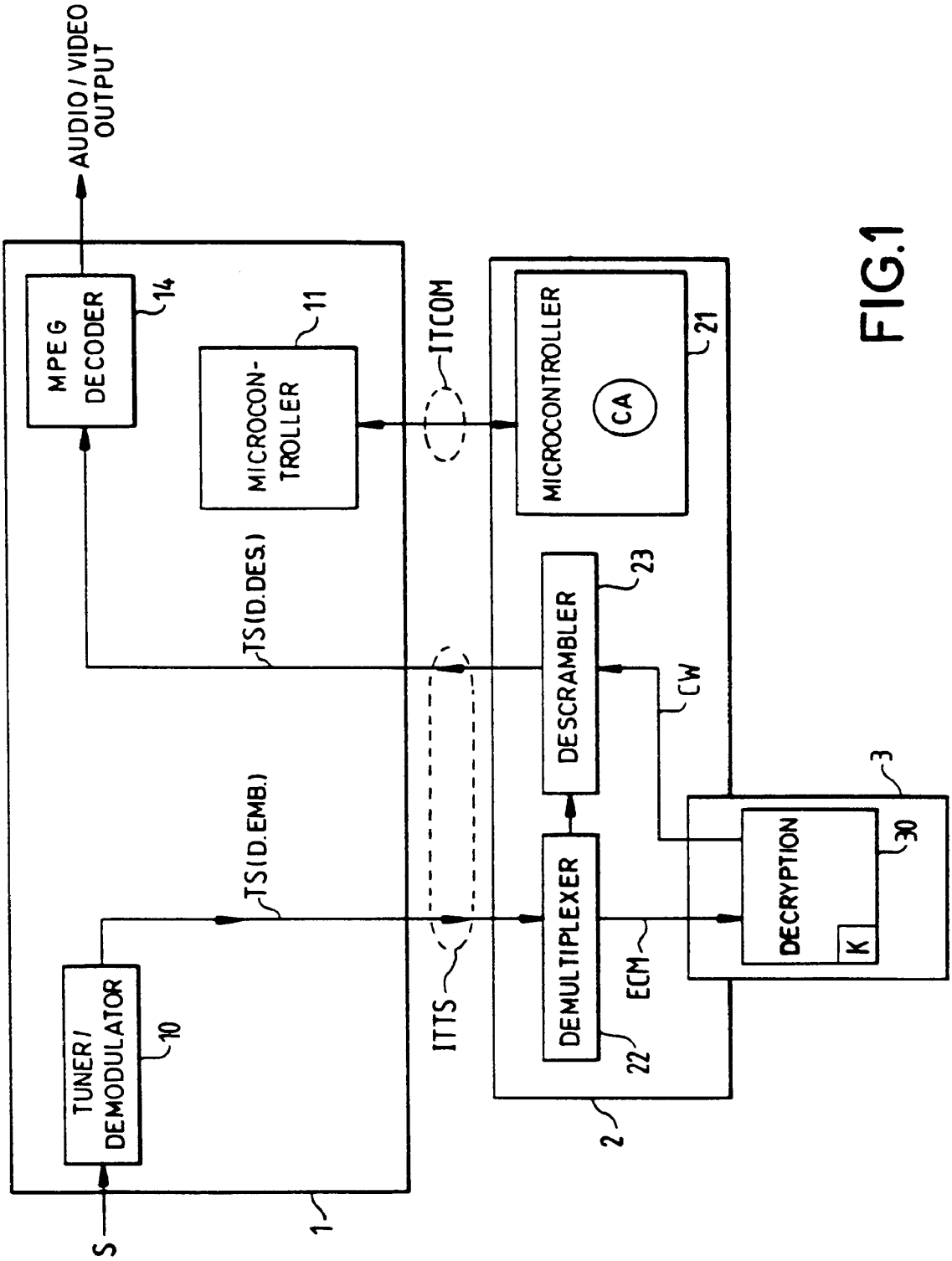

AUDIO / VIDEO OUTPUT
MPEG DECODER
14
MICROCON-TROLLER
11
ITCOM
MICROCONTROLLER
CA
21
TS(D.DES.)
DESCRAMBLER
23
CW
TS(D.EMB.)
DEMULTIPLEXER
ECM
DECRYPTION
K
30
3
ITTS
22
TUNER / DEMODULATOR
10
S
1
2

FIG.1

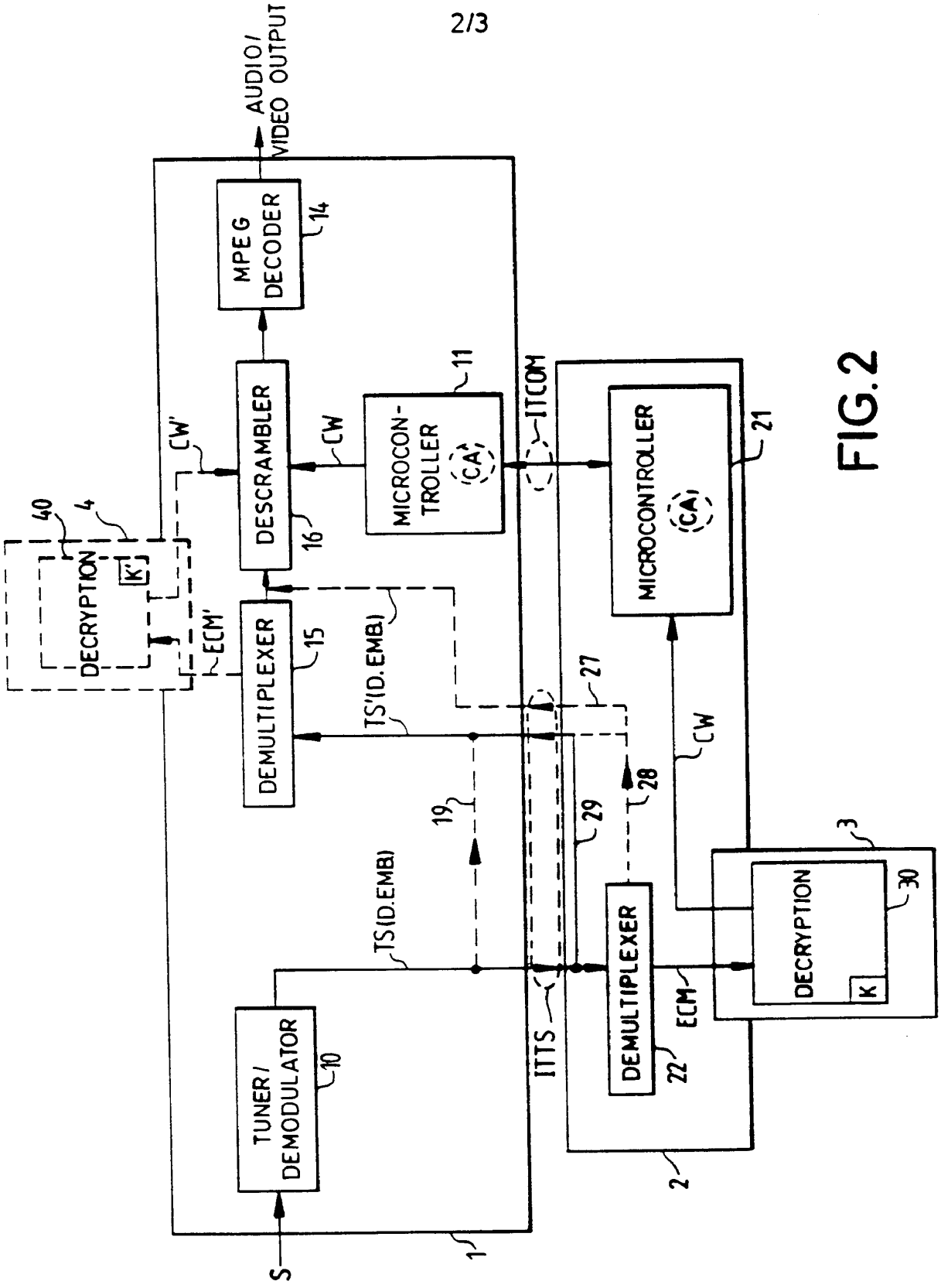

AUDIO/
VIDEO OUTPUT
MPEG
DECODER
14
DESCRAMBLER
16
CW'
CW
MICROCON-
TROLLER
(CA)
11
ITCOM
MICROCONTROLLER
(CA)
21
DECRYPTION
K'
40
4
ECM'
DEMULTIPLEXER
15
TS'(D.EMB)
27
CW
19
TS(D.EMB)
28
29
3
DECRYPTION
K
30
DEMULTIPLEXER
22
ECM
ITTS
TUNER/
DEMODULATOR
10
S
1
2

FIG.2

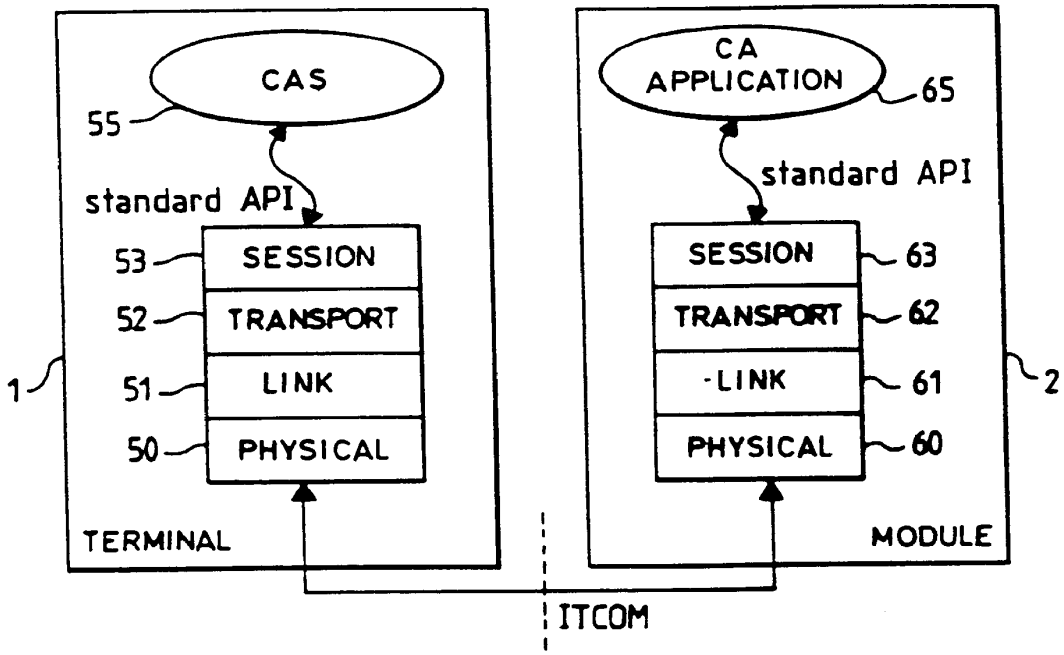

CAS
55
standard API
53
SESSION
52
TRANSPORT
1
51
LINK
50
PHYSICAL
TERMINAL
CA
APPLICATION
65
standard API
SESSION
63
TRANSPORT
62
LINK
61
2
PHYSICAL
60
MODULE
ITCOM

FIG.3

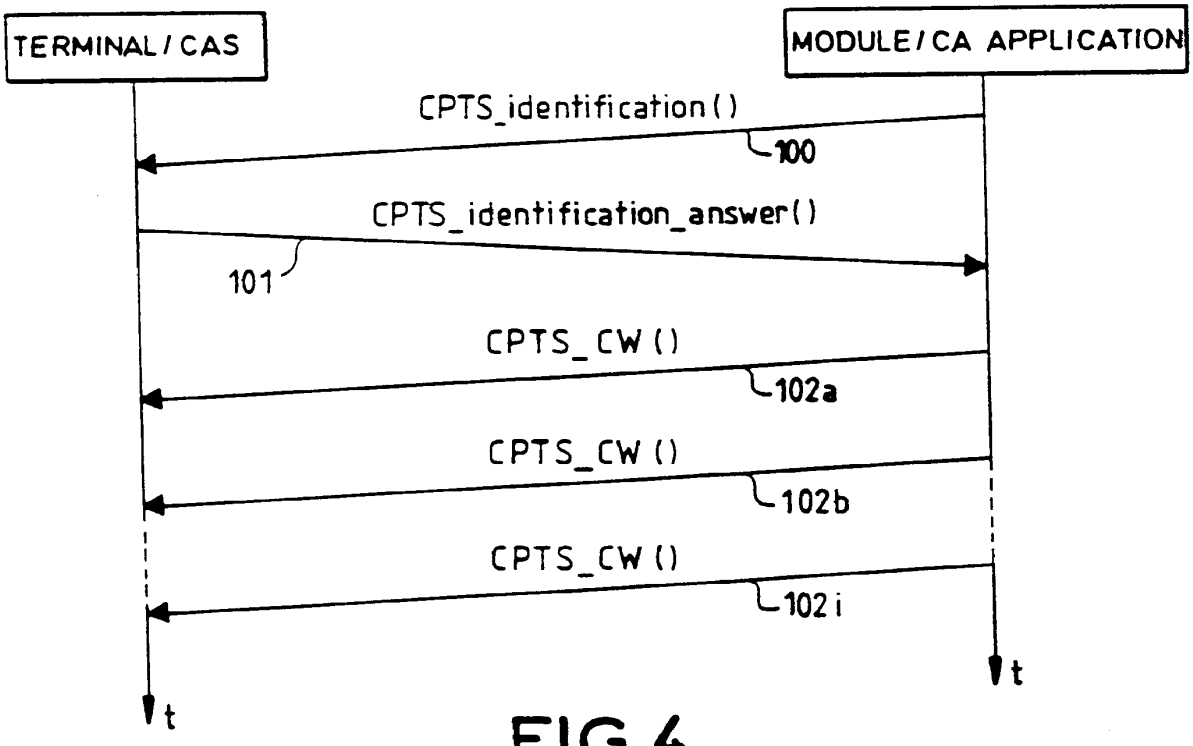

TERMINAL / CAS
MODULE / CA APPLICATION
CPTS_identification()
100
CPTS_identification_answer()
101
CPTS_CW()
102a
CPTS_CW()
102b
CPTS_CW()
102i
t
t

FIG.4

INTERNATIONAL SEARCH REPORT

Interr. nal Application No
PCT/EP 00/08439

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N5/00 H04N7/16 H04N7/167

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 923 245 A (SONY UK LTD) 16 June 1999 (1999-06-16) page 3, column 4, line 19 -page 7, column 11, line 10 figures 1-7	1-15
A	WO 96 06504 A (CHANEY JOHN WILLIAM ;THOMSON CONSUMER ELECTRONICS (US)) 29 February 1996 (1996-02-29) page 6, line 1 -page 19, line 16 figures 1-4	1-15

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
7 December 2000	14/12/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Van der Zaal, R

1

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INTERNATIONAL SEARCH REPORT

Inter. nal Application No
PCT/EP 00/08439

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 706 291 A (NEWS DATACOM LTD) 10 April 1996 (1996-04-10) page 2, column 2, line 47 -page 3, column 3, line 19 page 5, column 8, line 12 - line 50 page 6, column 9, line 47 -column 10, line 30 figures 1-3	1,6,7, 14,15

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

information on patent family members

Interr. nal Application No
PCT/EP 00/08439

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		JP 11331801 A	30-11-1999
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		EP 0878088 A	18-11-1998
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		US 5774546 A	30-06-1998
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Form PCT/ISA/210 (patent family annex) (July 1992)

(12) DEMANDE INTERNATIONALE PUBLIÉE EN VERTU DU TRAITÉ DE COOPÉRATION EN MATIÈRE DE BREVETS (PCT)

(19) Organisation Mondiale de la Propriété Intellectuelle
Bureau international

(43) Date de la publication internationale
11 octobre 2001 (11.10.2001)

PCT

(10) Numéro de publication internationale
WO 01/75876 A1

(51) Classification internationale des brevets[7] : G11B 20/00, H04L 29/06

(21) Numéro de la demande internationale : PCT/FR01/00572

(22) Date de dépôt international : 28 février 2001 (28.02.2001)

(25) Langue de dépôt : français

(26) Langue de publication : français

(30) Données relatives à la priorité :
00/04222 31 mars 2000 (31.03.2000) FR

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(72) Inventeurs; et

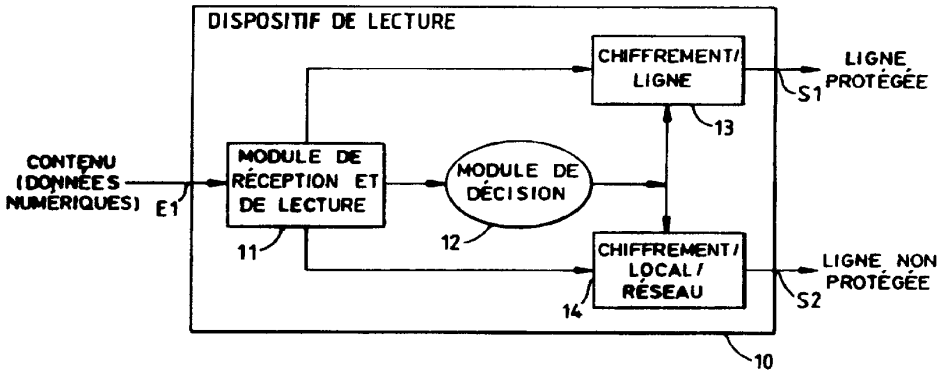
(75) Inventeurs/Déposants *(pour US seulement)* : **DIEHL, Eric** [FR/FR]; Thomson Multimédia, 46, quai Alphonse Le Gallo, F-92648 Boulogne (FR). **ANDREAUX, Jean-Pierre** [FR/FR]; Thomson Multimédia, 46, quai Alphonse Le Gallo, F-92648 Boulogne (FR). **FURON, Teddy** [FR/FR]; Thomson Multimédia, 46, quai Alphonse Le Gallo, F-92648 Boulogne (FR). **CHEVREAU, Sylvain** [FR/FR]; Thomson Multimédia, 46, quai Alphonse Le Gallo, F-92648 Boulogne (FR).

(74) Mandataire : **KOHRS, Martin**; Thomson Multimédia, 46, quai Alphonse Le Gallo, F-92648 Boulogne (FR).

[Suite sur la page suivante]

(54) Title: DEVICE FOR READING, RECORDING AND RESTORING DIGITAL DATA IN A COPY-PROTECTION SYSTEM FOR SAID DATA

(54) Titre : DISPOSITIFS DE LECTURE, D'ENREGISTREMENT ET DE RESTITUTION DE DONNEES NUMERIQUES DANS UN SYSTEME DE PROTECTION CONTRE LA COPIE DESDITES DONNEES



10...READING DEVICE
13...LINE ENCRYPTION
S1...PROTECTED LINE
S2...UNPROTECTED LINE
14...LOCAL NETWORK ENCRYPTION
12...DECISION MODULE
11...RECEIVING AND READING MODULE
E1...CONTENTS (DIGITAL DATA)

(57) Abstract: The invention concerns a device for reading digital data (10) receiving data representing a content designed to be connected to a digital home network. It comprises: first means for encrypting (13) data in accordance with a protection mode specific to a line whereby the device is to be connected to another digital network device, the encrypted data being in that case supplied to a first output (S1); and second means for encrypting (14) data in accordance with a mode specific to the home network, the encrypted data being in that case supplied to a second output (S2). The invention also concerns a device for recording and restoring digital data designed to be connected to said reading device (10).

[Suite sur la page suivante]

WO 01/75876 A1

(81) États désignés *(national)* : AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) États désignés *(régional)* : brevet ARIPO (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), brevet eurasien (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), brevet européen (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), brevet OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Publiée :

— *avec rapport de recherche internationale*

En ce qui concerne les codes à deux lettres et autres abréviations, se référer aux "Notes explicatives relatives aux codes et abréviations" figurant au début de chaque numéro ordinaire de la Gazette du PCT.

(57) Abrégé : Le dispositif de lecture de données numériques (10) recevant des données représentant un contenu est destiné à être raccordé à un réseau numérique domestique. Il comporte: un premier moyen de chiffrement (13) des données selon un mode de protection spécifique à une ligne avec laquelle le dispositif est destiné à être raccordé à un autre dispositif du réseau numérique, les données chiffrées étant dans ce cas fournies à une première sortie (S1); et un deuxième moyen de chiffrement (14) des données selon un mode de protection spécifique au réseau domestique, les données chiffrées étant dans ce cas fournies à une deuxième sortie (S2). L'invention concerne également un dispositif d'enregistrement et un dispositif de restitution de données numériques destinés à être raccordés à ce dispositif de lecture (10).

Dispositifs de lecture, d'enregistrement et de restitution de données numériques dans un système de protection contre la copie desdites données

Domaine de l'invention

L'invention se rapporte d'une manière générale au domaine de la protection contre la copie de données numériques, plus particulièrement dans un environnement de réseau numérique domestique.

Etat de la technique

Un réseau numérique domestique peut véhiculer des données numériques issues de différentes sources extérieures au réseau. Il peut s'agir de données stockées sur des supports détachables tels que des disques optiques, par exemple des disques DVD (de l'anglais "*Digital Versatile Disc*" signifiant littéralement "*Disque Numérique Polyvalent*"), ou des bandes magnétiques, les supports étant soit pré-enregistrés, soit enregistrables.

Il peut aussi s'agir de données diffusées puis injectées sur le réseau numérique domestique, par exemple des signaux de télévision numérique diffusés par satellite, par le câble ou encore par des réseaux numériques hertziens. Les données peuvent également être téléchargées en provenance de l'Internet.

Enfin, un réseau numérique domestique peut en outre être amené à gérer des données numériques stockées localement, par exemple dans un disque dur relié au réseau domestique.

Ces données numériques peuvent être séparées en deux grandes catégories: d'une part les données qui ne nécessitent pas de protection particulière (par exemple, celle qui relèvent d'une création personnelle de l'utilisateur du réseau domestique) et d'autre part les données qui doivent être protégées contre la copie pour garantir les intérêts de leur créateur (film, musique, jeux, etc.).

Divers mécanismes et possibilités existent actuellement pour protéger des données numériques contre une copie illégitime.

Les deux principales techniques de protection sont actuellement:

- le chiffrement des données, qui consiste à transformer des données intelligibles (ou "claires") en données chiffrées ou embrouillées à l'aide d'une clé, cette clé étant soit une clé secrète partagée par le dispositif qui chiffre les données et par celui qui est autorisé à les déchiffrer, soit dans les systèmes de cryptographie asymétrique une clé privée ou publique;

- le tatouage des données, qui consiste à insérer de manière non perceptible un tatouage (communément appelé "Watermark") attaché aux données à protéger. Le tatouage doit être non-modifiable et non effaçable même en cas de transformation des données à protéger.

Les deux techniques ci-dessus peuvent naturellement être associées en combinant le tatouage et le chiffrement des données.

Par ailleurs, les données numériques diffusées sont le plus souvent protégées dans le cadre d'un système à accès conditionnel. Dans ce type de système, les données fournies par différents prestataires de services sont transmises sous forme embrouillée par des mots de contrôle CW (de l'anglais "*Control Word*") afin de garantir que les données ne parviennent qu'aux utilisateurs ayant acquis le droit de les recevoir (par exemple moyennant un abonnement au service). Les mots de contrôle sont eux-mêmes transmis dans le flux de données diffusées après avoir été chiffrés avec un algorithme de clé K, cette clé K étant contenue dans un processeur sécurisé, par exemple inclus dans une carte à puce, qui est fournie aux utilisateurs par le prestataire de service pour leur permettre de déchiffrer les mots de contrôle et donc de désembrouiller les données.

Dans les réseaux numériques domestiques, deux grandes méthodes ont été proposées jusqu'à présent pour utiliser et combiner ces techniques de protection:

- la première méthode consiste à protéger les données qui doivent l'être en les chiffrant / embrouillant localement d'un bout à l'autre du réseau (on parle en général de "*end-to-end protection*" – signifiant littéralement "protection d'un bout à l'autre"), c'est à dire dès leur entrée en un point du réseau jusqu'au moment où elle sont restituées à l'utilisateur (affichage de vidéo sur un écran de téléviseur, diffusion de musique par un haut-parleur, etc.), tous les appareils du réseau utilisant le même type de protection, spécifique au réseau domestique. Les données ne sont donc jamais disponibles en clair dans le réseau, que ce soit sur le bus numérique reliant les appareils entre eux ou dans les appareils eux-même, sauf au moment ultime de leur restitution, généralement sous forme analogique, à l'utilisateur ;

- la seconde méthode consiste à associer une protection locale à chaque type d'appareil du réseau (un type de chiffrement particulier, un système d'accès conditionnel, etc.) avec une "protection de ligne" (ou protection "point-à-point"); dans ce type de méthode, les données sont disponibles en clair à l'intérieur des appareils mais ne sont jamais disponibles en clair sur le bus

numérique reliant les différents appareils du réseau entre eux; les données sont en effet re-chiffrées avant d'être transmises sur le bus.

Exposé de l'invention

Un but de la présente invention est de proposer un système permettant de concilier les différentes méthodes de protection qui ont été proposées jusque là.

L'invention concerne à cet effet un dispositif de lecture de données numériques destiné à être raccordé à un réseau numérique domestique et susceptible de recevoir des données représentant un contenu. Celui-ci comporte, selon l'invention :

- un premier moyen de chiffrement des données selon un mode de protection spécifique à une ligne avec laquelle le dispositif est destiné à être raccordé à un autre dispositif du réseau numérique, les données chiffrées étant dans ce cas fournies à une première sortie; et

- un deuxième moyen de chiffrement des données selon un mode de protection spécifique au réseau domestique, les données chiffrées étant dans ce cas fournies à une deuxième sortie.

Selon une caractéristique avantageuse de l'invention, le dispositif comporte en outre un module de décision adapté à délivrer une permission ou une interdiction de copie et/ ou de lecture desdites données numériques, lesdites données numériques étant fournies au premier ou au deuxième moyen de chiffrement lorsque ledit module de décision délivre une interdiction de copie ou une permission de copie unique.

Selon une autre caractéristique avantageuse de l'invention, lesdites données numériques sont fournies directement à la première et/ou à la deuxième sortie sans être chiffrées lorsque ledit module de décision délivre une permission de copie illimitée.

Selon une autre caractéristique particulière de l'invention, le dispositif ne fournit aucune données numérique à la première ni à la deuxième sortie lorsque ledit module de décision délivre une interdiction de lecture.

Selon une autre caractéristique particulière de l'invention, le module de décision délivre une permission de copie illimitée lorsque lesdites données numériques reçues ne sont pas chiffrées.

Selon une caractéristique préférée de l'invention, le module de décision délivre une permission de copie illimitée lorsqu'en outre lesdites données numériques reçues ne sont pas tatouées.

Selon une autre caractéristique particulière de l'invention, le module de décision délivre une interdiction de lecture lorsque à la fois lesdites données numériques reçues ne sont pas chiffrées et sont tatouées.

Selon une autre caractéristique particulière de l'invention, le module de décision délivre une interdiction de copie lorsque lesdites données numériques reçues sont chiffrées; qu'elles sont stockées sur un support de type enregistrable; et que des informations de contrôle de la copie contenues dans lesdites données indiquent qu'une copie unique est autorisée.

Selon une autre caractéristique particulière de l'invention, le module de décision délivre une interdiction de lecture lorsque lesdites données numériques reçues sont chiffrées; qu'elles sont stockées sur un support de type enregistrable; et que des informations de contrôle de la copie contenues dans lesdites données indiquent qu'aucune copie n'est autorisée.

Selon une autre caractéristique particulière de l'invention, le module de décision délivre une permission de copie unique lorsque lesdites données numériques reçues sont chiffrées; qu'elles sont stockées sur un support de type non-enregistrable ou que ce sont des données diffusées ou téléchargées; et que des informations de contrôle de la copie contenues dans lesdites données indiquent qu'une copie unique est autorisée.

Selon une autre caractéristique particulière de l'invention, le module de décision délivre une interdiction de copie lorsque lesdites données numériques reçues sont chiffrées; qu'elles sont stockées sur un support de type non-enregistrable ou que ce sont des données diffusées ou téléchargées; et que des informations de contrôle de la copie contenues dans lesdites données indiquent qu'aucune copie n'est autorisée.

Selon encore une autre caractéristique avantageuse de l'invention, les informations de permission ou d'interdiction de copie et/ ou de lecture desdites données numériques délivrées par le module de décision sont attachées aux données fournies à la première ou à la deuxième sortie.

Selon un mode de réalisation particulier de l'invention, la première et la deuxième sortie sont reliées respectivement à un unique connecteur pour raccorder le dispositif à un bus numérique du réseau domestique, ledit bus fonctionnant dans un premier mode protégé lorsque les données sont issues de la première sortie et dans un second mode non protégé lorsque les données sont issues de la deuxième sortie.

Avantageusement, le choix de la première ou de la deuxième sortie pour fournir les données est déterminé par le dispositif raccordé au réseau

numérique domestique destiné à recevoir lesdites données émises par le dispositif de lecture sur le réseau domestique.

L'invention concerne également un dispositif d'enregistrement de données numériques destiné à être raccordé à un dispositif de lecture tel que ci-dessus par l'intermédiaire d'un réseau numérique domestique. Selon l'invention, ce dispositif d'enregistrement comporte :

- une première entrée destinée à recevoir des données qui ont été fournies à la première sortie du dispositif de lecture; et
- une seconde entrée destinée à recevoir des données qui ont été fournies à la deuxième sortie du dispositif de lecture.

Selon une caractéristique particulière de l'invention, le dispositif d'enregistrement comporte un moyen de déchiffrement des données selon un mode de protection spécifique à une ligne avec laquelle le dispositif est destiné à être raccordé au dispositif de lecture, ledit moyen de déchiffrement étant relié à la première entrée du dispositif d'enregistrement.

Selon une autre caractéristique particulière de l'invention, le dispositif d'enregistrement comporte en outre un module de décision adapté à analyser les informations de permission ou d'interdiction de copie et/ou de lecture attachées aux données à enregistrer. Le dispositif d'enregistrement délivre les données à enregistrer à une sortie lorsque le module de décision détecte une permission de copie. Par contre, le dispositif d'enregistrement ne délivre aucune donnée à enregistrer à ladite sortie lorsque le module de décision détecte une interdiction de copie.

L'invention concerne aussi un dispositif de restitution de données numériques destinés à être raccordés à un dispositif de lecture tel que ci-dessus par l'intermédiaire d'un réseau numérique domestique. Selon l'invention, ce dispositif comporte :

- une première entrée destinée à recevoir des données qui ont été fournies à la première sortie du dispositif de lecture et qui est reliée à un premier moyen de déchiffrement des données selon un mode de protection spécifique à une ligne avec laquelle le dispositif est destiné à être raccordé au dispositif de lecture ; et
- une seconde entrée destinée à recevoir des données qui ont été fournies à la deuxième sortie dudit dispositif de lecture et qui est reliée à un deuxième moyen de déchiffrement des données selon un mode de protection spécifique au réseau domestique.

Brève description des dessins

L'invention sera mieux comprise à la lecture de la description suivante d'un mode de réalisation particulier, non limitatif, de celle-ci faite en référence aux dessins annexés dans lesquels :

- la figure 1 représente un réseau numérique domestique servant à illustrer le principe de l'invention ;
- la figure 2 représente un dispositif de lecture de données numériques selon l'invention destiné à être raccordé à un réseau domestique;
- la figure 3 représente un dispositif d'enregistrement de données numériques selon l'invention destiné à être raccordé à un réseau domestique;
- la figure 4 représente un dispositif de restitution de données numériques destiné à être raccordé à un réseau domestique;
- la figure 5 illustre un procédé mis en œuvre dans le dispositif de la figure 2 ; et
- la figure 6 illustre un procédé mis en œuvre dans le dispositif de la figure 3.

Description détaillée de modes de réalisation de l'invention

Sur la figure 1, on a représenté un exemple de réseau numérique domestique. Celui-ci se compose d'un certain nombre de dispositifs reliés entre eux par un bus numérique B, par exemple un bus selon la norme IEEE 1394. Ces dispositifs peuvent être divisés en trois catégories :

- les dispositifs de lecture qui sont capables de recevoir des données numériques en provenance de différentes sources de données; sur la figure 1, deux exemples de ces dispositifs sont représentés: le décodeur 1 recevant des données d'une antenne satellite 6, notamment des programmes de télévision numérique, et le lecteur DVD 2 capable de lire des disques DVD 5 ;
- les dispositifs d'enregistrement de données, tel le dispositif 3, qui sont capables d'enregistrer le contenu des données lues par les dispositifs de lecture sur des supports d'enregistrement persistants ; et
- les dispositifs de restitution, tel le téléviseur numérique 4 de la figure 1, qui sont prévus pour restituer le contenu de données lues par un dispositif de lecture.

Bien entendu, cette séparation entre les trois catégories de dispositifs est faite pour les besoins de simplification de l'explication et un appareil d'électronique grand public réel peut très bien regrouper deux catégories de dispositifs décrits ci-dessus, voire les trois. Par exemple, un

téléviseur numérique peut contenir aussi le dispositif de lecture des émissions diffusées sous forme numérique ou bien un lecteur de DVD peut aussi contenir un dispositif d'enregistrement.

Sur la figure 2, on a représenté un dispositif de lecture 10 selon l'invention. Celui-ci reçoit sur son entrée E1 des données numériques représentant un contenu. Ce contenu peut être un contenu pré-enregistré, un contenu enregistré dans le réseau, un contenu diffusé ou un contenu téléchargé. Les données numériques sont reçues par un module de réception et de lecture 11 qui est capable d'interpréter le format des données reçues. En fait ce module est différent selon le type d'appareil appartenant à la première catégorie. Ce module a des fonctions dédiées selon le type de contenu qu'il reçoit: ainsi, si le dispositif de lecture est un lecteur de DVD Vidéo, le module 11 reconnaîtra le format de données embrouillées selon le système CSS (de l'anglais "*Content Scramble System*" signifiant littéralement "*Système d'Embrouillage de Contenu*") utilisé habituellement pour protéger le contenu des disques DVD et sera capable de désembrouiller les données; si le dispositif de lecture est un décodeur numérique, le module 11 reconnaîtra le format de flux de données diffusées protégées par un système d'accès conditionnel et sera capable de désembrouiller les données si l'utilisateur possède les droits nécessaires.

Le dispositif de lecture comprend en outre un module de décision 12 qui effectue un contrôle sur la lecture des données, c'est à dire qu'il détermine si les données lues en entrée peuvent être copiées librement (statut "*Copy-Free*"), ne peuvent être copiées qu'une seule fois (statut "*Copy-Once*"), ne peuvent plus être copiées (statut "*Copy-No-More*"), ne peuvent jamais être copiées (statut "*Copy-Never*") ou bien si ces données lues représentent une copie illégale et ne doivent donc pas être restituées sur un dispositif de restitution. Pour déterminer ces différents statuts, le module de décision utilise un procédé qui sera décrit plus bas en liaison avec la figure 5, à partir, soit de l'ensemble du flux de données qu'il reçoit du module de réception et de lecture 11, soit de seulement certaines informations extraites de ce flux de données, selon le type d'implémentation choisie par l'homme du métier.

Il génère en sortie des informations de gestion de génération de copie, par exemple des informations au format CGMS (de l'anglais "*Copy Generation Management Status*" signifiant littéralement "*Statut pour la Gestion des Générations de Copies*"), qui sont ensuite utilisées par les dispositifs d'enregistrement ou de restitution pour déterminer si les données peuvent être enregistrées ou copiées.

En pratique, ces informations sont transmises à deux modules de chiffrement de sortie 13 et 14 qui, en fonction des informations de gestion de génération de copie reçues, fournissent les données respectivement aux sorties S1 ou S2 sous forme protégée ou non, les informations concernant le statut des données étant également transmises en sortie dans le flux de données.

Si l'information de gestion de génération de copie indique que les données lues représentent une copie illégale, les modules de chiffrement 13 ou 14 ne fourniront aucune donnée en sortie. Il ne sera ainsi pas possible de visualiser le contenu, par exemple s'il s'agit d'un film, ou de l'enregistrer.

Si ces informations indiquent que les données ont un statut "*Copy-Free*", c'est à dire qu'elles peuvent être copiées librement, les données seront transmises sur l'une ou l'autre des sorties S1 ou S2 ou sur les deux sans être chiffrées.

Par contre si ces information indiquent que les données ont un statut "*Copy-No-More*" ou "*Copy-Never*" ou "*Copy-Once*", elles seront transmises aux sorties S1 ou S2 sous forme chiffrée.

Selon l'invention, le dispositif de lecture comprend deux modules de chiffrement de sortie différents. Les sorties S1 et S2 du dispositif sont des sorties numériques, c'est à dire qu'elles sont destinées à être reliées à un bus numérique. Par contre, elles utilisent chacune un mode de protection différent.

Pour la sortie S1, les données sont protégées au niveau de la ligne, par exemple selon la proposition de protection "DTCP" pour un bus numérique selon la norme IEEE 1394 ("DTCP" est un acronyme de "*Digital Transmission Content Protection*", aussi connu sous le nom de "5C", pour laquelle on pourra se référer pour plus de détails à la publication *"5C Digital Transmission Content Protection White Paper", Rev. 1.0, 14 juillet 1998*, disponible à l'adresse Internet suivante *http://www.dtcp.com/*). Lorsque cette sortie est utilisée, les données sont chiffrées par le module de chiffrement 13 de manière spécifique pour la ligne.

La sortie S2 conduit quant à elle à une ligne non protégée. Dans ce cas, les données sont chiffrées selon un mode de protection local du réseau domestique, de manière à ce que le contenu soit protégé. On pourra notamment utiliser le mode de chiffrement local des données conforme à la proposition XCA (acronyme de "eXtended Conditional Access", pour laquelle on pourra se référer pour plus de détails à la publication "*XCA, A Global Copy Protection System for Home Networks, White Paper v. 1.2*" publiée le 6 janvier 2000). Dans le cas où cette sortie S2 est utilisée, les données sont chiffrées par le module de chiffrement local 14.

Les sorties S1 et S2 du dispositif de lecture ont été représentées de manière séparée à la figure 1 mais il peut en réalité s'agir d'un seul connecteur de sortie permettant de connecter le dispositif au bus B du réseau domestique. Dans ce cas, le bus numérique pourra comporter deux modes distincts de fonctionnement: le mode protégé dans lequel les données sont chiffrées pour une liaison spécifique entre deux appareils du réseau et le mode non protégé dans lequel les données sont chiffrées de manière globale au niveau du réseau.

Le choix du type de sortie dépend en fait de l'appareil destiné à recevoir les données lues par le dispositif de lecture. En effet, le dispositif de lecture de l'invention est destiné à pouvoir être utilisé en liaison avec d'autres dispositifs qui ne supportent qu'un seul mode de protection: soit celui au niveau de la ligne, soit celui au niveau du réseau local. Entre le dispositif qui reçoit les données et celui qui les émet sur le bus à son intention, il existe de manière connue un échange lors duquel le dispositif de lecture connaît le type de protection supporté par l'appareil destinataire et peut ainsi déterminer quelle sortie S1 ou S2 sera choisie pour transmettre les données. Si l'appareil destiné à recevoir les données supporte les deux modes de protection tout comme le dispositif de lecture, le choix de la sortie S1 ou S2 sera prédéterminé selon l'implémentation choisie par l'homme du métier. Il est également possible dans ce cas d'utiliser les deux sorties, c'est à dire de transmettre les données à la fois sur la ligne protégée et sur la ligne non protégée, si celles-ci sont physiquement séparées.

En liaison avec la figure 5, nous allons maintenant décrire le procédé mis en œuvre par le module de décision 12 pour déterminer le statut des données pour la gestion de génération de copie.

Le premier test 100 consiste à vérifier si les données reçues sont chiffrées. Si ce n'est pas le cas (sortie "*N*"), cela signifie que l'on a affaire à un contenu qui est une création de l'utilisateur ou bien à un contenu qui a été piraté. C'est pourquoi un test supplémentaire 101 peut être effectué de manière préférentielle mais non obligatoire, pour déterminer si le contenu est tatoué. Si la réponse est positive (sortie "*O*"), cela signifie que le contenu a été piraté et le dispositif de lecture doit refuser de le lire (sortie "*STOP!*"). Si par contre, le contenu n'est pas tatoué (sortie "*N*" au test 101), alors le contenu est effectivement libre de copie et le statut "*Copy-Free*" lui est attribué.

Si la réponse au premier test 100 est positive (sortie "*O*"), c'est à dire si les données reçues sont chiffrées, le test suivant 102 consiste à détecter le type de support du contenu. Ceci s'applique en particulier pour les supports

détachables tels que les DVD qui peuvent être du type "*Enregistrable*" (par exemple les formats DVD-RAM, DVD-RW, DVD-R) ou du type "*Non enregistrable*" (par exemple DVD-ROM ou DVD vidéo pré-enregistré). Les données diffusées ou téléchargées seront par convention du type "*Non enregistrable*".

Si le support du contenu est du type "*Enregistrable*", le test suivant 103 consiste à détecter si le fournisseur du contenu a donné le droit d'effectuer une copie unique (statut "*Copy-Once*") ou aucune copie (statut "*Copy-Never*") de son contenu. Ces informations de contrôle de la copie communément notées CCI (acronyme de l'anglais "*Copy Control Information*") ou encore CGMS (acronyme de l'anglais "*Copy Generation Management System*" signifiant "système de gestion de la génération de copie") sont présentes dans les données sous une forme déterminée par le fournisseur du contenu et qui est bien connue de l'homme du métier. Si un support du type "*Enregistrable*" a un statut "*Copy-Once*", cela signifie que le support est lui-même la copie unique et qu'il ne doit plus être autorisé de copie. Par conséquent le statut de sortie sera "*Copy-No-More*". Par contre, si celui-ci a un statut "*Copy-Never*", cela signifie qu'il s'agit d'une copie pirate et celle-ci ne doit pas être lue par le dispositif de lecture (sortie "*STOP!*").

Il est à noter que le statut "*Copy-No-More*" signifie qu'il est interdit d'effectuer une génération supplémentaire de copie des données reçues. Ce statut signifie également, dans le cas où nous avons une protection locale au niveau du réseau (par exemple selon la proposition XCA), qu'il est possible d'effectuer une copie locale des données, cette copie n'étant lisible par aucun autre dispositif que ceux du réseau dans lequel elle a été copiée, ou en d'autres termes qu'il n'est pas possible d'effectuer une génération supplémentaire de copie pour un autre réseau domestique.

Si le support du contenu est du type "*Non-enregistrable*" ou si les données reçues sont des données diffusées ou téléchargées, le même test que le test 103 est effectué (test 104) et le statut détecté ("*Copy-Once*" ou "*Copy-Never*") correspond au statut de sortie attribué aux données.

Le statut "*Copy-Once*" autorise également la copie locale au niveau du réseau domestique lorsque nous avons un mode de protection local au réseau.

Nous allons maintenant décrire un dispositif d'enregistrement 20 selon l'invention tel que représenté schématiquement à la figure 3.

Celui-ci comporte deux entrées numériques E2 et E3, la première E2 recevant les données par une ligne protégée et la seconde E3 par une ligne non protégée. Comme on l'a vu plus haut, il peut s'agir en réalité d'une seule connexion physique avec un bus numérique capable de fonctionner dans un mode "protégé" ou dans un mode "non protégé". Le choix de l'entrée dépend du type d'appareil avec lequel le dispositif d'enregistrement est relié et des modes de protection supportés par cet appareil.

Dans le cas où les données sont reçues sur l'entrée E2, elles sont transmises à un module de déchiffrement 21 qui effectue un déchiffrement en utilisant une clé spécifique de la ligne, qui a par exemple été échangée avec le dispositif de lecture ayant envoyé les données sur la ligne.

Les informations concernant le statut des données, c'est à dire les informations de gestion de génération de copie des données, sont extraites du flux de données et analysées par un module de décision 22 selon le procédé qui sera décrit en liaison avec la figure 6 ci-dessous. Celui-ci effectue le contrôle de la copie au niveau du dispositif d'enregistrement.

Si le statut détecté est du type "*Copy-No-More*" ou "*Copy-Never*", l'enregistrement est stoppé et le module de décision 22 donne l'instruction au module de mise en forme pour l'enregistrement 23 de ne transmettre aucune donnée en sortie pour l'enregistrement.

Si en revanche le statut détecté est du type "*Copy-Once*", le module de décision 22 donne l'instruction au module 23 d'effectuer une mise en forme pour l'enregistrement de manière à ce que les données ne soient pas enregistrées en clair. Il peut s'agir par exemple d'un chiffrement selon la proposition CPRM (acronyme de "*Content Protection for Recordable Media*" signifiant littéralement "*Protection de Copie pour Support Enregistrable*" pour laquelle on pourra trouver plus de détails à l'adresse Internet suivante : *http://www.4centity.com/4centity/tech/cprm/*). Les données mises en forme sont ensuite transmises en sortie S3 pour être stockées sur un support d'enregistrement 24.

Lorsque le statut détecté par le module de décision 22 est du type "*Copy-Free*", l'enregistrement des données peut être effectué en clair, c'est à dire sans que les données ne soient mises en forme par le module 23.

Dans le cas où les données sont reçues sur l'entrée E3, elles sont déjà protégées par un chiffrement local au niveau du réseau. Dans ce cas, le dispositif d'enregistrement n'effectue aucun traitement et se contente d'enregistrer les données sous forme chiffrée.

En liaison avec la figure 6, nous allons maintenant décrire le procédé mis en œuvre dans le module de décision 22 du dispositif d'enregistrement.

Le module 22 a deux sources d'informations pour connaître le statut des données vis à vis de la gestion des générations de copie: les informations définies par le système de protection au niveau de la ligne – ces informations étant analysées à l'étape 110 – et les informations intégrées dans le contenu même des données transmises sur la ligne non protégée – informations analysées à l'étape 111. En principe, les deux sources doivent fournir les mêmes statuts de données mais, de manière préférentielle, et pour améliorer la sécurité du système, un test supplémentaire 112 est effectué pour définir le statut le plus restrictif parmi les informations reçues.

L'ordre de restriction parmi les statuts est le suivant:

"*Copy-Never*" = "*Copy-No-More*" > "*Copy-Once*" > "*Copy-Free*" ;

">" signifiant "est plus restrictif que".

Par exemple, si une information analysée à l'étape 110 indique un statut "*Copy-Once*" tandis que celle analysée à l'étape 111 indique un statut "*Copy-Free*", le statut retenu à l'étape 112 sera "*Copy-Once*".

Ensuite, selon le statut défini à l'étape 112, le module de décision 22 du dispositif d'enregistrement autorisera l'enregistrement (statuts "*Copy-Free*" ou "*Copy-Once*") ou bien n'autorisera pas l'enregistrement (statuts "*Copy-No-More*" ou "*Copy-Never*").

Il est à noter que les données reçues sur la ligne non protégée pourront toujours être enregistrées puisque celles-ci bénéficient déjà d'une protection spécifique au réseau local, c'est à dire qu'elles sont chiffrées de telle sorte qu'elles ne peuvent être lues (et restituées) que par un appareil du réseau.

Nous allons maintenant décrire un dispositif de restitution de données 30 selon l'invention tel que représenté à la figure 4.

Celui-ci comporte, comme le dispositif d'enregistrement 20, deux entrées numériques E4 et E5, reliées respectivement à une ligne protégée et à une ligne non protégée. Lorsque les données sont reçues sur l'entrée E4, celles-ci sont déchiffrées par le module de déchiffrement 31 spécifique à la ligne. Elles sont ensuite transmises en sortie S4 pour être restituées. Par exemple, s'il s'agit d'un téléviseur numérique, les données sont transmises au moyen d'affichage (tube cathodique, écran plasma, etc.) pour être visualisées.

Lorsque les données sont reçues sur l'entrée E5, elles sont transmises à un module de déchiffrement local 32 spécifique au réseau dans

lequel se trouve le dispositif. Ce module constitue la fin de la protection "d'un bout à l'autre" du réseau puisque les données ne sont déchiffrées, dans ce mode de protection, que pour être restituées en sortie S4 du dispositif.

Les dispositifs de lecture, d'enregistrement et de restitution de l'invention sont ainsi compatibles avec les différents modes de protection existants dans les réseaux numériques domestiques et permettent ainsi une meilleure interopérabilité des systèmes de protection contre la copie illicite.

Il est à noter que le terme "ligne" tel qu'employé dans toute la description s'entend de tout canal de communication dans un réseau numérique, que ce canal soit constitué par une ligne physique ou par une voie de communication dite "sans fil".

REVENDICATIONS

1. Dispositif de lecture de données numériques (1, 2, 10) destiné à être raccordé à un réseau numérique domestique et susceptible de recevoir des données représentant un contenu, caractérisé en ce qu'il comporte :

- un premier moyen de chiffrement (13) des données selon un mode de protection spécifique à une ligne avec laquelle le dispositif est destiné à être raccordé à un autre dispositif du réseau numérique, les données chiffrées étant dans ce cas fournies à une première sortie (S1) ; et
- un deuxième moyen de chiffrement (14) des données selon un mode de protection spécifique au réseau domestique, les données chiffrées étant dans ce cas fournies à une deuxième sortie (S2).

2. Dispositif selon la revendication 1, caractérisé en ce qu'il comporte en outre un module de décision (12) adapté à délivrer une permission ou une interdiction de copie et/ ou de lecture desdites données numériques,

lesdites données numériques étant fournies au premier (13) ou au deuxième (14) moyen de chiffrement lorsque ledit module de décision (12) délivre une interdiction de copie ("Copy-Never"; "Copy-No-More") ou une permission de copie unique ("Copy-Once").

3. Dispositif selon la revendication 2, caractérisé en ce que lesdites données numériques sont fournies directement à la première (S1) et/ou à la deuxième (S2) sortie sans être chiffrées lorsque ledit module de décision (12) délivre une permission de copie illimitée ("Copy-Free").

4. Dispositif selon l'une des revendications 2 ou 3, caractérisé en ce qu'il ne fournit aucune données numérique à la première (S1) ni à la deuxième (S2) sortie lorsque ledit module de décision (12) délivre une interdiction de lecture ("STOP!").

5. Dispositif selon l'une des revendications 2 à 4, caractérisé en ce que ledit module de décision (12) délivre une permission de copie illimitée ("Copy-Free") lorsque lesdites données numériques reçues ne sont pas chiffrées.

6. Dispositif selon la revendication 5, caractérisé en ce que ledit module de décision (12) délivre une permission de copie illimitée ("Copy-Free") lorsqu'en outre lesdites données numériques reçues ne sont pas tatouées.

7. Dispositif selon l'une des revendications 2 à 4, caractérisé en ce que ledit module de décision (12) délivre une interdiction de lecture ("STOP!") lorsque:

- lesdites données numériques reçues ne sont pas chiffrées ; et
- lesdites données numériques reçues sont tatouées.

8. Dispositif selon l'une des revendications 2 à 4, caractérisé en ce que ledit module de décision (12) délivre une interdiction de copie ("Copy-No-More") lorsque :

- lesdites données numériques reçues sont chiffrées; et
- lesdites données numériques reçues sont stockées sur un support de type enregistrable; et
- des informations de contrôle de la copie contenues dans lesdites données indiquent qu'une copie unique est autorisée.

9. Dispositif selon l'une des revendications 2 à 4, caractérisé en ce que ledit module de décision (12) délivre une interdiction de lecture ("STOP!") lorsque:

- lesdites données numériques reçues sont chiffrées; et
- lesdites données numériques reçues sont stockées sur un support de type enregistrable; et
- des informations de contrôle de la copie contenues dans lesdites données indiquent qu'aucune copie n'est autorisée.

10. Dispositif selon l'une des revendications 2 à 4, caractérisé en ce que ledit module de décision (12) délivre une permission de copie unique ("Copy-Once") lorsque:

- lesdites données numériques reçues sont chiffrées; et
- lesdites données numériques reçues sont stockées sur un support de type non-enregistrable ou sont des données diffusées ou téléchargées;
- des informations de contrôle de la copie contenues dans lesdites données indiquent qu'une copie unique est autorisée.

11. Dispositif selon l'une des revendications 2 à 4, caractérisé en ce que ledit module de décision (12) délivre une interdiction de copie ("Copy-Never") lorsque :

- lesdites données numériques reçues sont chiffrées;
- lesdites données numériques reçues sont stockées sur un support de type non-enregistrable ou sont des données diffusées ou téléchargées;
- des informations de contrôle de la copie contenues dans lesdites données indiquent qu'aucune copie n'est autorisée.

12. Dispositif selon l'une des revendications précédentes, caractérisé en ce que les informations de permission ou d'interdiction de copie et/ ou de lecture desdites données numériques délivrées par le module de décision (12) sont attachées aux données fournies à la première (S1) ou à la deuxième (S2) sortie.

13. Dispositif selon l'une des revendications précédentes, caractérisé en ce que la première (S1) et la deuxième (S2) sortie sont reliées respectivement à un unique connecteur pour raccorder ledit dispositif à un bus numérique (B) du réseau domestique, ledit bus fonctionnant dans un premier mode protégé lorsque les données sont issues de la première sortie (S1) et dans un second mode non protégé lorsque les données sont issues de la deuxième sortie (S2).

14. Dispositif selon l'une des revendications précédentes, caractérisé en ce que le choix de la première (S1) ou de la deuxième (S2) sortie pour fournir les données est déterminé par le dispositif raccordé audit réseau numérique domestique destiné à recevoir lesdites données émises par ledit dispositif de lecture sur ledit réseau domestique.

15. Dispositif d'enregistrement de données numériques (3, 20) destiné à être raccordé à un dispositif de lecture (1, 2, 10) selon l'une des revendications 1 à 14 par l'intermédiaire d'un réseau numérique domestique, caractérisé en ce qu'il comporte :

- une première entrée (E2) destinée à recevoir des données qui ont été fournies à la première sortie (S1) dudit dispositif de lecture (10); et
- une seconde entrée (E3) destinée à recevoir des données qui ont été fournies à la deuxième sortie (S2) dudit dispositif de lecture (10).

16. Dispositif selon la revendication 15, caractérisé en ce qu'il comporte un moyen de déchiffrement (21) des données selon un mode de protection spécifique à une ligne avec laquelle le dispositif est destiné à être raccordé au dispositif de lecture, ledit moyen de déchiffrement (21) étant relié à la première entrée (E2) dudit dispositif d'enregistrement.

17. Dispositif selon l'une des revendications 15 ou 16 prises dans leur dépendance de la revendication 12, caractérisé en ce qu'il comporte en outre un module de décision (22) adapté à analyser les informations de permission ou d'interdiction de copie et/ou de lecture attachées aux données à enregistrer,

ledit dispositif d'enregistrement délivrant lesdites données à enregistrer à une sortie (S3) lorsque ledit module de décision (22) détecte une permission de copie ("Copy-Once"; "Copy-free") ;

ledit dispositif d'enregistrement ne délivrant aucune donnée à enregistrer à ladite sortie (S3) lorsque ledit module de décision (22) détecte une interdiction de copie ("Copy-No-More"; "Copy-Never").

18. Dispositif de restitution de données numériques (4, 30) destiné à être raccordé à un dispositif de lecture (1, 2, 10) selon l'une des revendications 1 à 14 par l'intermédiaire d'un réseau numérique domestique, caractérisé en ce qu'il comporte:

- une première entrée (E4) destinée à recevoir des données qui ont été fournies à la première sortie (S1) dudit dispositif de lecture (10) et qui est reliée à un premier moyen de déchiffrement (31) des données selon un mode de protection spécifique à une ligne avec laquelle le dispositif est destiné à être raccordé au dispositif de lecture ;

- une seconde entrée (E5) destinée à recevoir des données qui ont été fournies à la deuxième sortie (S2) dudit dispositif de lecture (10) et qui est reliée à un deuxième moyen de déchiffrement (32) des données selon un mode de protection spécifique au réseau domestique ; et

- une sortie (S4) pour la restitution des données, reliée au premier et au deuxième moyen de déchiffrement.

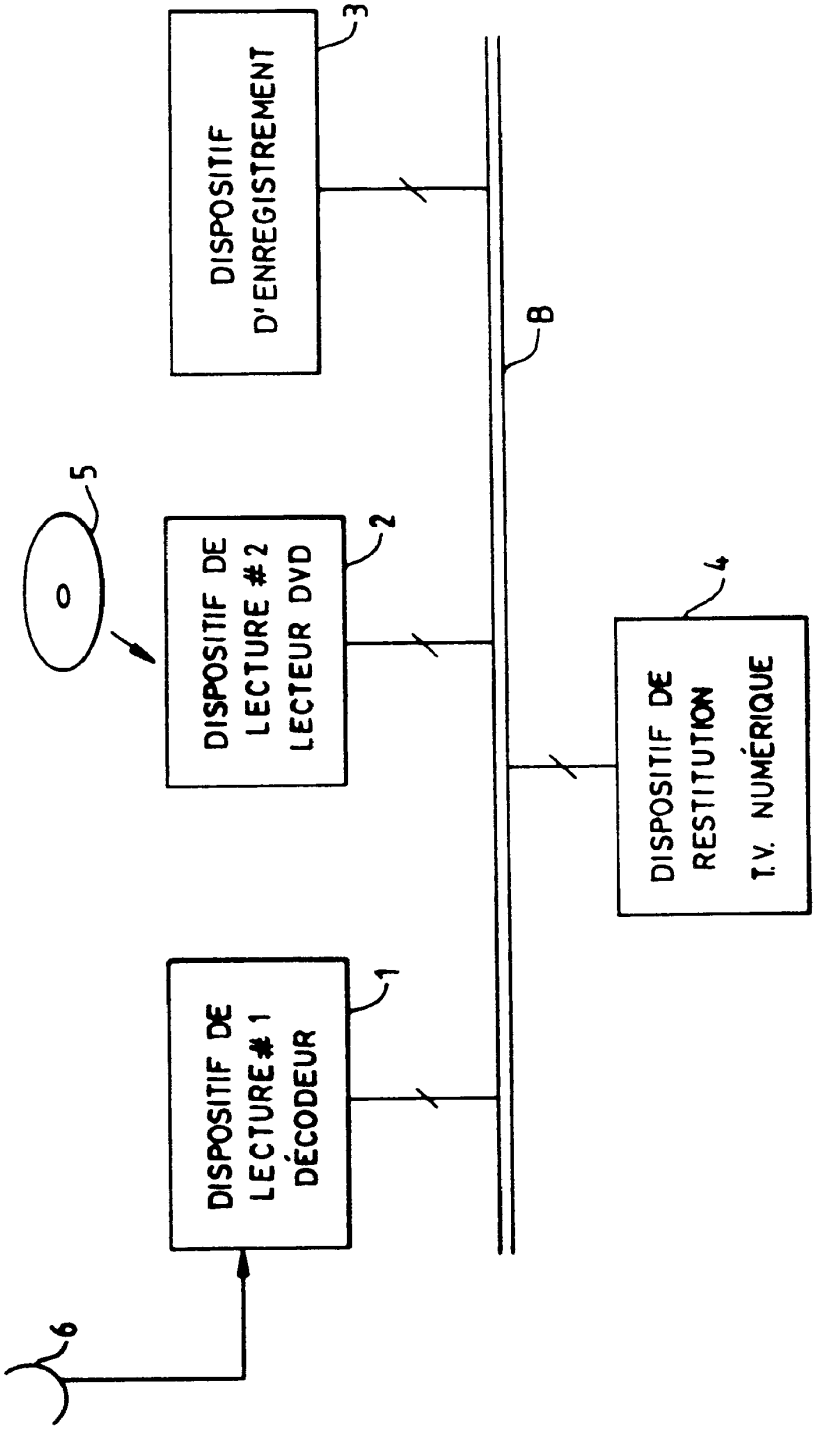

DISPOSITIF D'ENREGISTREMENT
3
8
5
DISPOSITIF DE LECTURE #2 LECTEUR DVD
2
4
DISPOSITIF DE RESTITUTION T.V. NUMÉRIQUE
DISPOSITIF DE LECTURE #1 DÉCODEUR
1
6

FIG.1

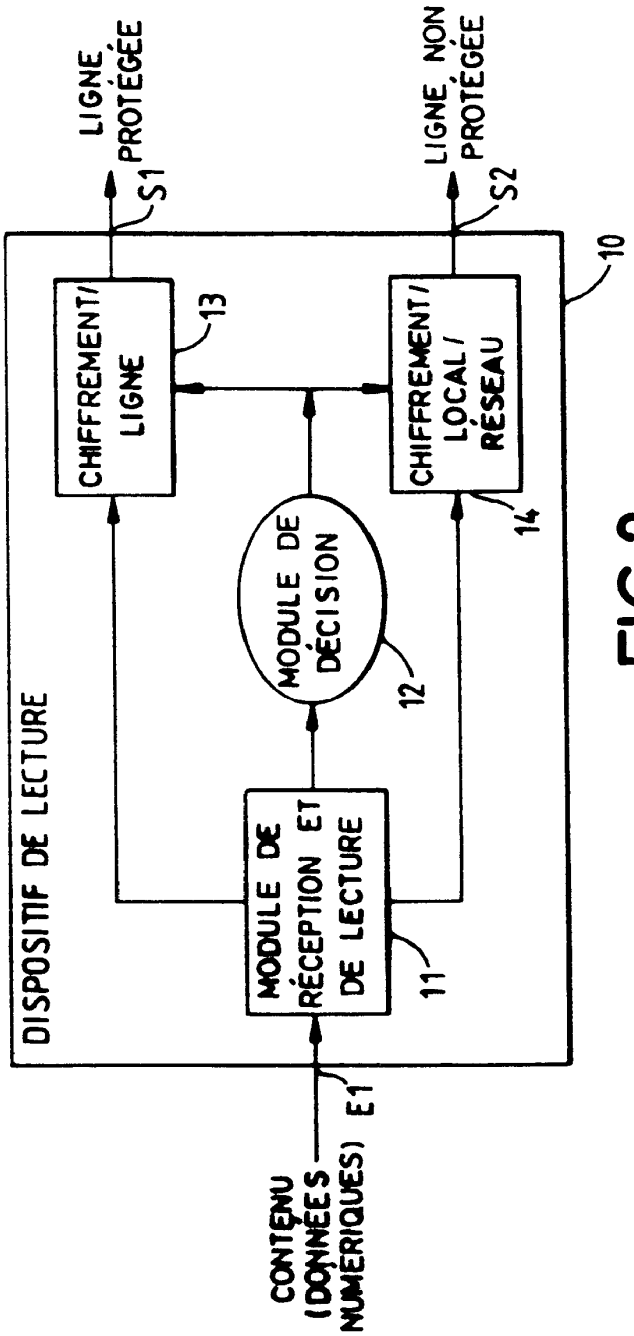

LIGNE PROTÉGÉE
S1
LIGNE NON PROTÉGÉE
S2
10
CHIFFREMENT/ LIGNE
13
CHIFFREMENT/ LOCAL/ RÉSEAU
14
MODULE DE DÉCISION
12
MODULE DE RÉCEPTION ET DE LECTURE
11
DISPOSITIF DE LECTURE
E1
CONTENU (DONNÉES NUMÉRIQUES)

FIG.2

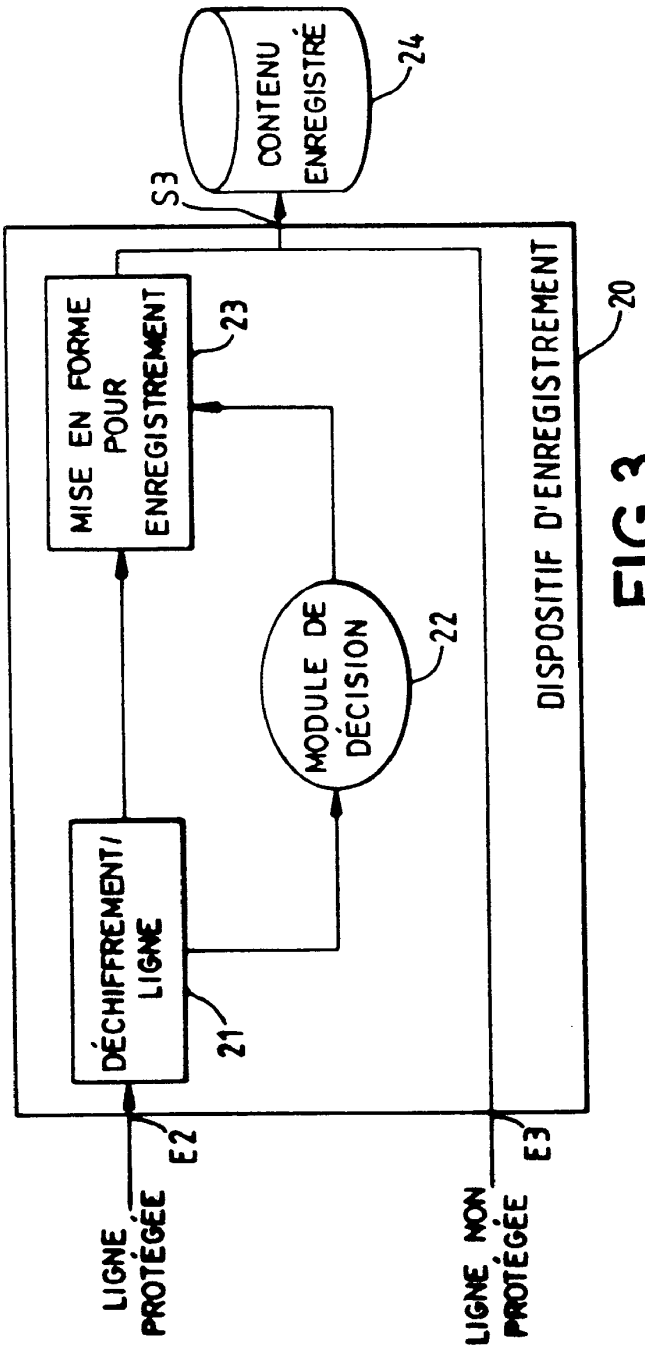

CONTENU ENREGISTRÉ
24
S3
MISE EN FORME POUR ENREGISTREMENT
23
MODULE DE DÉCISION
22
DÉCHIFFREMENT/ LIGNE
21
DISPOSITIF D'ENREGISTREMENT
20
E2
E3
LIGNE PROTÉGÉE
LIGNE NON PROTÉGÉE

FIG.3

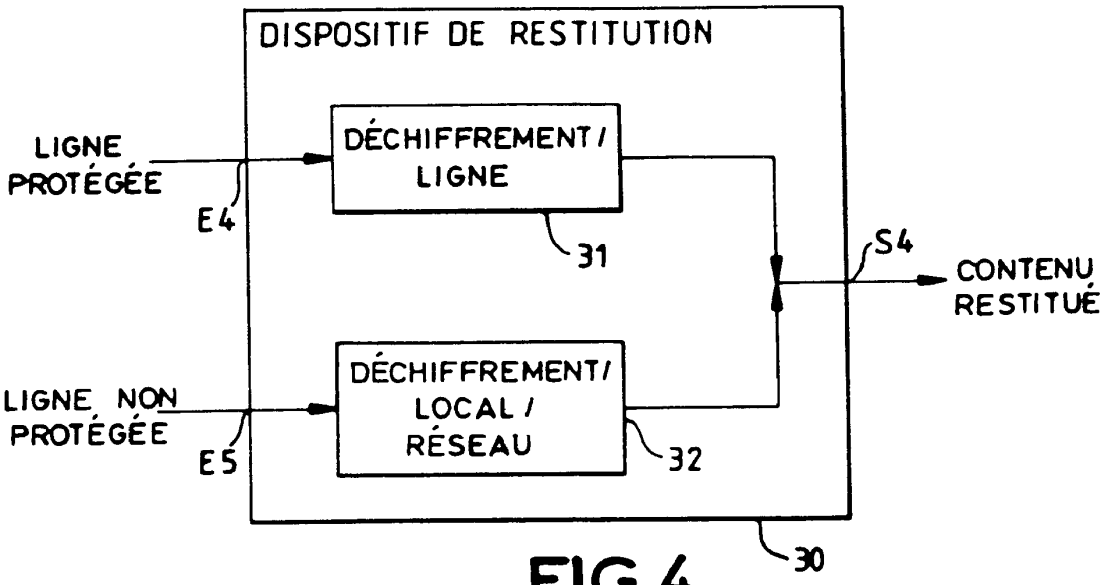

DISPOSITIF DE RESTITUTION
LIGNE PROTÉGÉE
E4
DÉCHIFFREMENT/ LIGNE
31
S4
CONTENU RESTITUÉ
LIGNE NON PROTÉGÉE
E5
DÉCHIFFREMENT/ LOCAL / RÉSEAU
32
30

FIG.4

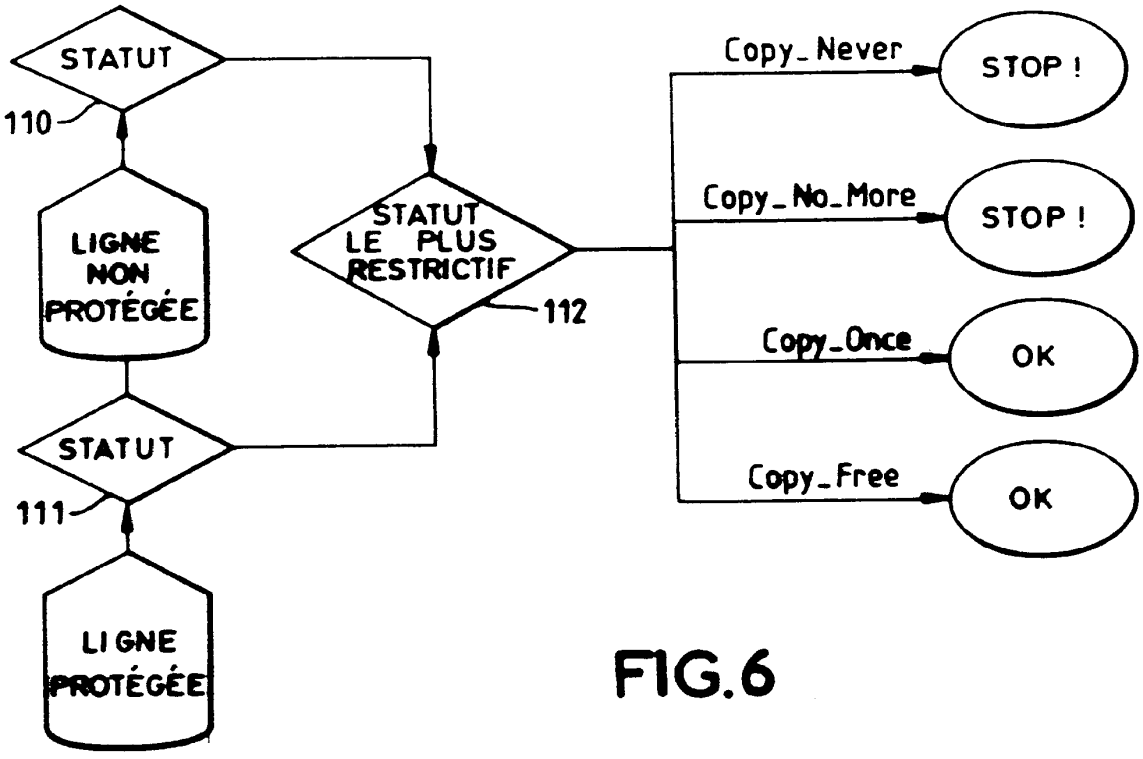

STATUT
110
LIGNE NON PROTÉGÉE
STATUT
111
LIGNE PROTÉGÉE
STATUT LE PLUS RESTRICTIF
112
Copy_Never
STOP !
Copy_No_More
STOP !
Copy_Once
OK
Copy_Free
OK

FIG.6

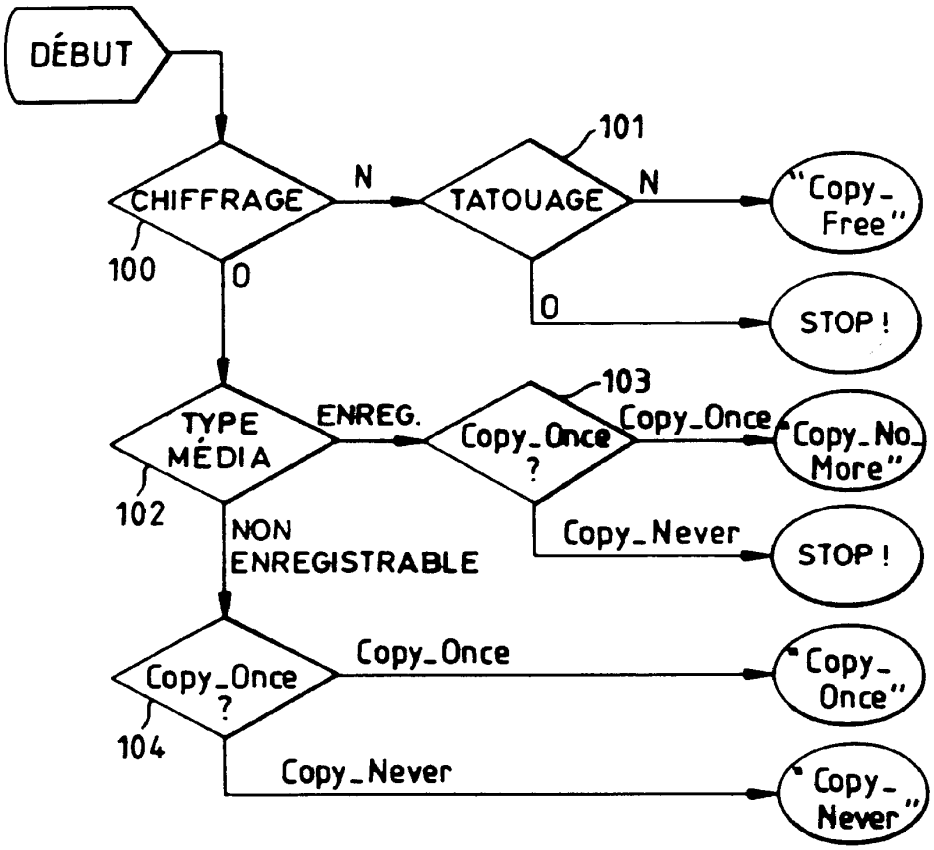

DÉBUT
CHIFFRAGE
100
N
0
101
TATOUAGE
N
0
"Copy_Free"
STOP !
TYPE MÉDIA
102
ENREG.
NON ENREGISTRABLE
103
Copy_Once ?
Copy_Once
"Copy_No_More"
Copy_Never
STOP !
Copy_Once ?
104
Copy_Once
"Copy_Once"
Copy_Never
"Copy_Never"

FIG.5

INTERNATIONAL SEARCH REPORT

International application No
PCT/FR 01/00572

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G11B20/00 H04L29/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G11B H04L G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 382 296 A (PHILIPS NV) 16 August 1990 (1990-08-16) the whole document ---	1
A	EP 0 969 463 A (PIONEER ELECTRONIC CORP) 5 January 2000 (2000-01-05) the whole document ---	1-12,15, 17
A	HITACHI LTD ET AL: "5C Digital Transmission Content Protection White Paper - Revision 1.0" DTCP, 'Online! 14 July 1998 (1998-07-14), XP002134182 Retrieved from the Internet: <URL:http://www.dtcp.com/wp_spec.pdf> 'retrieved on 1999-10-15! cited in the application the whole document -----	1,12

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 May 2001	29/05/2001

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Ogor, M

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Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inform on on patent family members

International application No
PCT/FR 01/00572

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0382296 A	16-08-1990	NL 8900307 A	03-09-1990
		AU 620298 B	13-02-1992
		AU 4911190 A	16-08-1990
		CA 2009290 A	08-08-1990
		CN 1045317 A,B	12-09-1990
		DE 69011543 D	22-09-1994
		DE 69011543 T	02-03-1995
		JP 2250439 A	08-10-1990
		KR 155373 B	16-11-1998
		US 4980912 A	25-12-1990
		US 5144662 A	01-09-1992
EP 0969463 A	05-01-2000	JP 2000023089 A	21-01-2000

Form PCT/ISA/210 (patent family annex) (July 1992)

RAPPORT DE RECHERCHE INTERNATIONALE

Demande Int' ıtionale No
PCT/FR 01/00572

A. CLASSEMENT DE L'OBJET DE LA DEMANDE
CIB 7 G11B20/00 H04L29/06

Selon la classification internationale des brevets (CIB) ou à la fois selon la classification nationale et la CIB

B. DOMAINES SUR LESQUELS LA RECHERCHE A PORTE

Documentation minimale consultée (système de classification suivi des symboles de classement)
CIB 7 G11B H04L G06F

Documentation consultée autre que la documentation minimale dans la mesure où ces documents relèvent des domaines sur lesquels a porté la recherche

Base de données électronique consultée au cours de la recherche internationale (nom de la base de données, et si réalisable, termes de recherche utilisés)
EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERES COMME PERTINENTS

Catégorie °	Identification des documents cités, avec, le cas échéant, l'indication des passages pertinents	no. des revendications visées
A	EP 0 382 296 A (PHILIPS NV) 16 août 1990 (1990-08-16) le document en entier	1
A	EP 0 969 463 A (PIONEER ELECTRONIC CORP) 5 janvier 2000 (2000-01-05) le document en entier	1-12,15, 17
A	HITACHI LTD ET AL: "5C Digital Transmission Content Protection White Paper - Revision 1.0" DTCP, 'en ligne! 14 juillet 1998 (1998-07-14), XP002134182 Extrait de l'Internet: <URL:http://www.dtcp.com/wp_spec.pdf> 'extrait le 1999-10-15! cité dans la demande le document en entier	1,12

☐ Voir la suite du cadre C pour la fin de la liste des documents

☒ Les documents de familles de brevets sont indiqués en annexe

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Date à laquelle la recherche internationale a été effectivement achevée	Date d'expédition du présent rapport de recherche internationale
21 mai 2001	29/05/2001

Nom et adresse postale de l'administration chargée de la recherche internationale	Fonctionnaire autorisé
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Formulaire PCT/ISA/210 (deuxième feuille) (juillet 1992)

RAPPORT DE RECHERCHE INTERNATIONALE

Renseignements relatifs aux mem[illegible]s de familles de brevets

Demande internationale No
PCT/FR 01/00572

Document brevet cité au rapport de recherche	Date de publication	Membre(s) de la famille de brevet(s)	Date de publication
EP 0382296 A	16-08-1990	NL 8900307 A	03-09-1990
		AU 620298 B	13-02-1992
		AU 4911190 A	16-08-1990
		CA 2009290 A	08-08-1990
		CN 1045317 A,B	12-09-1990
		DE 69011543 D	22-09-1994
		DE 69011543 T	02-03-1995
		JP 2250439 A	08-10-1990
		KR 155373 B	16-11-1998
		US 4980912 A	25-12-1990
		US 5144662 A	01-09-1992
EP 0969463 A	05-01-2000	JP 2000023089 A	21-01-2000

Formulaire PCT/ISA/210 (annexe familles de brevets) (juillet 1992)

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
18 October 2001 (18.10.2001)

PCT

(10) International Publication Number
WO 01/77790 A1

(51) International Patent Classification[7]: G06F 1/00, G07F 17/16

(21) International Application Number: PCT/EP01/04088

(22) International Filing Date: 10 April 2001 (10.04.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
00401007.0 11 April 2000 (11.04.2000) EP

(71) Applicant *(for all designated States except US)*: **THOMSON MULTIMEDIA** [FR/FR]; 46, quai Alphonse Le Gallo, F-92100 Boulogne-Billancourt (FR).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **DIEHL, Eric** [FR/FR]; Thomson multimedia, 46, quai Alphonse Le Gallo, F-92648 Boulogne (FR). **FISCHER, Pierre** [FR/FR]; Thomson multimedia, 46, quai Alphonse Le Gallo, F-92648 Boulogne (FR).

(74) Agent: **BONNANS, Arnaud**; Thomson multimedia, 46, quai Alphonse Le Gallo, F-92648 Boulogne (FR).

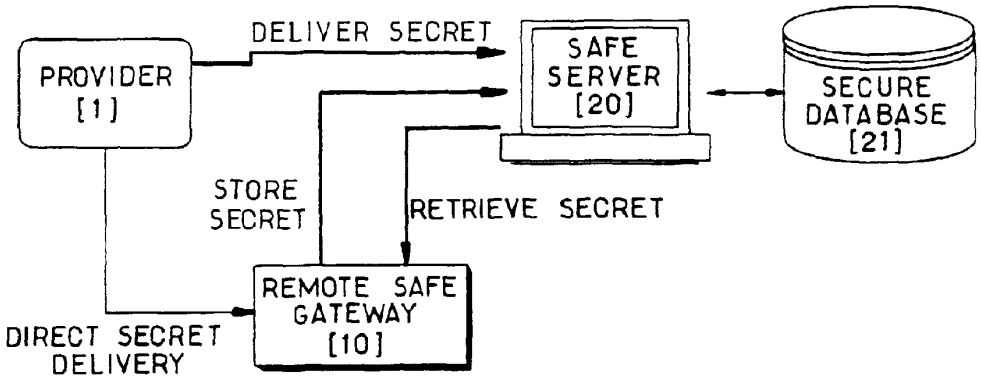
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: SYSTEM AND PROCESS FOR STORING SECURELY SECRET INFORMATION, APPARATUS AND SERVER TO BE USED IN SUCH A SYSTEM AND METHOD FOR DISTRIBUTION OF A DIGITAL CONTENT



(57) Abstract: A system for securely storing secret information comprises an apparatus (10; 1) containing the secret information, a device meant to use said secret information to decrypt a digital content and a remote server (20). The apparatus can send the secret information to the server (20) that has means for storing the secret information. A process with the following steps is proposed: initiating a remote communication between the apparatus (10; 1) and the remote server (20); sending the secret information from the apparatus (10; 1) to the server (20); storing the secret information on the server (20). A method for distribution of a digital content is also described.

WO 01/77790 A1

SYSTEM AND PROCESS FOR STORING SECURELY SECRET INFORMATION, APPARATUS AND SERVER TO BE USED IN SUCH A SYSTEM AND METHOD FOR DISTRIBUTION OF A DIGITAL CONTENT

Field of the invention

The invention relates generally to secure storage of secret information and more particularly to a system and a process for securely storing secret information and to an apparatus and a server to be used in said system. The invention also relates to a method for distribution of a digital content.

Background art

With the advent of digital TV, and copy protection, the access to content will be protected by rights. These rights may have many forms like entitlements, or dedicated decryption keys. The notion of rights might be extended to any secret information. All these type of data have in common that they need to be stored in a safe place.

Today none of the consumer devices has such tamper proof place. The price would be prohibitive. Only smart cards offer sufficient security. Unfortunately the size of memory of smart cards, and thus their storage capability, is limited. Furthermore a smart card can break down, or be lost. So today, once the user mislays his secret data, he will have no simple way to retrieve them. If these data represent user's rights acquired on digital content (for example the right to view a film or to listen to music) it may be prejudicial to the user if he loses these rights he has paid for.

Summary of the invention

The present invention is therefore directed to the problem of finding a way of safely and securely storing secret data to be used by a single device or by a device in a network. Another problem to be solved by the invention is to find a way of retrieving these secret data if the device or the network has lost them.

The invention relates to a system for securely storing secret information to be used by a device wherein said secret information is stored in a remote server. The device may be part of a home network and preferably the secret information is used by said device to access to a digital content.

Therefore, the remote server acts as a bank which maintains in a safe place digital secrets.

The invention proposes an apparatus containing secret information to be used by a device to decrypt a digital content and having means for sending

said secret information to a remote server in order to store said information in said remote server, said server being remote from said device.

The invention also proposes a system for securely storing secret information comprising an apparatus containing said secret information, a device meant to use said secret information to decrypt a digital content and a server remote from said apparatus and from said device, wherein said apparatus comprises means for sending said secret information to said server and wherein said server comprises means for storing said secret information.

The apparatus may be part of said device, or may belong to the same home network as said device. In such cases, the apparatus is thereafter called the remote safe gateway. The apparatus may alternatively belong to a local network generating said secret information (*i.e.* belong to the secret provider).

According to another aspect of the invention, a server for securely storing secret information to be used by a device remote from said server to decrypt a digital content has means for receiving said secret information through a remote communication

A process is proposed for securely storing secret information to be used by a device to decrypt a digital content : this process comprises the steps of :

- initiating a remote communication between an apparatus containing said secret information and a server remote from said device ;
- sending said secret information from said apparatus to said server ;
- storing said secret information on said server.

The invention also relates to a method for distribution of a digital content to be used by a device comprising the steps of :

- encrypting the digital content to thereby generate an encrypted digital content and secret information meant to later decrypt the encrypted digital content ;
- sending said secret information to a server remote from said device for storing said secret information on said server ;
- providing means for said device to retrieve said secret information from said server and to decrypt the encrypted digital content with said secret information.

Brief description of the drawings

Fig. 1 illustrates the general architecture of a system according to the invention.

Fig. 2 illustrates the architecture of a device used in the system of Fig. 1.

Fig. 3 illustrates a process for storing secret information according to a first embodiment of the invention.

Fig. 4 illustrates a process for retrieving a secret information stored according to the process illustrated in Fig. 3.

Fig. 5 illustrates a second embodiment of the invention.

Fig. 6 illustrates a process for storing a secret information in the second embodiment of the invention.

Description of the preferred embodiments

In Fig. 1, we have illustrated a first embodiment of a system according to the invention. In this embodiment, the user has a Set Top Box device 10 (STB) with a return channel such as a PSTN (for "Public Switched Telephone Network") modem or a cable modem.

We assume that all the information to store securely can be carried to this STB. For instance, we can envisage that a complete home network can benefit from the remote safe facility. In this case, preferably, a unique device of the network will be able to store and retrieve secret information according to the invention. This unique dedicated STB is used as an apparatus called the remote safe gateway. Obviously it could be another type of device, for example a computer.

Through its return channel, each remote safe gateway interacts with a remote server 20 called the remote safe server. The remote server has direct access to its own secure database 21. The secure database will store safely and securely the secret information.

In a preferred embodiment of the system, the secure database will be duplicated at least once in different locations. This will avoid loss of data due to natural or malicious crashes. Nevertheless, only one occurrence of the secure database will be considered in the following in order to simplify the presentation of the invention.

The user receives his secrets from a secret provider 1 which is consider here as having generated the secret information. It may be for example a content provider which provides, with an encrypted content, a secret to decrypt this content.

The secret provider 1 provides the information directly to the remote safe gateway 10. The user may receive information from many secret providers.

The characteristics of the system are as follows :

- A user must be identified uniquely. It must not be possible to impersonate him.

- A user must be able to transfer the secret digital information stored in his home system to the safe server 20. No information must leak from this transfer. For that purpose, the remote safe gateway 10 is used to make this transfer.

- The user must be able to retrieve one, part, or all the information stored in his remote safe. No information must leak from this transaction. For that purpose, the remote safe gateway 10 is also used for this transaction.

- There must be no constraint on the format of the stored information.

We will now describe how the system is working.

A first stage of the process consists in the registration of the user. Prior to use the remote safe, the user must sign on the remote safe server's operator. For that purpose, he provides a set of personal information. The definition of these data depends on the operator and is out of the scope of this invention. In return the operator returns a set of secret user identity information (SI_{user}) used in the next stages. Among this set of information is the unique identifier (ID_{user}) that thoroughly defines a given user.

The channel used for this communication can be different from the return channel of the remote safe gateway. In any case the transfer of the secret user identity information (SI_{user}) needs to be secured. There are several possible ways: mailing of a smart card, encrypted information sent through the return channel, ... In the last case, the decryption key is transferred through a secure separate channel such as phone or post mail.

A second stage of the process consists in the storage of secret information in the safe. This requires several steps.

In a first step, the remote safe gateway authenticates the remote safe server using known authentication methods. If the authentication fails, then the storage operation fails.

In a second step, the remote safe server authenticates the remote safe gateway. If the authentication fails, then the storage operation fails.

In a third step, they define a common session key $K_{session}$. This means a remote communication is initiated between the remote safe server and the remote safe gateway.

Then, in a fourth step, the remote safe server creates a unique identifier, $InfID_{user\_i}$ for the information i to be stored. InfIDuser_i is unique for each information stored by the user. Its choice is fully under the control of the

remote safe server. It can be either a "random" number, or a number dedicated to the user, following a given rule *f*, so that $f(InfID_{user\_i}, ID_{user})=true$.

In a fifth step, the remote safe gateway sends the information i to store to the remote safe server. The information i is encrypted using the session key Ksession before being sent. In an optional step, the remote safe gateway encrypts the information i using a secret key of the remote safe gateway before using the session key. Thus, with this optional step, the remote safe server will not have access to the plain text information.

Then, in the last step, the remote safe server decrypts the received information using the session key Ksession and stores it into its secure database.

The transfer may be secured against transmission errors, or message tampering. In that case, the remote safe server checks the integrity of the decrypted message before its eventual storage.

A third stage of the process consists in the retrieval of the secret information from the remote safe server. This operation requires the following steps.

In a first step, the remote safe server authenticates the remote safe gateway. If the authentication fails, then the retrieval operation fails.

In a second step, they define a common session key Ksession.

Then, in a third step, the remote safe gateway provides the remote safe server with the unique identifier of the information to retrieve InfIDuser_i.

In a fourth step, the remote safe server checks the validity of InfIDuser_i. It checks if the corresponding information exists in the database and if this is the case, the remote safe server sends back the requested information to the requesting remote safe gateway in a fifth step. The information is encrypted using the session key Ksession before being sent to the remote safe gateway.

Then, in a last step, the remote safe gateway decrypts the received message using the session key Ksession.

Preferably, the transfer is secured against transmission errors, or message tampering. In that case, the remote safe gateway checks the integrity of the decrypted message before using it.

According to one preferred aspect of the invention, all the operations, except the registration phase, should be transparent to the user. In other words, the retrieval of the stored secrets should be automatic and should not request any interaction from the user.

Fig. 2 illustrates a possible architecture for the remote safe gateway. In this figure, only the elements which are necessary for the understanding of the invention have been represented.

The remote safe gateway has a Central Processing Unit (CPU) 100. It is assumed that the CPU has its own volatile memory and non-volatile memory where its program is stored. In addition, the remote safe gateway has a non-volatile memory space 101 called the identifiers' memory. The CPU 100 can read and write the content of this space.

The remote safe gateway has also a secure processor 102. This secure processor is a tamper proof device that has at least a dedicated CPU 110, a non volatile memory 111 (ROM – Read Only Memory) to store program and persistent data, a volatile memory 112 (RAM – Random Access Memory), and a dedicated non-volatile memory area 113, called the secret cache memory. The secure processor 102 is, in a preferred embodiment, a smart card.

The CPU 100 never handles actual secrets. It handles only information identifiers InfIDuser_i. It maintains a list of the secret information through a list of their corresponding InfIDuser_i. This list is stored in the identifiers' memory. This space needs not to be tamper-proofed. Therefore it is not costly. The size of the identifiers' memory should be chosen to be large enough to store the expected amount of information identifiers.

The secure processor's CPU 110 handles the actual secrets. It stores them in its secret cache memory 113. Unfortunately this space is limited in size due to cost. Therefore it will employ memory-caching techniques that optimize the use of the space. It will store the most recently used secrets and some of the most frequently used secrets.

If the remote safe gateway needs a secret information which is not readily available in the secret cache memory 113, then the secure processor's CPU 110 requests it to the remote safe server.

In one embodiment of the invention, the remote safe gateway is part of a digital home network where other devices are connected. Some of these devices can also handle secrets. In that case they may reproduce the architecture of Fig. 2. Nevertheless, only the remote safe gateway is able to communicate with the remote safe server. The other devices exchange, through secure communication, with the remote safe gateway their secrets to store or to retrieve.

We will now enter into more details of this first embodiment.

Registration of the user.

When signing on, the user receives the secret user identity information as follows:

- A unique identifier IDuser.
- A pair of public (PUB_{user}) and private (PRI_{user}) keys; the remote safe server encrypts with a public key cryptosystem that we will call CS1. RSA (Rivest-Shamir-Adleman public key cryptosystem) could be such a system.
- A public key certificate $CERT_{user}$ signed by the remote safe server using its private signature key PRI_{safe_sign}. The remote safe server signs with a public key cryptosystem that we will call CS2. RSA could be such a system. CS2 can be identical to CS1.
- The public key of the remote safe server PUB_{safe_enc} using cryptosystem CS1.

These data must be transferred safely to the user. It is especially important that his private key, $PRI_{user,}$ is kept secret. He may for example receive these data in a smart card sent to him via mail.

Storage of the secret information.

The format of the message to store is preferably defined as follows:

```
Info_To_Store = {
     InfIDuser_i
     Length_clear_text
     Clear_Text
     Length_secret
     for I=0 to Length_secret-1
          Secret_data[i]
     Checksum
}
```

where :

- InfIDuser_i is a unique identifier of the information stored by the user. This identifier is unique to the user and delivered by the safe server ;
- Clear_Text is an ASCII text that describes the stored secret information. Its content is user defined. It could be envisaged that the secret provider delivers a default value for this secret ;
- Length_clear_text defines the length in bytes of Clear_Text ;
- Secret_data is the secret to store in the remote safe ;
- Length_secret defines the length in bytes of Secret_data ;
- Checksum is the sum of all previous bytes of the packet.

The process for storing a secret information is illustrated in Fig. 3 and explained in the following.

The mutual authentication and key exchange uses the Authenticated DIFFIE HELLMAN Key Exchange Protocol. The protocol generates a common key K_{com}.

The common session key Ksession is the set of the 112 lower bits of the hash of K_{com} through the Secure Hash Algorithm (SHA-1).

The remote safe server defines a new value for the information identifier, InfIDuser_i. It sends it to the remote safe gateway.

The remote safe gateway builds the message Info_To_Store with its secret data and InfIDuser_i. It encrypts it with the Triple DES algorithm using the common session key Ksession. It sends the encrypted message to the remote safe server that decrypts it using the common key Ksession.

The remote safe server checks the validity of Checksum. If the received message is valid, the remote safe server sends it to the secure database. If the operation was successful, the remote safe server returns an acknowledgement to the remote safe gateway, else it returns a non-acknowledgement.

Retrieving the secret information.

The process for retrieving a secret information stored in the remote safe server is illustrated by Fig. 4 and will be explained in the following.

The mutual authentication and key exchange uses the Authenticated DIFFIE HELLMAN Key Exchange Protocol. The protocol generates a common key K_{com}.

The common session key Ksession is the set of the 112 lower bits of the hash of K_{com} through the Secure Hash Algorithm (SHA-1).

The remote safe gateway sends the reference of the data to retrieve: InfIDuser_i.

On receipt of the information identifier InfIDuser_i, the remote safe server passes it to the secure database.

The secure database checks if the message exists, i.e., if there is an information, own by the user, that has the right identification. If it is the case, then it returns the requested information Info_To_Retrieve to the remote safe server. The remote safe server encrypts the received data using Triple DES with the session key Ksession and It sends the encrypted message to the remote safe gateway.

The remote safe gateway decrypts the received message using the session key Ksession. It checks the validity of Checksum and if it is valid, the remote safe gateway uses the retrieved secret information Info_To_Retrieve.

We will now describe a second embodiment of the invention which is illustrated in Fig. 5.

In this embodiment, the secret provider can provide the information directly to the remote safe gateway or by an indirect way using the remote safe server. The user may receive information from many secret providers.

The additional characteristics of the system are as follows:

- A third party, known as the secret provider, can deposit a secret to the remote safe server on behalf of a user. No information must leak from this transaction.

- It is not possible to impersonate a secret provider.

- Once a secret as been deposited by a secret provider, the secret provider has no possible access to it.

- A secret provider cannot retrieve any information stored on the account of a user.

- Only an authorized secret provider can deposit a secret onto the account of a user.

In this embodiment, the process for the secret provider has two stages :

The first stage consists in the registration of the secret provider. As for the remote safe gateway, the secret provider needs to sign on the remote safe server. He signs on as secret provider. In return, it receives a set of information known as secret provider identity information (SI_{prov}).

The second stage consists in the storage of a secret information on behalf of a user. This stage requires several steps.

In a first step, the secret provider, through an apparatus of a local network of its own, authenticates the remote safe server. If the authentication fails, then the storage operation fails.

In a second step, the remote safe server authenticates the secret provider. If the authentication fails, then the storage operation fails.

In a third step, the remote safe server and the secret provider's apparatus define a common session key $K_{session.}$

Then, in a fourth step, the secret provider provides the identity of the user that he is acting for: ID_{user}.

In a fifth step, the remote safe server creates a unique identifier, InfIDuser_i for the information to be stored. InfIDuser_i is unique for each information stored by the user identified by IDuser. Its choice is fully under the control of the remote safe server. It can be either a "random" number, or a number dedicated to the user, following a given rule.

In a sixth step, the secret provider sends the information to store to the remote safe server. The sent information is encrypted using the session key $K_{session}$.

In a last step, the remote safe server decrypts the received information using the session key $K_{session}$ and stores it into its secure database. The transfer may be secured against transmission errors, or message tampering using known techniques. In that case, the remote safe server checks the integrity of the decrypted message before its eventual storage.

Once the operation was successfully ended, then the secret provider sends the information identifier InfIDuser_i to the corresponding remote safe gateway. The secret provider does not keep any copy of it. Therefore, it is impossible for the secret provider to access any more to the secret information to retrieve it or to modify it.

Details of this second embodiment are explained bellow:

Registration of the secret provider

When signing on, the secret provider receives the following secret provider identity information:

- A unique identifier ID_{prov}.
- A pair of public (PUB_{prov}) and private (PRI_{prov}) keys; the remote safe server encrypts with the public key cryptosystem CS1.
- A public key certificate $CERT_{prov}$ signed by the remote safe server using its private signature key $PRI_{safe\_sign\_2}$; the safe server signs with the public key cryptosystem CS2.
- The public key of the remote safe server PUB_{safe_enc}.

These information must be transferred safely to the secret provider. It is especially important that his private key is kept secret

Storage of an information on behalf of a user.

This process, which is illustrated in Fig. 6, is similar to the process described previously in view of Fig. 3. The main differences are:

- Prior to exchange the secret information, the secret provider has to identify the user to whom is it depositing. The identification uses the user's unique identifier IDuser.

- Once the secret provider successfully stored the information, it sends the reference of the information to the user, that is to its remote safe gateway.

The system if the invention may be applied to a new distribution model. For example, a content provider wants to distribute in a controlled manner a content. This content can be any digital content such as video, MP3 files, software, etc. For that purpose it distributes the content encrypted with an encryption key $K_{enc\_cont\_i}$. To read this encrypted content, the user must have access to the decryption key $K_{dec\_cont\_i}$. The decryption key may be equal to the encryption if we use a symmetric cryptosystem. The user contacts the content provider and buys the right to access the content. Acting as a secret provider, the content provider deposits the decryption key in the user's remote safe. In return the user receives the information identifier of the decryption key.

Another possible application of the system of the invention is a small footprint backup of a jukebox. The jukebox will be a future new type of consumer device. It will probably be successful. Nevertheless with the jukebox, a major risk is introduced: loss of all the contents stored in the jukebox. Currently it is envisaged to use hard disks as storage units. In the field of software, it is well known that regular backup of the hard disk is a safe practice. But it is not reasonable to expect the same feature in a consumer device.

The system of the invention will provide a backup facility based on the remote safe as a new service. For each legally delivered content, the content provider will provide an additional information called a digital purchase proof. The digital purchase proof is the result of a one way cryptographic function using as input parameter a unique identifier of the owned content, and the user identifier ID_{user}. Instead of backing up all his contents, the user stores in his remote safe all his digital purchase proofs. If he loses one content, the user returns to the content provider the corresponding digital proof. The content provider checks if the digital proof is consistent with the claimed content and the identity of the user. If it is the case, then the content provider sends back to the user a copy of the content.

In conclusion, the invention offers the following advantages:

- the possibility to handle in a safe and secure manner a large quantity of secret data without requesting an in-house large tamper-proof space;

- a simple new model of distribution of digital content that could fit for IP streaming, or even prerecorded contents;

- a small size backup of large library of digital contents.

CLAIMS

1. Apparatus containing secret information to be used by a device to decrypt a digital content,

characterised by means for sending said secret information to a remote server (20) in order to store said information in said remote server (20), said server (20) being remote from said device.

2. Apparatus according to claim 1, being part of said device.

3. Apparatus according to claim 1, belonging to the same home network as said device.

4. Apparatus according to claim 1, belonging to a local network (1) generating said secret information.

5. System for securely storing secret information comprising :

- an apparatus (10 ; 1) containing said secret information ;
- a device meant to use said secret information to decrypt a digital content ;
- a server (20) remote from said apparatus and from said device,

wherein said apparatus (10 ; 1) comprises means for sending said secret information to said server (20) and wherein said server (20) comprises means for storing said secret information.

6. System according to claim 5, wherein said apparatus (10) is part of said device.

7. System according to claim 5, wherein said apparatus (10) and said device are connected to a common home network.

8. System according to claim 5, wherein said apparatus (1) belongs to a local network generating said secret information.

9. Server (20) for securely storing secret information to be used by a device to decrypt a digital content, said device being remote from said server (20),

characterised by means for receiving said secret information through a remote communication.

10. Process for securely storing secret information to be used by a device to decrypt a digital content comprising the steps of :

- initiating a remote communication between an apparatus (10 ; 1) containing said secret information and a server (20) remote from said device ;
- sending said secret information from said apparatus (10 ; 1) to said server (20) ;
- storing said secret information on said server (20).

11. Method for distribution of a digital content to be used by a device comprising the steps of :

- encrypting the digital content to thereby generate an encrypted digital content and secret information meant to later decrypt the encrypted digital content ;
- sending said secret information to a server (20) remote from said device for storing said secret information on said server (20) ;
- providing means (10) for said device to retrieve said secret information from said server (20) and to decrypt the encrypted digital content with said secret information.

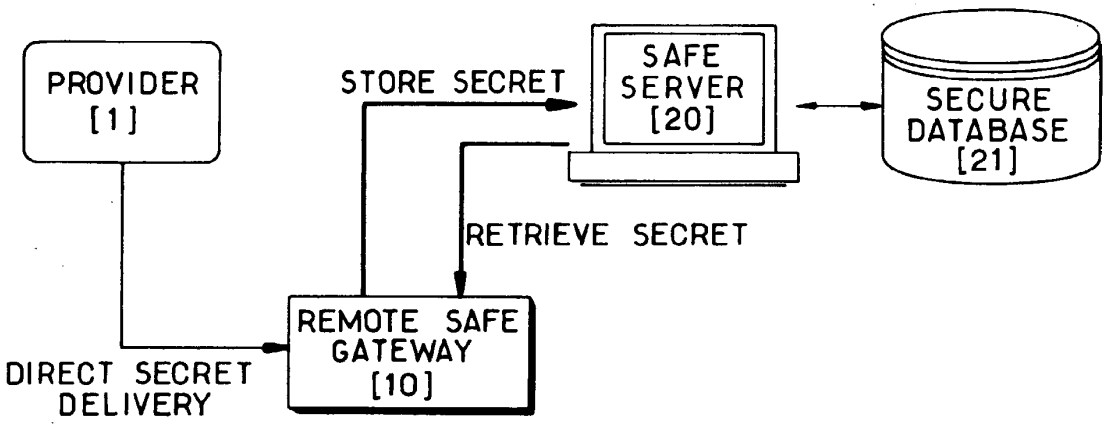

PROVIDER
[1]
STORE SECRET
SAFE
SERVER
[20]
SECURE
DATABASE
[21]
RETRIEVE SECRET
REMOTE SAFE
GATEWAY
[10]
DIRECT SECRET
DELIVERY

FIG.1

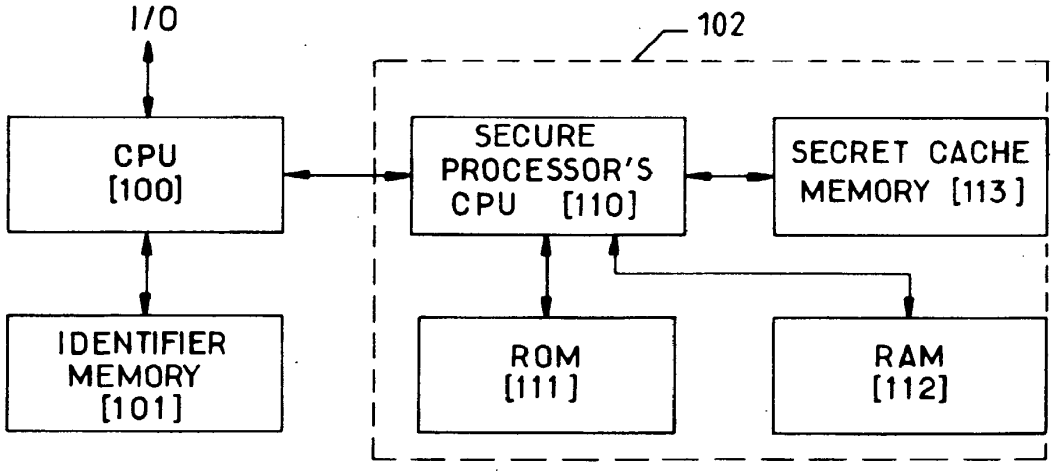

I/O
102
CPU
[100]
SECURE
PROCESSOR'S
CPU [110]
SECRET CACHE
MEMORY [113]
IDENTIFIER
MEMORY
[101]
ROM
[111]
RAM
[112]

FIG.2

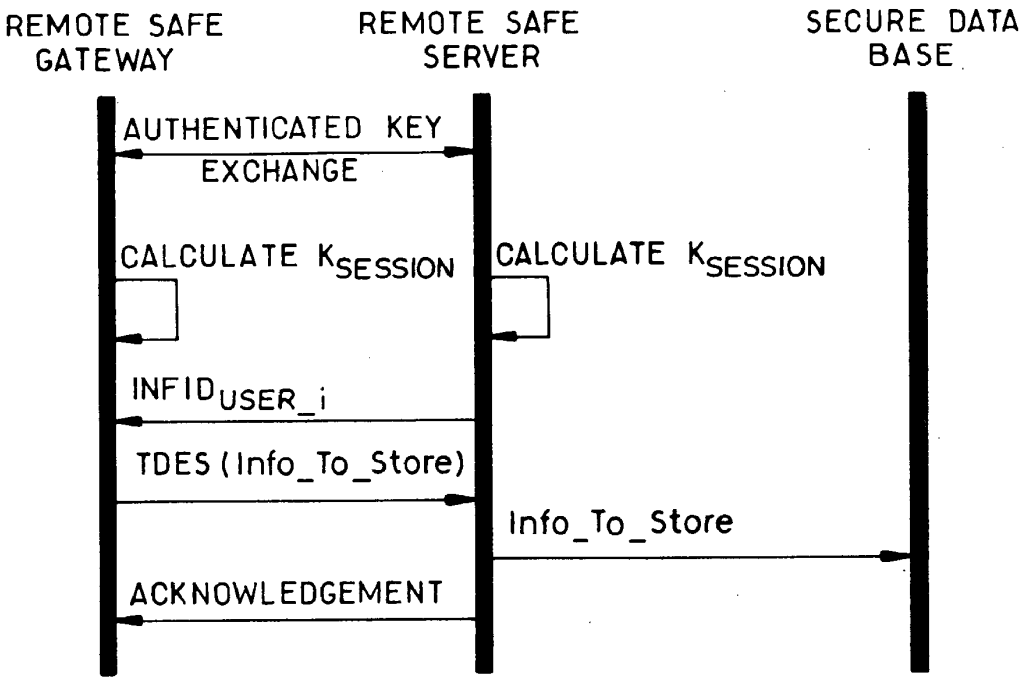

REMOTE SAFE GATEWAY
REMOTE SAFE SERVER
SECURE DATA BASE
AUTHENTICATED KEY EXCHANGE
CALCULATE $K_{SESSION}$
CALCULATE $K_{SESSION}$
$INFID_{USER\_i}$
TDES (Info_To_Store)
Info_To_Store
ACKNOWLEDGEMENT

FIG.3

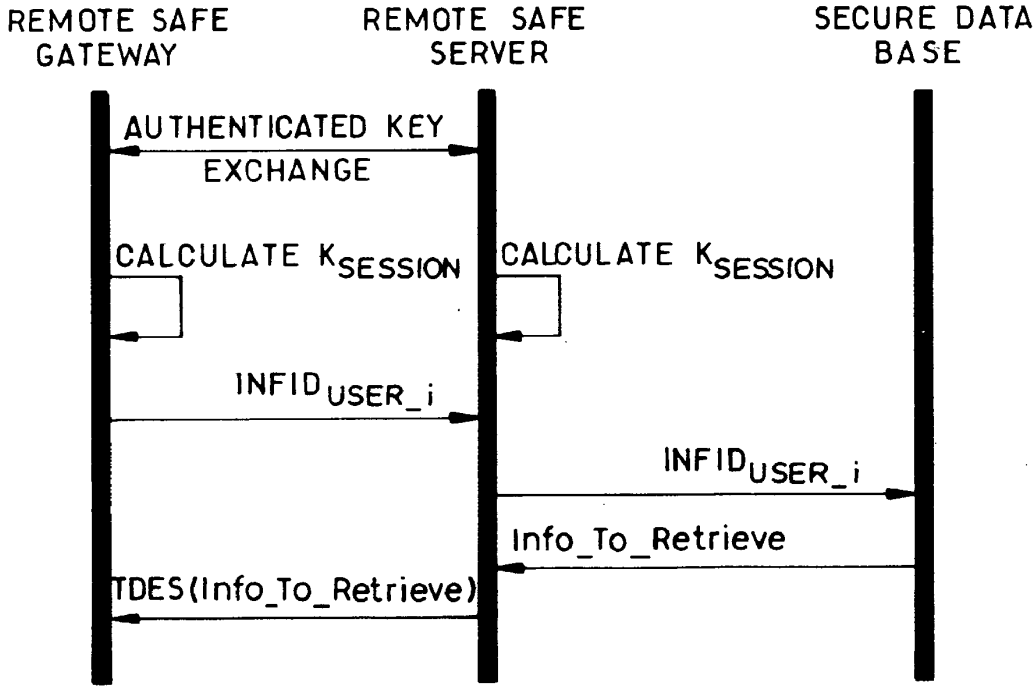

REMOTE SAFE GATEWAY
REMOTE SAFE SERVER
SECURE DATA BASE
AUTHENTICATED KEY EXCHANGE
CALCULATE $K_{SESSION}$
CALCULATE $K_{SESSION}$
$INFID_{USER\_i}$
$INFID_{USER\_i}$
Info_To_Retrieve
TDES(Info_To_Retrieve)

FIG.4

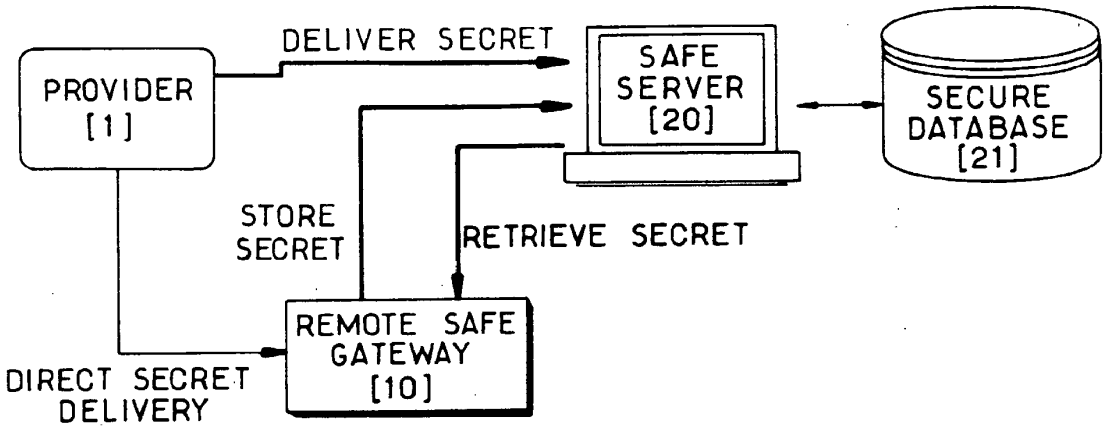

PROVIDER
[1]
DELIVER SECRET
SAFE
SERVER
[20]
SECURE
DATABASE
[21]
STORE
SECRET
RETRIEVE SECRET
REMOTE SAFE
GATEWAY
[10]
DIRECT SECRET
DELIVERY

FIG.5

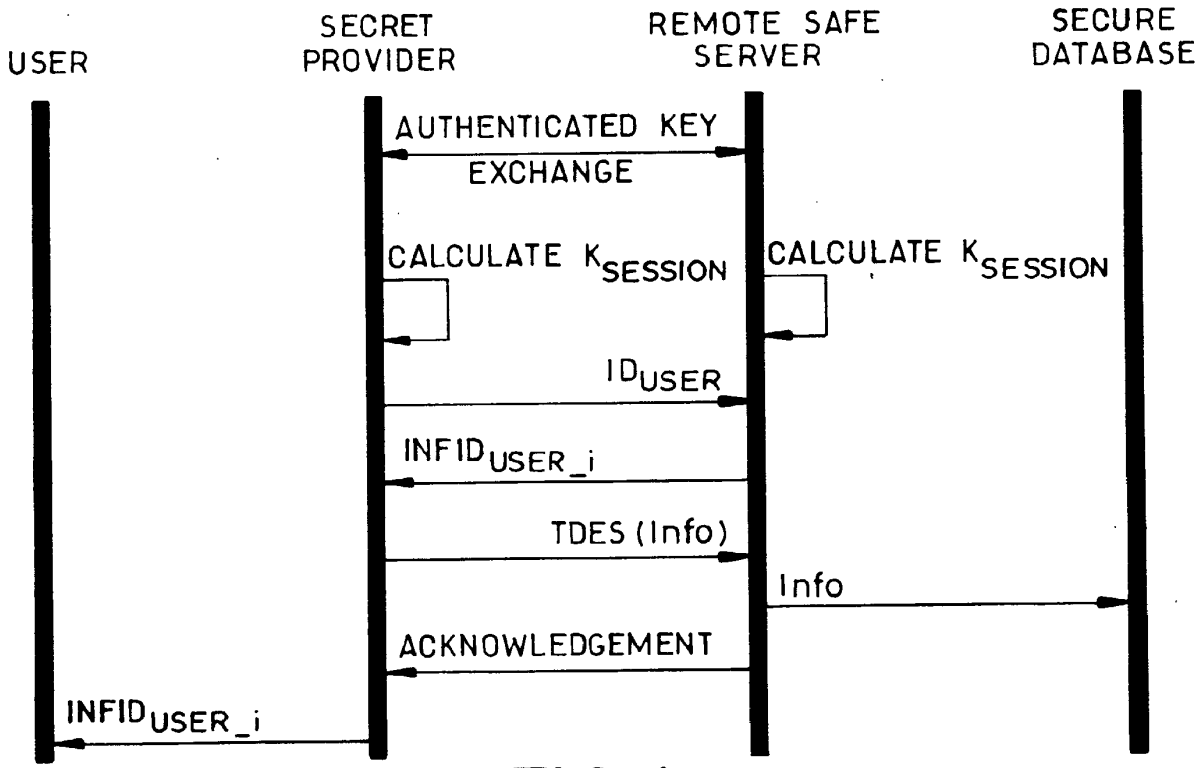

USER
SECRET
PROVIDER
REMOTE SAFE
SERVER
SECURE
DATABASE
AUTHENTICATED KEY
EXCHANGE
CALCULATE $K_{SESSION}$
CALCULATE $K_{SESSION}$
ID_{USER}
$INFID_{USER\_i}$
TDES (Info)
Info
ACKNOWLEDGEMENT
$INFID_{USER\_i}$

FIG.6

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 01/04088

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F1/00 G07F17/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F G07F H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 337 357 A (CHOU WAYNE W ET AL) 9 August 1994 (1994-08-09) figure 1 column 3, line 26 -column 4, line 37	1-11
X	EP 0 843 449 A (SUNHAWK CORP INC) 20 May 1998 (1998-05-20) column 5, line 8 -column 8, line 19 figures 2-5	1-11
X	WO 98 42098 A (CRYPTOWORKS INC) 24 September 1998 (1998-09-24) page 10, line 7 -page 11, line 29 figures 1,5,6,9	1-11

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
6 August 2001	14/08/2001

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Papastefanou, E

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/EP 01/04088

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		EP 0636962 A	01-02-1995
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WO 9842098 A	24-09-1998	AU 6759198 A	12-10-1998
		EP 0968585 A	05-01-2000

Form PCT/ISA/210 (patent family annex) (July 1992)

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
2 June 2005 (02.06.2005)

PCT

(10) International Publication Number
WO 2005/050450 A1

(51) International Patent Classification[7]: G06F 11/30

(21) International Application Number:
PCT/US2004/038124

(22) International Filing Date:
15 November 2004 (15.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/715,035 17 November 2003 (17.11.2003) US
10/, 17 May 2004 (17.05.2004) US

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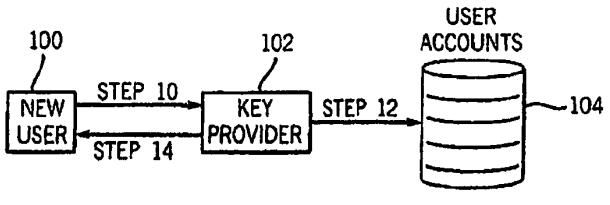
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DIGITAL CONTENT SECURITY SYSTEM



(57) Abstract: A Personal Digital Key Digital Content Security System (PDK-DCSS) is used to protect computers from unauthorized use and protect the digital content (110) stored on computers from being wrongfully accessed, copied, and/or distributed. The basic components of the PDK-DCSS are 1) a standard hard drive device (108), with the addition of a PDK Receiver/Decoder Circuit (PDK-RDC) optionally integrated into the hard drive's controller, and 2) a PDK-Key associated with the PDK-RDC. The PDK-Key and RDC technology is utilized to provide two categories of protection: 1) hard drive (108) access control for providing Drive-Level and Sector-Level protection and 2) operating system-level independent file protection for providing File-Level and Network-Level protection.

WO 2005/050450 A1

DIGITAL CONTENT SECURITY SYSTEM

REFERENCE TO RELATED APPLICATIONS

This application is related to U.S. patent application Serial No. 10/xxx,xxx filed May 17, 2004, which is a continuation-in-part of U.S. patent application Serial No. 10/715,035 filed November 17, 2003, which is a continuation-in-part of U.S. patent application Serial No. 10/153,979 filed May 23, 2002, which is a continuation-in-part of U.S. patent application Serial No. 09/750,487 filed December 27, 2000 and Serial No. 10/016,857 filed December 14, 2001, all of which are incorporated herein by reference in their entirety.

FIELD OF THE INVENTION

The present invention relates generally to digital content security systems and, more particularly, to a digital content security system and method that provides different levels of protection of a computer or other storage device and the digital content stored thereon.

BACKGROUND OF THE INVENTION

The market for downloading digital content online is rapidly climbing because distribution of such content is inexpensive, fast, and easy and the quality of the content itself is acceptable. The market, however, remains disorganized due to competing standards, competing companies, discontented artists and producers, and outright theft of digital content.

Digital rights management (DRM) companies seek to solve the foregoing problems by delivering the digital content from the real producers to the right customers and ensuring that everyone who should be paid in fact is paid. DRM seeks to get everyone paid by managing the multiple steps for distributing digital content (music, video, software) online: watermarking, encryption, transaction management, and rights management. Some DRM companies perform all these steps, while other DRM companies specialize in one or two steps of the process.

First, watermarking stamps each piece of digital content with a digital mark so it can be tracked wherever it goes. Digital watermarks are just like paper watermarks, except they cannot be seen or heard. Special software is required to read a digital watermark.

Second, encryption scrambles watermarked digital content and stores it inside a digital safe for shipment around the Internet. The safe protects the content during shipping by allowing only those with the right software key to the safe to decrypt and use the content.

Third, transaction management handles actual payments for the digital content using credit card techniques found elsewhere in e-commerce. An order is placed, a credit card number is taken, account status is checked, and the exchange is authorized.

Finally, rights management manages the information about the digital content itself: what it is, who gets it, how it is delivered, how many times it may be used, how long the rights last, who gets paid, how much they get paid, and how. This information travels with the digital content in something called a digital permit. The permits rests on top of the digital content as it travels the Internet and allows legal users to enjoy the digital content for as long as the rights last.

The primary objective of DRM companies is to deploy technologies that protect digital content as it is distributed online. Some of these proposed technologies and DRM in general are discussed in the article "Digital Rights Management May Solve the Napster 'Problem'," *Technology Investor*, October 2000, pp. 24-27. Although such technologies should reduce the amount of digital theft, they generally favor the content provider at the expense of the consumer or favor the consumer at the expense of the content provider. That is, the rights of either the content provider or the consumer are compromised. For example, some technologies severely limit the consumer's ability to make extra copies of digital content even when the digital content is solely for personal use. Other technologies facilitate the making of copies of digital content which can be used by different

consumers without the content provider being compensated by each consumer. The present inventor has discovered an improved DRM system and method that effectively balances and protects the rights of both the consumer and the content provider. In addition, the present inventor has discovered an associated digital content security system for protecting computers and other storage devices from unauthorized use and protecting the digital content stored on computers and other storage devices from being wrongfully accessed, copied, and/or distributed.

SUMMARY OF THE INVENTION

In accordance with the foregoing, there is disclosed a Personal Digital Key Digital Content Security System (PDK-DCSS) for protecting computers from unauthorized use and protecting the digital content stored on computers from being wrongfully accessed, copied, and/or distributed. The basic components of the PDK-DCSS are (1) a standard hard drive device, with the addition of a PDK Receiver/Decoder Circuit (PDK-RDC) optionally integrated into the hard drive's controller, and (2) a PDK-Key associated with the PDK-RDC. The PDK-Key and RDC technology is utilized to provide two categories of protection: (1) hard drive access control for providing Drive-Level and Sector-Level protection and (2) operating system-level independent file protection for providing File-Level and Network-Level protection. A number of alternative embodiments are also disclosed.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings in which:

FIG. 1 is a flow chart of a method of managing digital rights in accordance with the present invention;

FIGS. 2, 3, and 4 are block diagrams of portions of a DRM system for implementing the method in FIG. 1;

FIG. 5 is a conceptual model of core options for acquiring digital content that can be encoded to produce key-secured content and core options for playing back the key-secured content;

FIG. 6 is a block diagram for implementing a core acquisition option of downloaded content;

FIG. 7 is a block diagram for implementing a core acquisition option of store-bought content;

FIG. 8 is a block diagram for implementing a core acquisition option of broadcast content;

FIGS. 9a and 9b are block diagrams for implementing a core playback option of stand-alone devices;

FIG. 10 is a block diagram for implementing a core playback option of networked devices;

FIG. 11 is a block diagram of a standard computer hard drive incorporating an integrated PDK-RDC (receiver/decoder circuit) for the purpose of enabling multiple methods of securing digital content;

FIG. 12 is a block diagram for implementing Drive-Level protection and Sector-Level protection in connection with the computer hard drive;

FIG. 13 is a flow chart of the logic executed by the PDK-RDC for implementing Drive-Level protection and Sector-Level protection;

FIG. 14 is a block diagram for implementing File-Level protection in connection with the computer hard drive; and

FIG. 15 is a block diagram for implementing Network-Level protection by expanding File-Level protection to a network environment.

While the invention is susceptible to various modifications and alternative forms, specific embodiments have been shown by way of example in the drawings and will be described in detail herein. However, it should be understood that the invention is not intended to be limited to the particular forms disclosed. Rather, the

invention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended claims.

DESCRIPTION OF SPECIFIC EMBODIMENTS

Turning now to the drawings and referring initially to FIG. 1, there is depicted a method of managing digital rights in accordance with the present invention. First, a new user requests a physical electronic key or data unit from a key provider (step 10). The key provider may offer a web site on the Internet, a toll free telephone number, and/or retail outlet where the key may be acquired. In addition, the key provider may allow a key to be requested in writing, preferably using a form designed by the key provider. In one model the user may acquire as many keys as desired, while in another model each user is only entitled to a single key.

Second, in response to the user's request for a physical key, the key provider establishes a new secure account for that new user in a secure user account database (step 12). The new account may include the following data fields: account number, password, software encryption key, user label, number of users (linked to account), address, telephone number, e-mail address, and custom fields. The custom fields may, for example, include demographic information such as the user's age, gender, marital status, income level, interests, hobbies, etc. The physical key may include the following data fields: user label, account number, software decryption key, and a custom storage area. The user label and the account number serve as a first activation code (or key code) for the acquired physical key. All data fields on the physical key, except for the user label, are preferably encrypted. To allow the user to view his or her account in the future, the user is preferably assigned a login name and the above-noted password.

Third, the key provider ships the physical electronic key to the new user via a package courier such as the U.S. Postal Service, United Parcel Service, or Federal Express (step 14). In one pricing model the physical key is sent to the user at no charge, while in another pricing model the physical key must be purchased by the

user. If the physical key must be purchased by the user, either the user must provide credit/debit card information to the key provider in step 10 to pay with a credit/debit card, or the key provider includes an invoice with the shipped key in step 14.

FIG. 2 is a block diagram of a system for implementing steps 10, 12, and 14 of the method of managing digital rights. The system includes the new user 100, the key provider's web site 102, and the user account database 104.

Referring back to FIG. 1, fourth, the user transmits his or her activation code in the physical key to a digital content provider, who may have a cooperative relationship with the key provider, and requests to purchase digital content (music, video, or software) from that content provider (step 16). The content provider may offer a web site on the Internet containing a listing of digital content available for purchase. To transmit the activation code to the content provider via the web site, the user may manually enter the activation code onto a secure page of the web site. Alternatively, the transmission of the activation code may be automatically implemented with wireless technology. Specifically, the user's computer may be outfitted with a detector that detects the activation code in the user's physical key and then relays the activation code to the content provider via the web site. The content provider may be affiliated with the key provider or may be separate from the key provider but have an arrangement therewith.

Fifth, the content provider requests the key provider to verify the activation code transmitted by the user (step 18). The content provider may send this request to the key provider's web site. Sixth, the key provider in turn accesses the user's account in the user account database and determines whether the activation code is in fact valid (step 20). The key provider may also determine whether the activation code is associated with the user that transmitted the activation code to the content provider. If the activation code is rejected as being invalid, the content provider is so informed and the content provider in turn will not honor any request by the user to purchase digital content. If, however, the activation code is accepted as being valid, the content provider is so informed and the purchase transaction proceeds. As

used herein, the term "key provider" generically refers to the entity or entities that manufacture, distribute, and validate the physical keys. These functions may actually be performed by multiple entities at different locations or by a single entity at a single location.

Seventh, after securing validation of the first activation code in the physical key, the content provider pulls the requested digital content from a digital content database/library, marks the digital content with a second activation code (or unlock code) associated with the first activation code in the physical key, and encrypts the marked digital content (step 22). The second activation code in the digital content may simply be the same as the first activation code in the physical key, but at least partially encrypted for security. In one embodiment, the "key-secured" content file includes the following data fields: user label, account number, and digital content. The user label and the account number serve as the second activation code for the digital content. If the content is merely for sampling (described in connection with FIG. 6), the file may include such additional data fields as a receiver/decoder circuit identification number, hour stamp, and life hours. All data fields on the content file, except for the user label, are preferably encrypted.

Eighth, the content provider delivers the encrypted digital content to the user (step 24). The encrypted digital content may be delivered by downloading the encrypted digital content to the user's computer while the user is online at the content provider's web site, by attaching the digital content to an e-mail addressed to the user, or by shipping a disk containing the encrypted digital content to the user via a package courier. The user may pay for the digital content either by providing credit/debit card information to the content provider in step 16 or by paying off of an invoice included with delivered digital content. If the digital content is delivered online, the user is preferably required to provide the credit/debit card information and have such information approved as a prerequisite to delivery of the digital content. If the user possesses more than one physical electronic key and would like the acquired digital content to function with each of the user's keys, all of the

activation codes are applied to the digital content. The content provider charges the user based on the number of keys with which the user would like the digital content to function. For example, the user may be charged the same amount for each activation code, or may be charged a larger amount for one activation code and lesser amounts (e.g., surcharges) for additional activation codes.

FIG. 3 is a block diagram of a system for implementing steps 16, 18, 20, 22, and 24 of the method of managing digital rights. The system includes the new user 100, the content provider 106, the key provider's web site 102, the digital content database 108, and the acquired digital content 110.

Returning to FIG. 1, ninth, the user enters the encrypted digital content into a playing device of a type suitable for playing the digital content (step 26). The device may, for example, be an MP3 player, a personal computer, a DVD player, a CD player, a cellular phone, or other portable device. In one embodiment, the device contains a wireless transceiver adapted to receive a radio frequency signal transmitted by a corresponding wireless transceiver in the user's physical electronic key. The wireless transceiver in the device is optionally tracked and "secured" for audit purposes by permanently including a unique identifier assigned by the device manufacturer in the transceiver.

Tenth, with the user's physical electronic key within a short range (e.g., few meters) of the playing device, the playing device reads (1) the first activation code carried in a secure radio frequency signal transmitted by the transceiver in the physical key to the transceiver in the device and (2) the second activation code marked on the encrypted digital content (step 28). The device contains decryption software or hardware for decrypting the encrypted digital content to the extent necessary to read any encrypted portion of the second activation code.

Eleventh, the playing device compares the first activation code and the second activation code and determines whether the first activation code is associated with the second activation code (step 30). Steps 29 and 30 may be performed, for example, when the user presses a "play" button on the playing device or when the

user first enters the encrypted digital content into the playing device. If the first activation code is associated with the second activation code, the device decrypts and plays the digital content. If the first activation code is not associated with the second activation code, the device does not play the digital content. If the second activation code is simply the same as the first activation code, then the foregoing comparison determines whether there is a match between the first activation code and the second activation code. In a preferred embodiment, the device continues to play the digital content only while the physical key is sufficiently close to the device to communicate the first activation code to the device and allow the device to compare the first activation code to the second activation code at least partially encrypted with the digital content even while the digital content is being played. If the physical key is moved out of range, the device is no longer enabled to decrypt and play the digital content. In an alternative embodiment, once the device is initially enabled to decrypt and play the digital content, the device remains enabled until either the "play" function is stopped, a play track/song ends, or the digital content is removed from the device, even if the physical key is moved out of range such that the key can no longer communicate the first activation code to the device.

FIG. 4 is a block diagram of a system for implementing steps 26, 28, and 30 of the method of managing digital rights. The system includes the encrypted digital content 110, the key-enabled playing devices 112, and the user's physical electronic key 114.

As stated above, the user's physical electronic key and the key-enabled playing device contain respective wireless transceivers to communicate the activation code in the key to the device. In a preferred embodiment, the transceivers are small, inexpensive *Bluetooth* radio chips that operate in the unlicensed ISM band at 2.4 GHz and avoid interference from other signals by hopping to a new frequency after transmitting or receiving a packet. The radio chips are plugged into electronic devices, which can then communicate over short distances and through obstacles by means of radio waves. *Bluetooth* is a term used to describe the

protocol of a short range (e.g., about 10 meters) frequency-hopping radio link between devices containing the radio chips. These devices are then termed "*Bluetooth*-enabled." The secure radio link replaces a cable that would otherwise be used to connect the devices. Further details concerning *Bluetooth* wireless technology may be obtained from www.bluetooth.com.

Wireless technologies other than *Bluetooth* may be used to communicate the activation code from the user's physical electronic key to the playing device. One example of an alternative wireless technology is known by a trade term "Wi-Fi," which is short for wireless fidelity and is another name for IEEE 802.11 b. Products certified as Wi-Fi by the Wireless Ethernet Compatibility Alliance (WECA) are interoperable with each other even if they are from different manufacturers. A user with a Wi-Fi product can use any brand of access point with any other brand of client hardware that is built to the Wi-Fi standard.

In other alternative embodiments, the communication between the user's physical electronic key and the playing device is not wireless. Rather, in one alternative embodiment, the user's physical electronic key communicates the activation code to the playing device via a transmission line such as a serial cable that plugs into the key at one end and the playing device at the other end. In another alternative embodiment, the key is a smart card or magnetic card into which the activation code is encoded, and the key is configured to physically fit into a card reader slot on the playing device.

The above-described DRM method and system for implementing the method are advantageous in that they afford the key holder with tremendous versatility in copying and using encrypted digital content for personal use. At the same time, the rights of the content provider are protected because only the key holder with a key-enabled device can use the encrypted digital content. The key holder can copy the encrypted digital content as many times as desired, but can only play the encrypted digital content on a key-enabled device that is enabled with the physical electronic key coded to decrypt the encrypted digital content. Thus, the digital content, even

when copied, remains personal to the key holder. Individuals other than the key holder cannot use the encrypted digital content, even if they copy it, because both the original and copies of the encrypted digital content are still encrypted and the individuals do not hold the physical electronic key coded to decrypt the digital content.

A core element of the present invention is the concept of a portable, physical electronic key that is personal to a particular user. The physical key represents a DRM solution that fully addresses the needs of both consumers and publishers of digital content. The physical key is permanently associated with a user's digital content library. At the time of content acquisition, the physical key becomes permanently associated with the newly acquired content. The user is now "linked" to that acquired content. A user (e.g., individual or family) may own as many physical keys as desired, but every piece of encrypted digital content purchased is tied to one specific key. The user may duplicate or transfer the acquired content to any media or device for playback as many times as desired, as long as the associated physical key is present. Thus, the present invention guarantees that the acquired content is played only by the user who has legitimately paid for it. The present invention gives consumers unprecedented freedoms and conveniences to use legitimately purchased content while still fully protecting content providers' rights.

Referring to FIG. 5, the present invention fully supports the use of "key-secured" digital content 125 with all core content acquisition options and all core playback options. The key-secured digital content 125 is encoded with a second activation code associated with a first activation code stored on the user's physical electronic key. The core acquisition options include downloaded content 120, store-bought content 122, and broadcast content 124. The core playback options include stand-alone devices 126 and networked devices 128. Each of these options are described in further detail below.

Referring to FIG. 6 generally, as already noted in FIGS. 1 through 4, a primary application of the present invention is its use in the downloading of digital

content from the Internet. A consumer shops a content distributor's website and selects a piece of content they wish to purchase (music, movies, software, E-books, etc.). The consumer then provides the web site with standard on-line purchase information including the selection's title and method of payment, as well as their physical electronic key information. Transparent to the consumer, the distributor's web site links to the key provider's web site and transmits the physical key information for validation. The key provider's web site then provides the distributor's web site with the information required to prepare the acquired content for secure shipment to the consumer (or notification that the physical key was invalid). The key provider's web site records the transaction for later billing. Finally, the distributor's web site retrieves a copy of the digital content from its library, permanently links it to the consumer's physical key (by using the key's information to encrypt it), and transmits the secured content to the consumer. The consumer is now free to duplicate the content as often as desired, and to play the content on any key-enabled playback device.

Referring to the specifics of FIG. 6, the process of implementing the core acquisition option of downloaded digital content 120 (see FIG. 5) proceeds as follows. At step 130, a receiver/decoder circuit 140 retrieves an account number from a consumer's physical key (transponder) 142 over a secure RF link. At step 131, the consumer enters such data as a password, purchase selection, and method of payment via the consumer's personal computer 144. The data is transmitted to a content distributor's web site 146 from the consumer's personal computer 144. At step 132, the content distributor's web site 146 transmits the account number and password to a key provider's web site 148. At step 133, the key provider's web site 148 authenticates all data against its database 150 and, if authentic, returns such information as the account number, user label, number of users, and software encryption key to the distributor's web site 146. If the data is not valid, the key provider's web site 148 sends a message to the distributor's web site 146 indicating the same. A counter, used for the key provider's billing purposes, is incremented. At

step 134, the distributor's web site 146 pulls the purchased content file from its database 152, encrypts it with the software encryption key it received in step 133, and builds a final key-secured content file that is then transmitted to the consumer's personal computer 144. Charges are assessed based on the number of users, etc. and billed to the consumer according to the method of payment. At step 135, invoices 154 are generated and sent to content distributors by the key provider's web site 148 on a regular cycle.

Optionally, to enable content providers to offer sample content (e.g., limiting playback to the device on which the content was originally downloaded, for a specified period of time) a special "enhanced" version of a receiver/decoder circuit 140 can be produced. These enhanced receiver/decoder circuits (primarily for PC's) would each include a unique identification number and additional functionality enabling them to "talk" to a key provider's web site 148 to acquire secured timing information. Sample content files may include the following information (in their encrypted header section):

- identification number of enhanced receiver/decoder circuit used for downloading and transmitted by the receiver/decoder circuit to the key provider's web site at the time of content purchase;
- hour stamp (i.e., the hour in which the content was downloaded; and
- life hours (i.e., number of hours content remains valid, such as perpetual, one hour, 24 hours, 48 hours, etc.).

The above information is used by an "enhanced" receiver/decoder circuit during playback to determine whether a content file has "expired" or is attempting to play on an unauthorized device (i.e., any device except the device on which the content was originally downloaded). This capability allows content distributor web sites to distribute limited-use samples with associated tiered-pricing models.

Referring to FIG. 7 generally, the present invention can be extended to store-bought content. To fully integrate store-bought content into the present invention, traditional store-bought content is modified in two ways. First, the content is

distributed in a copy protected format (e.g., using any valid copy protection technology). Second, the content contains a unique content serial code. The content serial code may be contained either directly in the digital content or as a physical label. Each content serial code is designated by a content distributor during manufacturing and stored in the key provider's database. This database is later used to validate that each content serial code is unique and used only a prescribed number of times. To a consumer, a content serial code on their newly purchased store-bought content represents a download of a key-secured version of that content for free or a prescribed price. This key-secured copy provides the consumer with exactly the same advantages and freedoms as any other key-secured content. From the consumer's standpoint, the download process occurs exactly as any other standard key-secured content download with the exception of how the payment is handled. The "payment" is the content serial code. By providing all of the advantages of the present invention to consumers of legacy-capable store-bought content (by way of "content serial code downloads"), the scheme provides the industry with the first complete DRM solution.

Referring to the specifics of FIG. 7, the process of implementing the core acquisition option of store-bought digital content 122 (see FIG. 5) proceeds as follows. At step 160, a receiver/decoder circuit 170 retrieves an account number from a consumer's physical key (transponder) 172 over a secure RF link, and the consumer's personal computer 174 reads a content serial code from the store-bought content 122. The store-bought content 122 contains the content serial code that uniquely identifies the content. The format of the content serial code may, for example, be PPPP.FFF.0123456789 where PPPP is a provider identification, FFF is a facility identification, and the numbers represent a sequence number. The store-bought content 122 incorporates a copy protection scheme such as Macrovision™, key2audio™, or SafeAudio™. Disc "copy flags" (specified in SDMI standards) may also be set to further inhibit duplication efforts.

At step 161, the consumer enters such data as a password and purchase selection via the consumer's personal computer 174. The previously-read content serial code specifies that the method of payment is to a "content serial code-credit" (i.e., there is typically no charge for this download because the content serial code confirms that the download in process is of content that the consumer has already legitimately purchased). The data is transmitted to a content distributor's web site 176 from the consumer's personal computer 174. At step 162, the distributor's web site 176 transmits the content serial code, account number, and password to a key provider's web site 178. At step 163, the key provider's web site 178 authenticates all data against its databases 180 and 182 and, if authentic, returns such information as the account number, user label, number of users, software encryption key, and paid-flag (indicating the content serial code has been validated) to the distributor's web site 176. The key provider's web site 178 now sets the paid-flag to disable any further downloads and records the account number field in the content serial code database 182 for auditing purposes. If the data is not valid, the key provider's web site 178 sends a message to the distributor's web site 176 indicating the same. A counter, used for the key provider's billing purposes, is incremented. Each entry in the content serial code database 182 may include the following data fields: CDC #, paid-flag, and account number. At step 164, the distributor's web site 176 pulls the content file from its database 184, encrypts it with the software encryption key it received in step 163, and builds a final key-secured file that is then transmitted to the consumer's personal computer 174. No charge is typically assessed because a valid content serial code serves as "payment" for the download. At step 165, invoices 186 are generated and sent to content distributors by the key provider's web site 178 on a regular cycle.

Referring to FIG. 8 generally, the present invention can be extended to broadcast content. To fully integrate broadcast content into the present invention, traditional broadcast content is only minimally modified. The modification is that the broadcast content is transmitted in a copy protected format (such as the DVD

standard known as Content Scramble System (CSS)). The remainder of the process is described below. A key-enabled recording device, incorporating a unique identifier, receives copy-protected broadcast content. If only playback of the broadcast content is desired, basic decoding (e.g., CSS) is performed and the broadcast content is sent on for playback. If the consumer wishes to record the broadcast content, however, the recording device performs additional steps prior to sending the broadcast content on for playback. The recording device connects to the key provider's web site to validate the recording device's internal identifier and the consumer's physical key. If both are valid, the recording device translates the broadcast content into a key-secured format by encoding it with the consumer's activation code, and then stores the key-secured content file, with its identifier permanently embedded within, for later use. The end result is key-secured broadcast content that provides the owner of the associated physical key all the freedoms and advantages of the present invention. Although the content was originally broadcast, it cannot be illegally copied or distributed. The present invention can be applied to pay per view offerings, as well as standard broadcast material.

Referring to the specifics of FIG. 8, the process of implementing the core acquisition option of broadcast digital content 124 (see FIG. 5) proceeds as follows. At step 180, a receiver/translator/recording device 190 receives digitally broadcast content in copy-protected format from a source 192 such as satellite, cable, Internet, or over-air. The broadcast content may be copy-protected using a copy-protection technology such as an enhanced CSS scheme. If a consumer wishes to only play (not record) the broadcast content, basic decoding (e.g., CSS decoding) is performed and the broadcast content is passed through to presentation device 194 for playback. The remaining steps below may be skipped.

If, however, the consumer wishes to record the broadcast content, the following additional steps are performed prior to sending the broadcast content on for playback. At step 181, the receiver/translator/recording device 190 retrieves an

account number from the consumer's physical key (transponder) 196 over a secure RF link. At step 182, the receiver/translator/recording device 190 transmits the account number and its recorder serial code to a key provider's web site 198. Each device 190 contains a recorder serial code that uniquely identifies the device. The format of the recorder serial code may, for example, be MMMM.FFF.0123456789 where MMMM is a manufacturer identification, FFF is a facility identification, and the numbers represent a sequence number. At step 183, the key provider's web site 198 authenticates the data against its databases 200 and 202 and returns an "approved" or "rejected" response. A counter, used for the key provider's billing purposes, is incremented. At step 184, if a "rejected" response is received, the broadcast content cannot be recorded. If an "approved" response is received, the receiver/translator/recording device 190 translates the decoded content into a key-secured format by encoding it with the consumer's activation code, and records the key-secured content, with the recorder serial code permanently embedded within, to a storage device (that can optionally be an external device). The broadcast content can now be copied to and played back on any key-enabled playback device. At step 185, invoices 199 are generated and sent to content distributors by the key provider's web site 198 on a regular cycle. While providing excellent additional security and protections, steps 182 and 183 are not mandatory for the present invention to function with broadcast content. It may be desirable, for cost purposes, to produce receiver/translator/recording devices 190 not capable of communicating with the key provider's web site 198.

Referring to FIGS. 9a and 9b generally, having acquired key-secured digital content and produced copies for playback on various devices such as a portable CD player, personal computer, home theater, etc., a consumer is now ready to use the digital content. Playback of key-secured content occurs as follows. A key-enabled playback device transparently reads information from a consumer's physical key and from the content file the consumer has requested to play. The pieces of information are then compared to validate that the physical key "matches" the content to be

played. If the elements match, the device begins playback of the content. If the elements do not match, the device will not play the content and, depending upon the device's capabilities, may display an "invalid content" message. From a consumer's point of view, when used with legitimately-acquired content, the process is entirely transparent, effortless, and non-intrusive. The consumer is free to use their content on any key-enabled playback device, with the only restriction being that the content can be played only when the associated physical key is present. As noted above, the present invention gives consumers unprecedented freedoms and conveniences to use legitimately purchased content while still fully protecting content providers' rights.

Referring to the specifics of FIGS. 9a and 9b, the process of implementing the core playback option of stand-alone devices 126 (see FIG. 5) proceeds as follows. At step 210, a consumer requests playback of a key-secured content file via a playback device 220. The playback device 220 may, for example, be the consumer's personal computer (FIG. 9a) or a stereo amplifier (FIG. 9b) with integrated compact disc reader/player. At step 211, a receiver/decoder circuit 222 searches for a physical key (transponder) 224. The circuit 222 may be a separate component from the playback device 220 as in FIG. 9a or integrated into the playback device 220 as in FIG. 9b. If the physical key is not found, the playback device 220 displays an "invalid content" message. If the physical key is found, the receiver/decoder circuit 222 retrieves all available information from the physical key 224 over a secure RF link. At step 212, the user labels in the physical key 224 and the key-secured content file are compared. If the user labels do not match, the playback device 220 displays an "invalid" message. If the user labels do match, the receiver/decoder circuit 222 retrieves the software decryption key from the physical key 224 over the secure RF link between the physical key 224 and the playback device 220 and begins decryption of the encrypted portion of key-secured file. When the account number is decrypted, it is matched against the account number retrieved from the physical key 224. If the account numbers do not match, the playback device 220 displays an "invalid content" message. If the account numbers

do match, the software decryption key is used by the playback device 220 to decrypt remaining data in the key-secured file for playback. The user label and the account number in the physical key serve as a first activation code, and the user label and the account number in the content file serve as a second activation code. These activation codes must match (or have some other predetermined association) in order for playback to proceed.

Referring to FIG. 10 generally, while stand-alone playback devices (e.g., CD players, PCs, DVD players, etc.) are currently the norm, the convergence of these devices and the Internet will lead to an environment where centralized digital distribution systems proliferate. Security of content in these environments is critical yet challenging to accomplish without imposing great restrictions. The present invention can provide security to a centralized digital distribution system and, in addition, offers many important enhancements that greatly increase the convenience and usability of such a system. These enhancements include integration of the physical key into a portable handheld computer which then doubles as the system remote. In addition to controlling all networked components, the remote is used for tasks such as purchasing content from the Internet, and tracking the movement of a user throughout a facility to provide automatic "content following" (i.e., where content playback follows the user from room to room). The centralized nature of the digital content distribution system means that only one storage device is required to maintain a consumer's entire digital content library (e.g., music, movies, software, E-books, etc.) and to feed that content to any networked playback device.

Referring to the specifics of FIG. 10, there is shown a centralized digital content distribution system for implementing the core playback option of networked devices 128 (see FIG. 5). The system is used in an establishment such as a residence or entertainment facility. The system includes a digital content server 310, a distribution hub 312, a plurality of remote clients 314, and a portable remote control 316. The digital content server 310 stores digital content acquired from a source 318 such as satellite, cable, Internet, or over-air. In addition, the digital

content server 310 may store digital content uploaded from a standard component 324. The plurality of remote clients 314 are located in different rooms of the establishment and linked to the digital content server 310 via the distribution hub 312 or switch. The remote clients 314 are linked to the distribution hub 312 by a backbone transmission network 315. The backbone transmission network 315 may be wireless or wired with fiber optic cables, coaxial cables, or twisted pair cables, may employ a networking protocol such as Ethernet, Wi-Fi, Arcnet, or ATM (Asynchronous Transfer Mode), and may employ a communications protocol such as TCP/IP. Each remote client 314 includes a network interface card (NIC) for interfacing with the backbone transmission network 315.

The remote control 316 is adapted to communicate with each of the remote clients 314 and select the digital content stored in the digital content server 310. The remote control 316 is essentially a personal digital assistant (i.e., hand-held computer) including a display and added remote control circuitry. The display may, for example, be a liquid crystal display (LCD). The added remote control circuitry includes "system remote" circuitry and "universal remote" circuitry.

The "system remote" circuitry in the remote control 316 is for establishing a first wireless transmission link 320 with each of the remote clients 314. The first wireless transmission link 320 may be a secure radio link (RF) as shown or an infrared link (IR). Upon establishing the first wireless transmission link 320 with one of the remote clients 314, the remote control 316 serves as a system remote capable of (1) displaying, scanning, and selecting the digital content available on the digital content server 310 and downloading the selected digital content from the digital content server 310 to the linked remote client 314 and (2) controlling the digital content server 310 to acquire or download digital content from a source 318 such as satellite, cable, Internet, or over-air. As used herein, the term "download" and similar variations thereof (e.g., downloaded, downloading, etc.) is intended to cover the transfer of content from one device to a receiving device whether the content is stored on the receiving device or merely "streamed" to the receiving

device for immediate playback. The remote control 316 preferably includes a display for displaying the digital content. The display may, for example, be a liquid crystal display (LCD). As a user holding the remote control 316 moves from room to room of the establishment, the remote control 316 successively establishes wireless transmission links 320 with the remote clients 314 in the respective rooms. In this way, the digital content available on the digital content server 310 follows the user's movement from room to room.

In a preferred embodiment, the first wireless transmission link 320 is a secure radio link established by matching transceivers in the remote control 316 and each remote client 314. The matching transceivers are preferably small, inexpensive Bluetooth™ radio chips that operate in the unlicensed ISM band at 2.4 GHz and avoid interference from other signals by hopping to a new frequency after transmitting or receiving a packet. The radio chips are integrated into the respective remote control 316 and each remote client 314, which can then communicate over short distances and through obstacles by means of radio waves. Wireless technologies other than Bluetooth, such as Wi-Fi, may be used to communicate remote control signals between the remote control 316 and each remote client 314.

The "universal remote" circuitry in the remote control 316 is for establishing a second wireless transmission link 322 with standard components 324 connected to the remote clients 314. The second wireless transmission link 322 is preferably an infrared link (IR) as shown. Upon establishing the second wireless transmission link 322 with one of the standard components 324, the remote control 316 series as a universal remote capable of operating the standard component 324. The standard component 324 may, for example, be an audio receiver (stereo amplifier), an audiovisual receiver, a video monitor (television), etc. The standard components 324 may be physically separate from, but linked to, the respective remote clients 314 or may be physically integrated into the respective remote clients 314 like integrated device 324c.

The digital content stored on the digital content server 310 may be formatted as a compact disc (CD), digital video disc (DVD), MP3, electronic book, software, etc. When the remote control 316 is linked to one of the remote clients 314, a user may scan and select digital content to be downloaded from the digital content server 310 to the remote client 314 and converted by the remote client 314 to a standard playable format (e.g., analog format) that can be played on the associated standard component 324. The selected digital content is downloaded from the digital content server 310 to the remote client 314 as raw digital data packets. The remote client 314, in turn, converts the downloaded digital content to a standard component output(s) compatible with a standard component 324 connected to the remote client 314, and the standard component 324 plays the digital content. Ports may, for example, include S-Video, RCA jacks, serial ports, Universal Serial Bus, Ethernet, Wi-Fi, Firewire™, Bluetooth, RF, or other similar outputs. The standard component 324 incorporates, or is linked to, audio speakers for broadcasting any audio signals received from the remote client 314 and a video monitor for displaying any video signals received from the remote client 314.

All content is stored on the digital content server 310 digitally, and is key-secured if obtained via the download or broadcast acquisition options of FIGS. 6 and 8. If the digital content is key-secured, the plurality of remote clients 314 include decryption circuitry (i.e., receiver/decoder circuit) for unlocking the digital content. The digital content selected for download from the digital content server 310 to a remote client 314 preferably remains encrypted until converted to a standard component output(s) in the remote client 314. The remote client 314 acts as a converter between key-secured digital content from the digital content server 310 and the standard component output(s). To decrypt the selected digital content, the remote control 316 contains a physical key initially acquired from a key provider in accordance with the present invention. The digital content is initially acquired from a content provider 326 that marks the digital content with an activation code associated with the physical key. The decryption circuitry in the

remote client 314 receives an activation code from the remote control 316 via the wireless transmission link 320 and is enabled to unlock and convert the digital content to a playable format if the activation code in the remote control 316 is associated with the activation code in the digital content. If the activation code in the remote control 316 is not associated with the activation code in the digital content, the remote client 314 will not unlock and convert the digital content.

In an alternative embodiment, the remote clients 314 are eliminated and the standard components 324 are linked directly to standard component outputs of the distribution hub 312 by the backbone transmission network 315. In this case, the distribution hub 312 serves as a switch, and the digital content server 310 contains the decryption circuitry for unlocking the digital content. As the digital content is decrypted, it is converted to a playable format and fed to the distribution switch 312 for delivery to the appropriate standard component 324. The decryption circuitry in the digital content server 310 receives the activation code from the remote control 316 and is only enabled to unlock and convert the digital content to a playable format if the activation code in the remote control 316 is associated with the activation code in the digital content.

Instead of decrypting the digital content so that it can be played, the digital content may be downloaded (or "passed through") in its encrypted format to a storage device such as a media burner 324a or computer hard disk 324b for storage thereon. When a user ultimately desires to play the stored digital content on a media player, the media player must contain the decryption circuitry for unlocking the digital content. After unlocking the digital content, the media player converts the unlocked digital content to a playable format and plays the digital content. The decryption circuitry in the media player receives the activation code from the remote control 316 or physical key with the same activation code. The media player is only enabled to unlock and convert the digital content to a playable format if the activation code in the remote control 316 or physical key is associated with the activation code in the digital content.

In addition to downloading selected digital content from the digital content server 310 to the remote clients 314, data (e.g., MP3, CD, DVD, software, etc.) from the standard components 324 can be uploaded to the digital content server 310 and stored digitally thereon. This allows for storage of legacy content on the digital content server 310.

Referring to FIG. 11 generally, a digital content security system and method protects computers from unauthorized use and protects the digital content stored on computers from being wrongfully accessed, copying, and/or distributed. The basic components of the Personal Digital Key Digital Content Security System (PDK-DCSS) are (1) a standard hard drive device 330, with the addition of a PDK Receiver/Decoder Circuit (PDK-RDC) 332 integrated into the controller 334, and (2) a PDK-Key 336 associated with the PDK-RDC as described above. The standard computer hard drive 330 incorporates the integrated PDK-RDC 332 for the purpose of enabling multiple methods of securing digital content. Hard drives 330 incorporating a PDK-RDC 332 are referred to herein as PDK hard drives. While the PDK-DCSS diagrams show the PDK-RDC 332 as being integrated with the hard drive's controller 334, all OS-level protections described below can be implemented using externally-based PDK-RDCs.

A PDK hard drive 330 is similar to any standard, currently available hard drive with the exception of the PDK-RDC 332 (which is integrated into the drive's controller circuit 334). A PDK-RDC 332 is an integrated circuit able to process PDK-Key information, as well as encrypt/decrypt PDK-compliant digital content. Additionally, this circuit 332 is able to secure the hard drive 330 itself. This is implemented by the circuit 332 enabling or disabling the hard drive's controller 334 depending on whether an associated PDK-Key 336 (one which is uniquely and permanently associated with the PDK hard drive 330) is present. Each PDK hard drive 330 would typically be delivered with its own PDK-Key 336.

Secure RF communications between a PDK-Key 336 and its associated hard drive 330 occurs in the same manner as described above. It should be noted that

software drivers can optionally be designed to allow for dynamic key assignment (assigning of keys after purchase to enable key swapping, or assigning of individual keys to multiple devices).

The PDK-Key and RDC technology is utilized to provide two categories of protection:

1) Hard drive access control - where an entire drive 330 is either completely accessible (unlocked) or inaccessible (locked), and/or individual data sectors or clusters of data sectors are optionally encrypted/decrypted, depending on whether the specific PDK-Key 336 associated (and shipped) with the drive 330 is within range. This category of protection can be accomplished transparently to the operating system (OS) responsible for managing the drive.

2) OS-level independent file protection - where the drive's RDC 332 functions independently of the drive 330 to protect individual files (typically copyrighted material) from wrongful copying. In this role, the RDC 332 works with any PDK-Key 336 (not just the one delivered with the drive 330) and any PDK-compliant file (they do not have to be stored on or associated with the hard drive 330). This category of protection requires an OS-level software driver be run under the OS responsible for managing the drive.

By utilizing these two categories of protection in various ways, four unique levels of content protection are enabled. Two of the levels (Drive-Level and Sector-Level) do not require external software support, while the remaining two (File-Level and Network-Level) require software drivers, as well as a stand-alone application for Network-Level implementations. Each of the four levels is defined below.

Referring to FIGS. 12 and 13 for Drive-Level protection, when implemented, a PDK hard drive 330 will only function when the associated PDK-Key 336 is within range. The drive's controller 334 is disabled whenever the PDK-Key 336 is not present. The contents of files stored on the drive 330 are not encrypted. The Drive-Level protection feature is designed to protect the hard drive's owner by locking access to the PDK hard drive 330 whenever the associated PDK-

Key 336 is not present (i.e. when the owner momentarily steps away from the computer, if the computer is stolen, etc.).

Referring to FIGS. 12 and 13 for Sector-Level protection, when enabled, every sector (or cluster of sectors) read or written is encrypted/decrypted by the RDC 332 using the drive's associated PDK-Key 336. Because the encryption is performed at Sector-Level as opposed to File-Level, the encoding can be accomplished without requiring any changes, involvement, or acknowledgement of the OS responsible for managing the drive. The Sector-Level protection feature is designed to further protect the hard drive's owner (beyond Drive-Level protection) by encrypting the contents of the files stored on the drive, without requiring any software modifications (OS, application, etc.). The security advantage is that if the drive access is in some way defeated, the contents of files on the drive are still protected. It should be noted that if users retrieve files from drive and purposely transfer them anywhere else (via email, memory sticks, etc.), the data will no longer be protected. Drive-Level protection and Sector-Level protection may be used individually or in combination. Also, as noted above, it should be understood that Sector-Level protection may be applied to individual data sectors or clusters of data sectors.

FIG. 13 illustrates the logic executed by the RDC 332 for implementing Drive-Level protection and Sector-Level protection. The logic ensures OS-level commands (save entire file, read entire file, etc.) are given adequate time to complete. This enables implementation of logic without requiring OS changes, involvement, or acknowledgement.

Referring to FIG. 14 for File-Level protection, implemented as an OS-level software driver utilizing the PDK-RDC 332 integrated in the PDK hard drive 330, File-Level protection provides standard PDK digital rights management services and functionality as described above. As needed, the driver instructs the RDC 332 to acquire PDK-Key information, validate the key-to-file match, and use the key's information to perform actual encryption/decryption of the file (as a whole, not at

the sector level). In the illustrated example, the file ABC 338 (which can reside on any storage device, in memory, etc.) is compared to any PDK-Key 336 within range of the PDK-RDC 332. If a match is found, the PDK-RDC 332 will decrypt the file 338 for use with whatever playback mechanism placed the request. Any PDK-Key 336 can be utilized, not just the key 336 associated with the PDK hard drive 330. When employed for File-Level protection (and Network-Level protection as described below), the PDK-RDC 332 functions independently of the hard drive 330 in which it resides. While PDK-compliant files it encrypts or decrypts may reside on the resident hard drive 330 and may be associated with the drive's PDK-Key 336, they do not have to be. The PDK-RDC 332 can work with other PDK-Keys and files residing on other mediums. When used in this manner, the PDK-RDC 332 can be thought of as just coincidently residing within the hard drive 330. For File-Level and Network-Level protection, the RDC 332 may be implemented as a separate circuit board (not integrated within the hard drive 330) and still provide identical functionality.

The primary use of File-Level protection is to secure and protect private or copyrighted material from wrongful copying and distribution. Because copies of any PDK-compliant files can only be accessed when the associated PDK-Key is present, File-Level protection enables copies (intended for use by the holder of the associated key) to be produced effortlessly and securely. In addition to the distribution of copyrighted content such as music and movies as described above, software developers can distribute their software products via the Internet with the same ease and security. Software distributed in this manner would allow the legal recipient to make unlimited copies (for backup purposes, use on a home computer, etc.), yet the copies would only function when the associated key is present, preventing unauthorized copies from being wrongfully distributed and used.

The File-Level protection feature is designed to protect publishers of private or copyrighted material. Users can protect any file by converting it to PDK-compliant format; however, security of document files can be compromised by key

holders not wishing to maintain the file's integrity. Because, while a Microsoft Word document (as an example) may be stored in the PDK-compliant protected format, once opened the contents could be cut and pasted into another application (e.g., an email program) thereby defeating the protection. Therefore the use of File-Level protection for use with documents is only applicable for entrusted recipients (individuals desiring to protect the content of which they are in possession). Non-document files, however, are not subject to these limitations.

Referring to FIG. 15 for Network-Level protection, File-Level Protection can be expanded to a network environment by employing a centralized software application / database called a PDK Document Controller (DC) 340 ruing on a server 342. A DC 340 enables the creation of Groups 342 that list which PDK-Keys 344 are allowed access to files in specific directories. All files stored in directories controlled by the DC 340 are automatically encrypted using the DC administrator's PDK-Key and thereby become PDK-compliant files. This process places all files stored in the DC 340 in a uniformly encrypted format.

Each user request for a file residing in a directory listed in a DC Group 342 results in the following steps. An RDC located in the requester's workstation 346 acquires information from the user's PDK-Key 344 and relays that information to the DC 340. The DC then enables appropriate access as defined by the DC's Group database information. Specifically, the DC 340 performing a lookup of the requester's PDK-Key 344 in the appropriate Group's tables. If the DC 340 determines that the PDK-Key 344 is listed in a Group 342 that also lists the directory containing the file the user wishes to access, the DC 340 knows that a valid PDK-Key 344 was used in the file request and grants access. The requested file is first decrypted with the administrator's PDK-Key, re-encrypted with the requester's PDK-Key 344, and then downloaded to the user's workstation 346. The foregoing process mirrors the process employed when using PDK to download digital media files from the Internet.

The Network-Level protection feature is designed to protect publishers of private or copyrighted material. Users can protect any file by converting it to PDK-compliant format; however, security of document files can be compromised by key holders not wishing to maintain the file's integrity. Because, while a Microsoft Word document (as an example) may be stored in the PDK-compliant protected format, once opened the contents could be cut and paste into another application (e.g., an email program) thereby defeating the protection. Therefore, the use of File-Level protection for use with documents is only applicable for entrusted recipients (individuals desiring to protect the content of which they are in possession). Non-document files, however, are not subject to these limitations. The system is well suited for establishing centralized databases of secure documents intended for distribution to entrusted recipients such as personnel in a law firm or medical facility.

While the present invention has been described with reference to one or more particular embodiments, those skilled in the art will recognize that many changes may be made thereto without departing from the spirit and scope of the present invention. A number of enhancements and variations can be implemented/utilized that effectively broaden the PDK technology's scope and utility. These enhancements and alternative embodiments are summarized below.

Integration of RDCs into Alternative Storage Devices. This embodiment involves integrating RDCs into alternative storage mechanisms beyond those of basic hard drives. These storage mechanisms include pure RAM/ROM-based storage commonly included/used in devices such as PDAs, cell phones, printer, copiers, faxes, scanners, MP3 players, GPS systems, digital cameras, computer motherboards, and DVR players, as well as portable storage devices such as Memory Sticks, Secure Digital memory cards, or any similar such product, in which case the RDC is either directly installed on the device, or integrated into the device in which the memory cards/sticks are inserted.

When an RDC is utilized in this manner, File-Level and Network-Level security function in the same manner as that described above for PDK hard drives. Drive-Level and Sector-Level security function in the same *logical* manner as that described for hard drives, but the *physical* implementation varies so as to control the bus structure that provides the communications path between the storage mechanisms and their hosting devices. As with PDK hard drives, access to the storage is enabled/disabled by interrupting the communications path, signaling to the hosting device that the storage is either "ready" or "busy," effectively enabling/disabling the device itself. To save batteries, RDCs used in this manner may only check for the presence of the associated PDK-Key on some periodic basis (versus every read or write sequence). And similar to PDK hard drives, Sector-Level security can be optionally utilized to encrypt/decrypt data traveling over the bus prior to writes and after reads to provide PDK's standard Sector-Level data encoding functionality.

As when utilized in PDK hard drives, the PDK's security features provide the same convenient, non-intrusive, wireless security mechanism for the above-defined devices. This security mechanism protects any data stored on such devices in the event they are ever stolen, left unattended, or even purposely "disabled" to prevent access to sensitive content (i.e. preventing minors from accessing adult files, websites, etc.). When the associated PDK-Key(s) is not present, these devices and their storage means are locked and disabled.

Dynamic PDK-Key Management. Utilizing dynamic PDK-Key management, PDK-Keys can be assigned to an RDC (whether integrated into a PDK hard drive or some other hosting device, or implemented independently) by a user (versus requiring such assignment at time of production). This capability is accomplished by including the required logic within the RDC's internal firmware (versus using an externally-based software driver to supply such capability).

Using this capability, a user can optionally assign any PDK-Key to act as the RDC's *master* key (the first key assigned to the device). Then by involving this

master key (to prove the original "owner's" validation of the process), the user can assign (or remove) *additional* keys to the PDK-device. The general benefits of this feature include:

- The ability for the individual possessing the *master* key to create backup keys (to be stored and later retrieved in the event the *master* is ever lost), and to allow other users (those possessing *additional* keys) to also access their PDK device(s).
- The option to ship PDK-RDCs (in any configuration, host devices, etc.) without any PDK-Keys. And to allow such devices containing these RDCs (such as PDK hard drives) to optionally function with all or part of the PDK-technology never enabled or utilized. For instance, a user may elect to not enable Drive-Level and Sector-Level security features, but still utilize the functionalities of File-Level and Network-Level security.
- Giving users the option to purchase and associate a PDK-Key at a later time, or importantly, assign a PDK-Key they *already* utilize for another PDK-based device. This allows a user to utilize a single PDK-Key to provide access to all their PDK-based devices.

This built-in (firmware-based) PDK-Key configuration/management capability greatly enhances PDK's overall flexibility and ease of setup/use.

Independent RDC configuration. While integrating an RDC into a hard drive offers numerous benefits, RDCs may exist separately from hard drive mechanisms. In this configuration (as previously defined) an RDC's physical circuitry may exist in the form of a PC Card, a PC expansion board that plugs into a standard PC expansion slot, a USB-based plug-in board, or any other similar design able to interface with a hosting device. Used in this manner, RDCs provide all previously defined functionalities with the exception of basic hard drive access-control.

Buffer Flush & Notification Software Driver. This enhancement involves using a simple software device driver to recognize when a PDK-Key is out of range

(by "watching" for signals from the RDC), and when such a condition is detected to flush (empty) the host system's "read" buffer (effectively clearing any data the system may have been cached in internal memory in order to speed data access), and display a simple message indicating the PDK-Key is in/out of range. This optional mechanism can be utilized with any RDC configuration and on any PDK-protected device.

Each of these embodiments and obvious variations thereof is contemplated as falling within the spirit and scope of the claimed invention, which is set fort in the following claims.

CLAIMS:

1. A method of securing a storage device having a hard drive, comprising:

detecting a portable, physical key with a receiver/decoder circuit associated with the hard drive;

validating the detected portable, physical key with the receiver/decoder circuit; and

permitting access to the storage device or a portion thereof with the receiver/decoder circuit if the detected key is validated.

2. The method of claim 1, wherein the receiver/decoder circuit resides in the storage device.

3. The method of claim 1, wherein the detecting step includes detecting the key over a secure wireless link.

4. The method of claim 1, wherein the validating step includes determining whether or not the detected key is associated with the storage device.

5. The method of claim 4, wherein the receiver/decoder circuit enables the storage device if the detected key is validated and disables the storage device if the detected key is not validated in order to provide device-level protection.

6. The method of claim 5, wherein the storage device stores digital content that is not encrypted with the key.

7. The method of claim 4, wherein digital content read from or written to the storage device is decrypted or encrypted by the receiver/decoder circuit using the key associated with the storage device in order to provide sector-level protection.

8. The method of claim 4, wherein the key associated with the storage device is initially delivered with the storage device.

9. The method of claim 1, wherein the storage device is selected from a group consisting of PDAs, cell phones, printer, copiers, faxes, scanners, MP3 players, GPS systems, digital cameras, computer motherboards, DVR players, memory sticks, and memory cards.

10. The method of claim 4, wherein the key associated with the storage device is assigned thereto by a user.

11. A system for securing a storage device of a computer, comprising:

a portable, physical key; and

a receiver/decoder circuit for detecting and validating the key and for permitting access to the storage device or a portion thereof if the detected key is valid, the receiver/decoder circuit being associated with the storage device;

12. The system of claim 11, wherein the receiver/decoder circuit resides in the computer.

13. The system of claim 11, wherein the receiver/decoder circuit detects the key over a secure wireless line.

14. The system of claim 11, wherein the receiver/decoder circuit validates the key by determining whether or not the detected key is associated with the storage device.

15. The system of claim 14, wherein the receiver/decoder circuit enables the storage device if the detected key is validated and disables the storage device if the detected key is not validated in order to provide device level protection.

16. The system of claim 15, wherein digital content stored on the computer is not encrypted with the key.

17. The system of claim 14, wherein the receiver/decoder circuit decrypts or encrypts digital content read from or written to the storage device using the key associated with the storage device in order to provide sector-level protection.

18. The system of claim 14, wherein the key associated with the storage device is initially delivered with the storage device.

19. The system of claim 11, wherein the storage device is selected from a group consisting of PDAs, cell phones, printer, copiers, faxes, scanners, MP3 players, GPS systems, digital cameras, computer motherboards, DVR players, memory sticks, and memory cards.

20. The system of claim 14, wherein the key associated with the storage device is assigned thereto by a user.

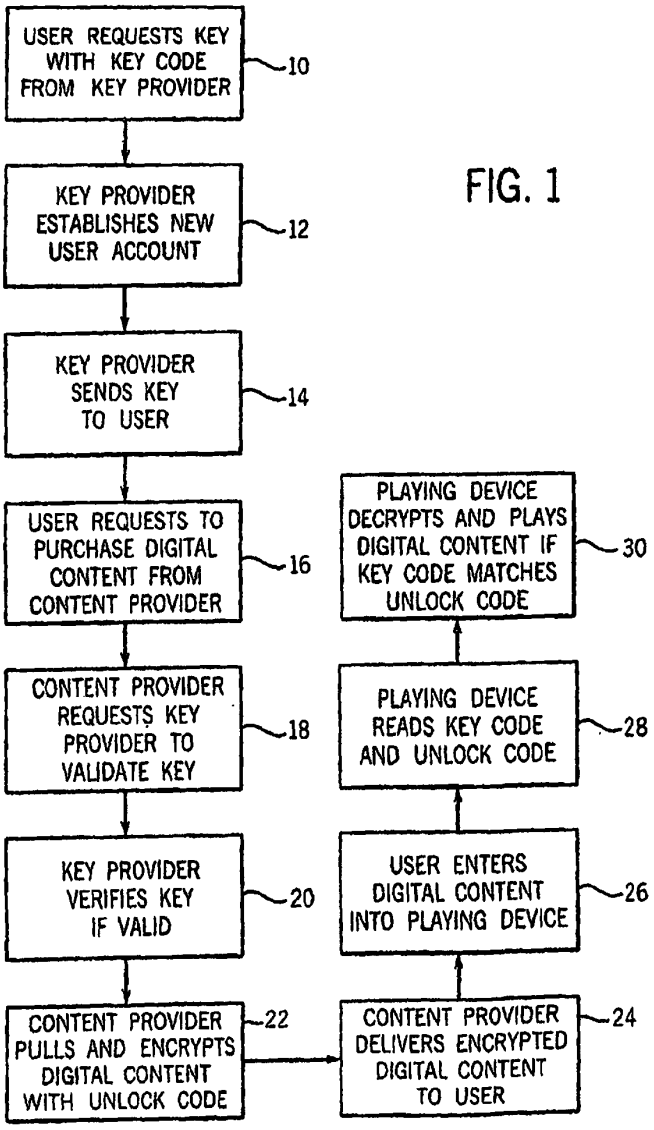

USER REQUESTS KEY WITH KEY CODE FROM KEY PROVIDER
10
KEY PROVIDER ESTABLISHES NEW USER ACCOUNT
12
KEY PROVIDER SENDS KEY TO USER
14
USER REQUESTS TO PURCHASE DIGITAL CONTENT FROM CONTENT PROVIDER
16
CONTENT PROVIDER REQUESTS KEY PROVIDER TO VALIDATE KEY
18
KEY PROVIDER VERIFIES KEY IF VALID
20
CONTENT PROVIDER PULLS AND ENCRYPTS DIGITAL CONTENT WITH UNLOCK CODE
22
CONTENT PROVIDER DELIVERS ENCRYPTED DIGITAL CONTENT TO USER
24
USER ENTERS DIGITAL CONTENT INTO PLAYING DEVICE
26
PLAYING DEVICE READS KEY CODE AND UNLOCK CODE
28
PLAYING DEVICE DECRYPTS AND PLAYS DIGITAL CONTENT IF KEY CODE MATCHES UNLOCK CODE
30

FIG. 1

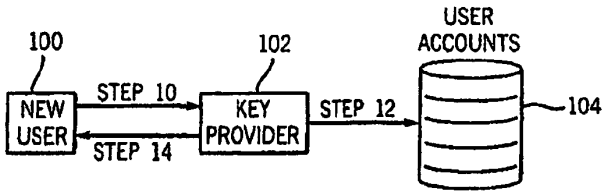


FIG. 2

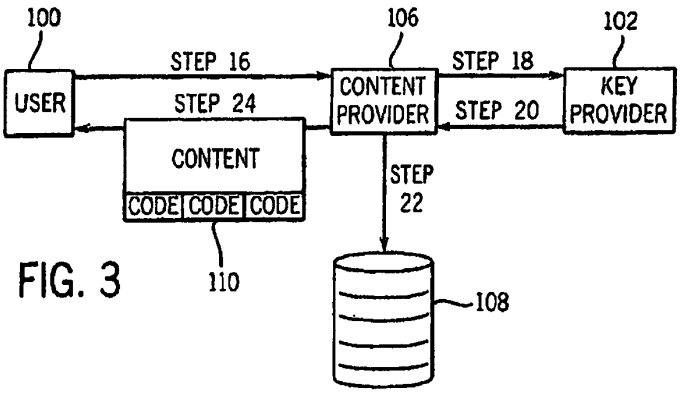


FIG. 3

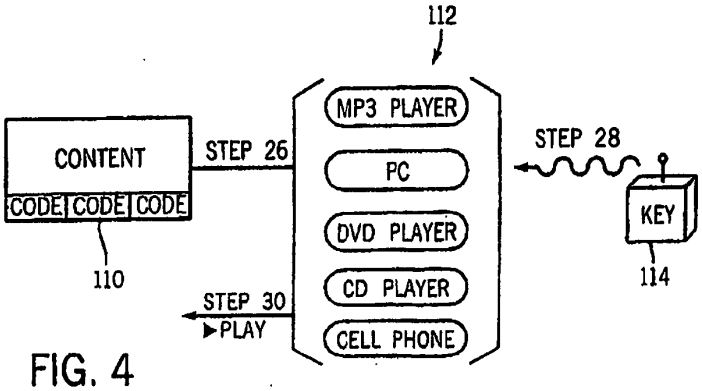


FIG. 4

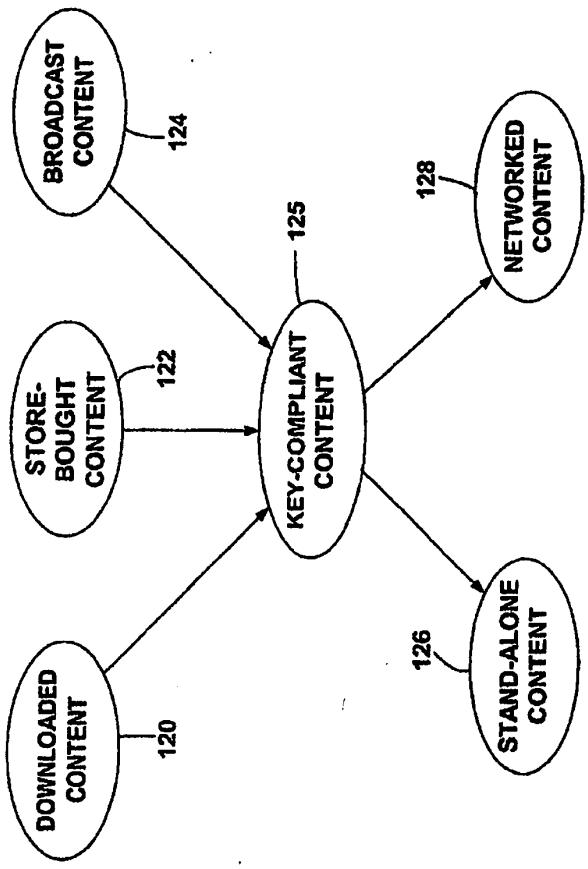

BROADCAST CONTENT
124
STORE-BOUGHT CONTENT
122
DOWNLOADED CONTENT
120
125
KEY-COMPLIANT CONTENT
128
NETWORKED CONTENT
126
STAND-ALONE CONTENT

FIG. 5

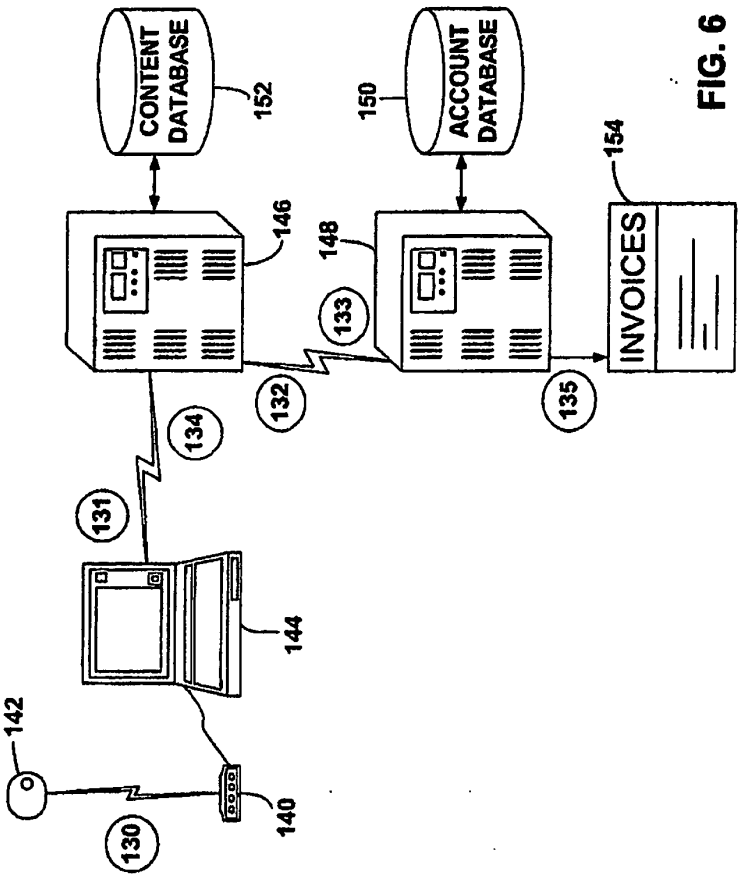

CONTENT DATABASE
152
ACCOUNT DATABASE
150
154
INVOICES
146
148
133
132
134
135
131
144
142
140
130

FIG. 6

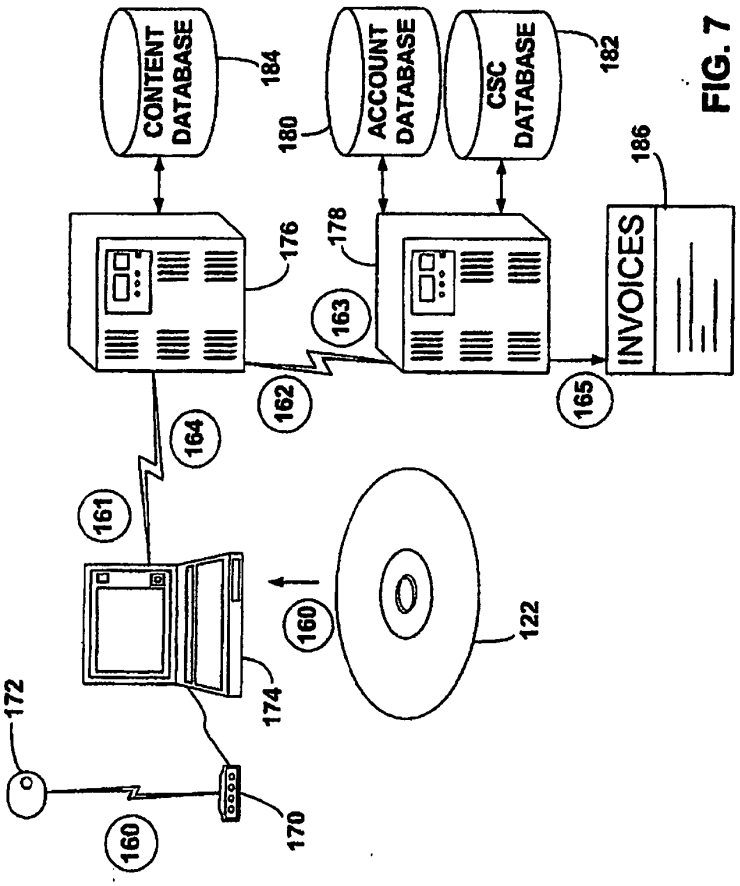

CONTENT DATABASE
184
ACCOUNT DATABASE
180
CSC DATABASE
182
186
INVOICES
176
178
163
162
164
165
161
160
122
174
172
170
160

FIG. 7

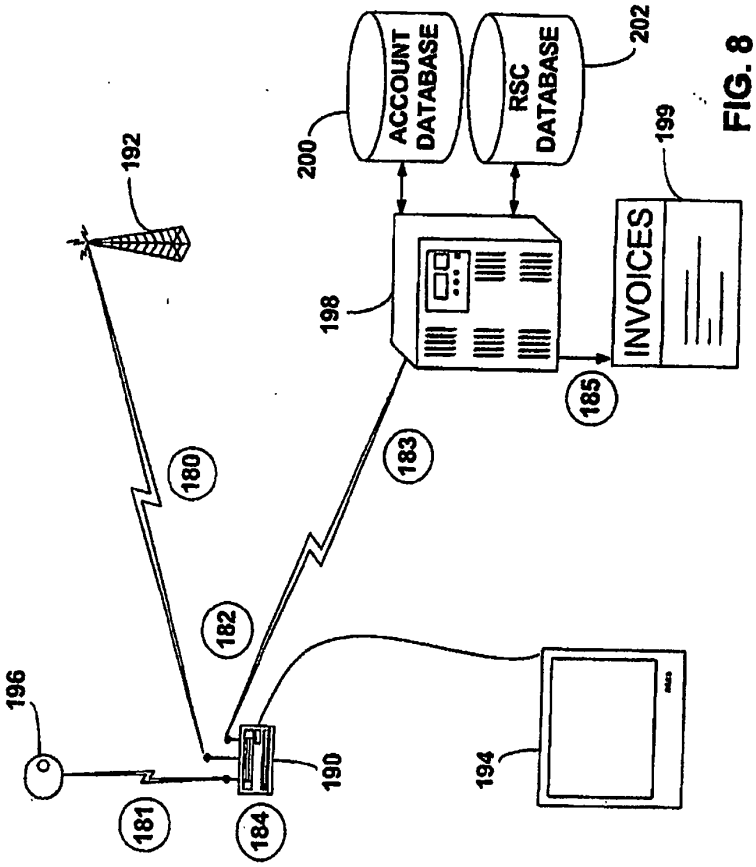

ACCOUNT DATABASE
RSC DATABASE
INVOICES
200
202
199
192
198
185
180
183
182
196
190
194
181
184

FIG. 8

FIG. 9a

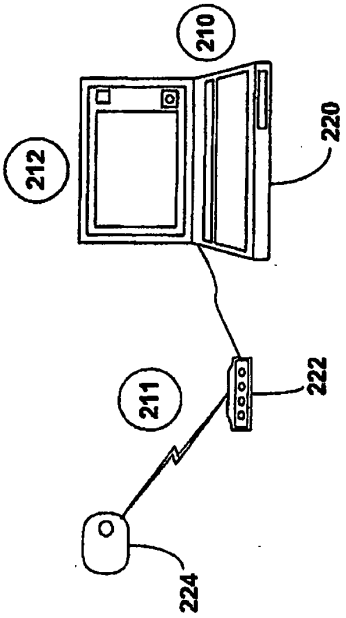
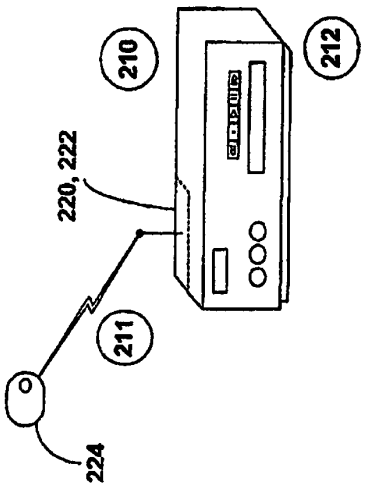


FIG. 9b



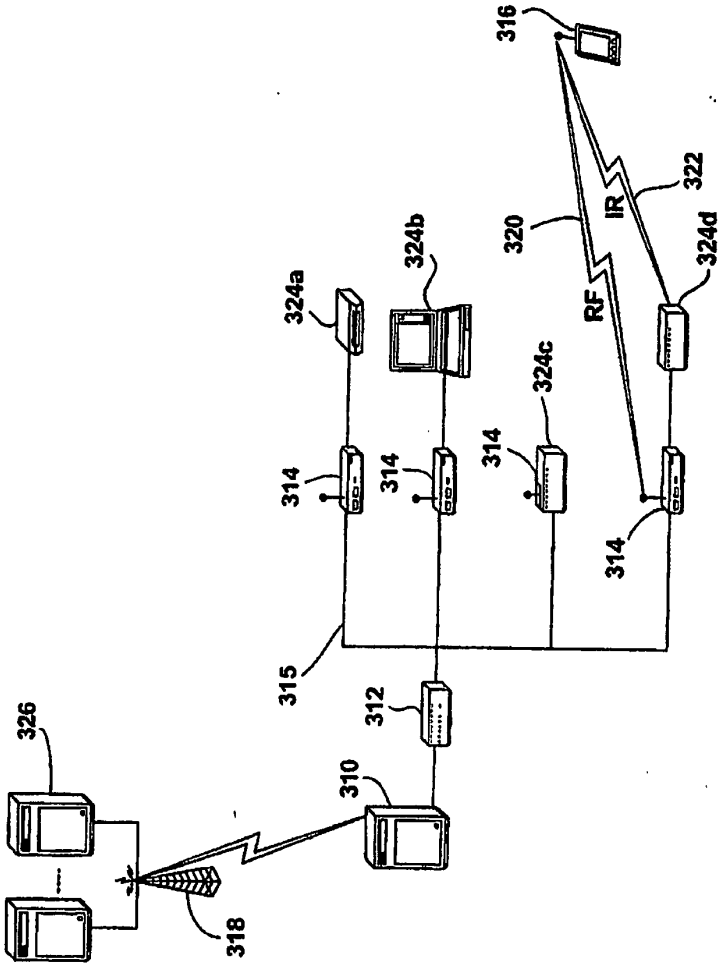

316
322
IR
320
RF
324d
324b
324a
324c
314
314
314
314
315
312
310
326
318

FIG. 10

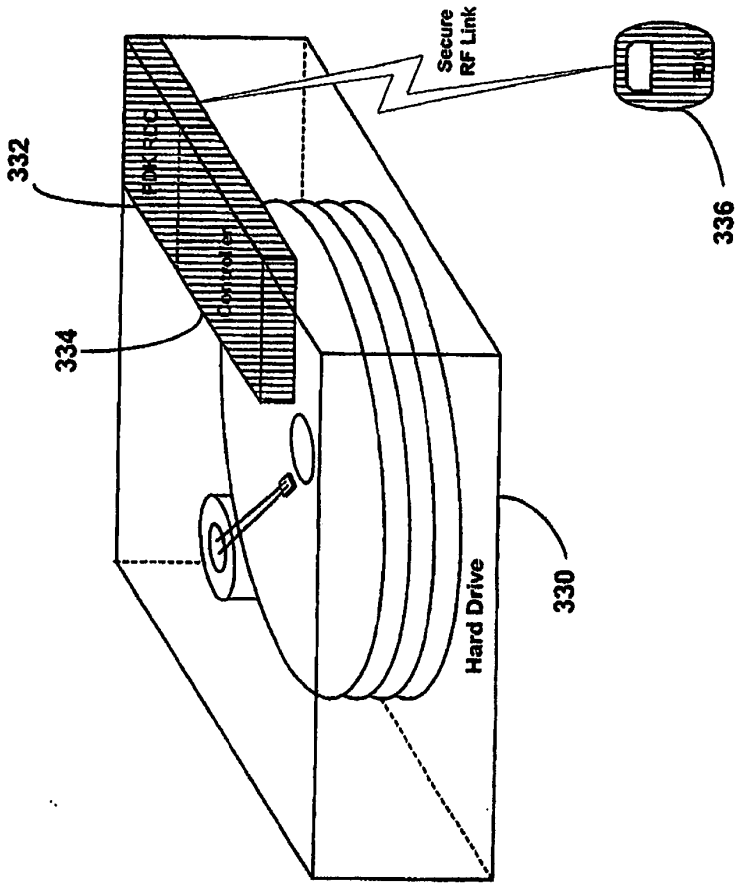


FIG. 11

10/13

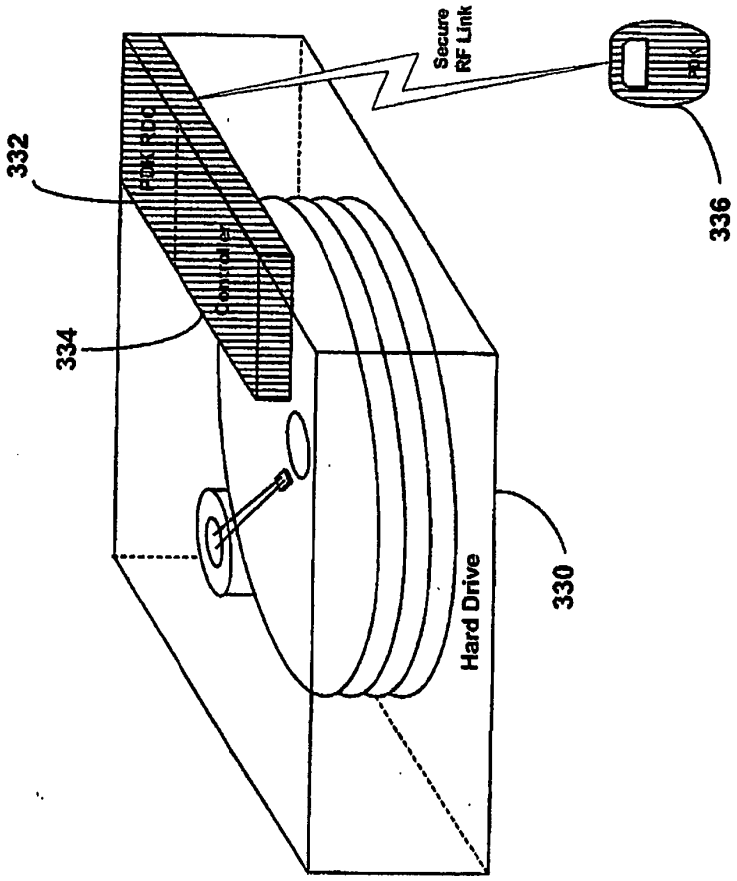

Secure
RF Link
FOK
332
FOK Reg
Control Bit
334
336
330
Hard Drive

FIG. 12

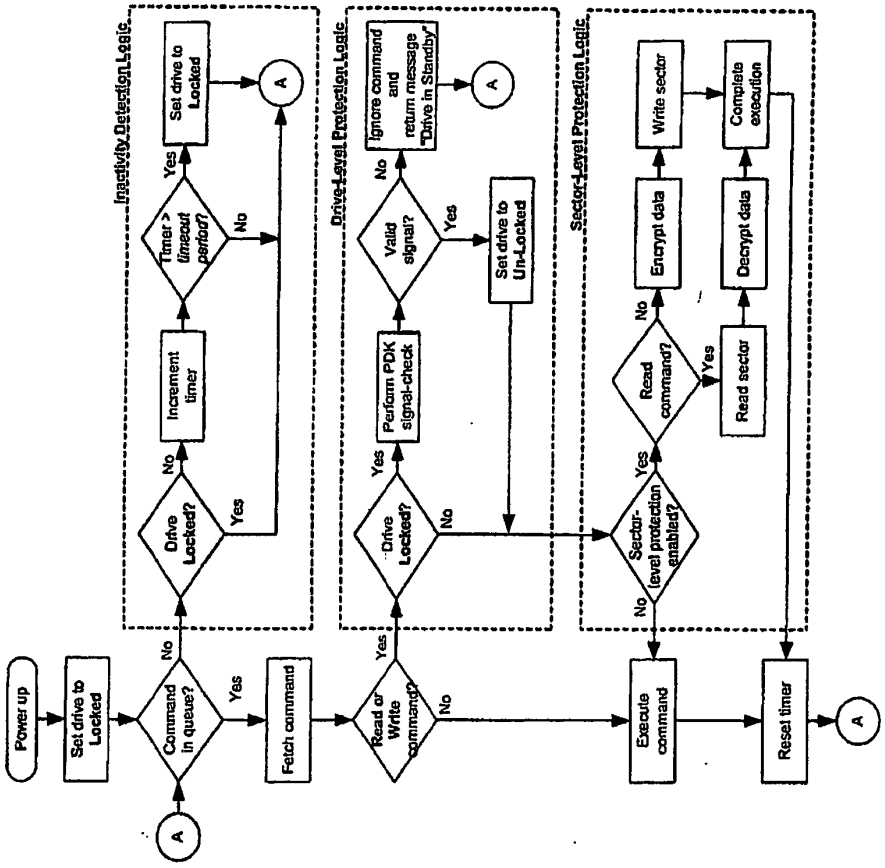

Power up
Set drive to Locked
Command in queue?
No
Yes
A
Fetch command
Read or Write command?
Yes
No
Inactivity Detection Logic
Drive Locked?
No
Yes
Increment timer
Timer > timeout period?
Yes
No
Set drive to Locked
A
Drive-Level Protection Logic
Drive Locked?
Yes
No
Perform PDK signal-check
Valid signal?
No
Yes
Ignore command and return message "Drive in Standby"
A
Set drive to Un-Locked
Sector-Level Protection Logic
Sector-level protection enabled?
Yes
No
Read command?
No
Yes
Encrypt data
Write sector
Read sector
Decrypt data
Complete execution
Execute command
Reset timer
A

FIG. 13

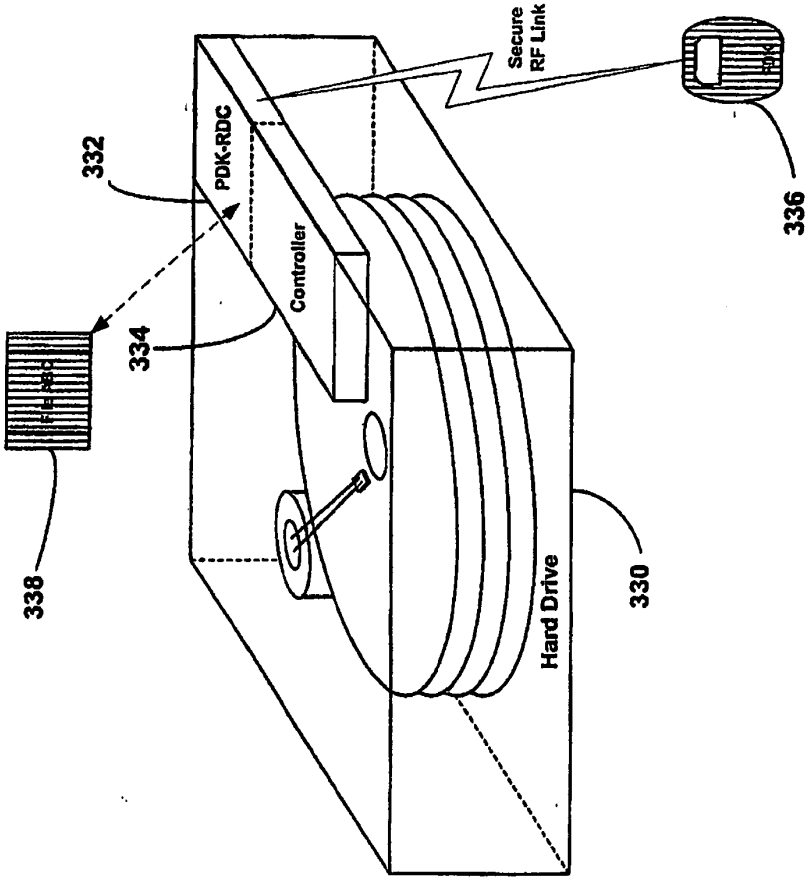

Secure
RF Link
PDK
336
332
PDK-RDC
Controller
334
338
330
Hard Drive

FIG. 14

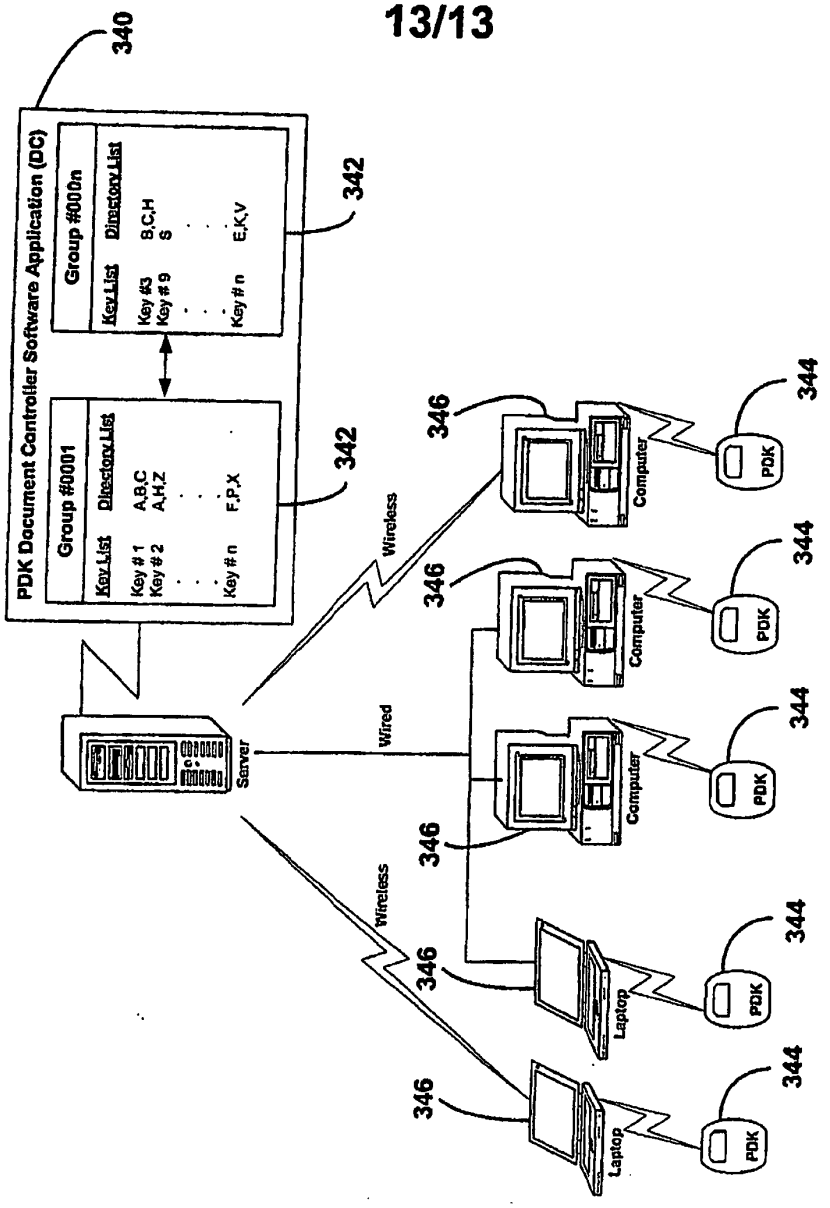

340
PDK Document Controller Software Application (DC)
Group #0001
Key List
Directory List
Key # 1
Key # 2
Key # n
A,B,C
A,H,Z
F,P,X
342
Group #000n
Key List
Directory List
Key #3
Key # 9
Key # n
B,C,H
S
E,K,V
342
Server
Wired
Wireless
Wireless
346
Computer
344
PDK
346
Computer
344
PDK
346
Computer
344
PDK
346
Laptop
344
PDK
346
Laptop
344
PDK

FIG. 15

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
22 September 2005 (22.09.2005)

PCT

(10) International Publication Number
WO 2005/086802 A2

(51) International Patent Classification: Not classified

(21) International Application Number:
PCT/US2005/007535

(22) International Filing Date: 8 March 2005 (08.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/551,320 8 March 2004 (08.03.2004) US

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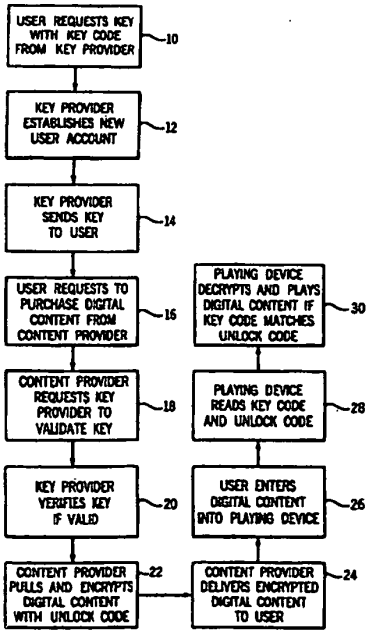
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: LINKED ACCOUNT SYSTEM USING PERSONAL DIGITAL KEY (PDK-LAS)

(57) Abstract: One embodiment of the invention includes a system comprising: a personal digital key and a computer readable medium that is accessible when authenticated by the personal digital key.



WO 2005/086802 A2

European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

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LINKED ACCOUNT SYSTEM USING PERSONAL DIGITAL KEY (PDK-LAS)

FIELD OF THE INVENTION

The present invention relates generally to embodiments of a linked account system using personal digital key (PDK-LAS).

BACKGROUND OF THE INVENTION

The market for downloading digital content online is rapidly climbing because distribution of such content is inexpensive, fast, and easy and the quality of the content itself is acceptable. The market, however, remains disorganized due to competing standards, competing companies, discontented artists and producers, and outright theft of digital content.

Digital rights management (DRM) companies seek to solve the foregoing problems by delivering the digital content from the real producers to the right customers and ensuring that everyone who should be paid in fact is paid. DRM seeks to get everyone paid by managing the multiple steps for distributing digital content (music, video, software) online: watermarking, encryption, transaction management, and rights management. Some DRM companies perform all these steps, while other DRM companies specialize in one or two steps of the process.

First, watermarking stamps each piece of digital content with a digital mark so it can be tracked wherever it goes. Digital watermarks are just like paper watermarks, except they cannot be seen or heard. Special software is required to read a digital watermark.

Second, encryption scrambles watermarked digital content and stores it inside a digital safe for shipment around the Internet. The safe protects the content during shipping by allowing only those with the right software key to the safe to decrypt and use the content.

Third, transaction management handles actual payments for the digital content using credit card techniques found elsewhere in e-commerce. An order

is placed, a credit card number is taken, account status is checked, and the exchange is authorized.

Finally, rights management manages the information about the digital content itself: what it is, who gets it, how it is delivered, how many times it may be used, how long the rights last, who gets paid, how much they get paid, and how. This information travels with the digital content in something called a digital permit. The permits rests on top of the digital content as it travels the Internet and allows legal users to enjoy the digital content for as long as the rights last.

The primary objective of DRM companies is to deploy technologies that protect digital content as it is distributed online. Some of these proposed technologies and DRM in general are discussed in the article "Digital Rights Management May Solve the Napster 'Problem'," *Technology Investor*, October 2000, pp. 24-27. Although such technologies should reduce the amount of digital theft, they generally favor the content provider at the expense of the consumer or favor the consumer at the expense of the content provider. That is, the rights of either the content provider or the consumer are compromised. For example, some technologies severely limit the consumer's ability to make extra copies of digital content even when the digital content is solely for personal use. Other technologies facilitate the making of copies of digital content which can be used by different consumers without the content provider being compensated by each consumer. The present inventor has discovered an improved DRM system and method that effectively balances and protects the rights of both the consumer and the content provider. In addition, the present inventor has discovered an associated digital content security system for protecting computers and other storage devices from unauthorized use and protecting the digital content stored on computers and other storage devices from being wrongfully accessed, copied, and/or distributed.

With the advent of the Internet, and online shopping, banking and so forth, the Internet has enabled the incidence of credit card, bank account

information, and similar data being stolen has risen dramatically. The cost to providers of transactions performed with these stolen items is enormous and results in higher transaction fees and product pricing to consumers, as it is the providers who are typically responsible for charges applied to stolen account information.

Additionally, the inconvenience and tangential problems that victims, consumers, suffer as a result of such crimes are often traumatic, but are minimally troublemsome. The insufficient technologies and procedures currently utilized to secure account-based transaction processing do little to prevent these crimes. The problem is most notable in the case of the largest growing segment for such transactions, the on-line environment.

SUMMARY OF THE INVENTION

One embodiment of the invention includes a system comprising: a personal digital key and a computer readable medium that is accessible when authenticated by the personal digital key.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings in which:

FIG. 1 is a flow chart of a method of managing digital rights in accordance with the present invention;

FIGS. 2, 3, and 4 are block diagrams of portions of a DRM system for implementing the method in FIG. 1;

FIG. 5 is a conceptual model of core options for acquiring digital content that can be encoded to produce key-secured content and core options for playing back the key-secured content;

FIG. 6 is a block diagram for implementing a core acquisition option of downloaded content;

FIG. 7 is a block diagram for implementing a core acquisition option of store-bought content;

FIG. 8 is a block diagram for implementing a core acquisition option of broadcast content;

FIGS. 9a and 9b are block diagrams for implementing a core playback option of stand-alone devices;

FIG. 10 is a block diagram for implementing a core playback option of networked devices;

FIG. 11 is a block diagram of a standard computer hard drive incorporating an integrated PDK-RDC (receiver/decoder circuit) for the purpose of enabling multiple methods of securing digital content;

FIG. 12 is a block diagram for implementing Drive-Level protection and Sector-Level protection in connection with the computer hard drive;

FIG. 13 is a flow chart of the logic executed by the PDK-RDC for implementing Drive-Level protection and Sector-Level protection;

FIG. 14 is a block diagram for implementing File-Level protection in connection with the computer hard drive; and

FIG. 15 is a block diagram for implementing Network-Level protection by expanding File-Level protection to a network environment.

FIG. 16 is a schematic view of a PDK key system embodiment of the invention.

FIG. 17 is a schematic view of a PDK key system embodiment of the invention.

While the invention is susceptible to various modifications and alternative forms, specific embodiments have been shown by way of example in the drawings and will be described in detail herein. However, it should be understood that the invention is not intended to be limited to the particular forms disclosed. Rather, the invention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended claims.

DESCRIPTION OF SPECIFIC EMBODIMENTS

Definitions

As used herein, "PDK Key or Key" refers to a PDK-compliant wireless key providing access to PDK-protected objects. The acronym "PDK" refers to "personal digital key."

A "PDK-hard drive" refers to a physical or "electronic" hard drive containing an integrated RDC.

A "PDK-protected product/object" refers to a hard drive or accounts or content protected via PDK technology .

An "assigned key" is a PDK key assigned to one or more protected objects.

An "RDC" refers to a Reader/Decoder circuit installed in a user's computer, or built into computer hard drive, or point-of-sale (POS) credit card swipe unit which communicates with PDK keys and decodes PDK data.

A "POS RCD" refers to a reader/decoder circuit integrated in a standard point-of-sale (POS) credit-card swipe unit.

A "manufacturer" as used herein refers to a manufacturer of PDK-keys.

A "provider" as used herein refers to an entity issuing a PDK-linked account, PDK hard drives and so forth.

A "customer" or "user" refers to an individual possessing or utilizing a PDK key.

A "master" or "master key" refers to a PDK key initially assigned to a PDK protected object, and which is required to be present for configuration transactions.

Description

One system embodiment of the invention, illustrated at 1000 in FIG. 16 includes a personal digital key, PDK, 1010, a point-of-sale reader decoder circuit, POS RDC, 1012, a PDK reader decoder circuit, 1014 that is connected to a provider 1016 having a database 1018. For some

embodiments, the PDK reader decoder circuit and POS RDC 1014 are in a single unit 1020, which for some embodiments, is a standard credit card swipe unit integrated with RDC. For some embodiments, a standard credit card 1022 is readable in the reader 1020. The provider 1016 may be a credit card processor, bank or other similar entity. The account database 1018 maintains the account number, PDK key number and other identifiers of the user.

In another embodiment, illustrated at 2000 in FIG. 17, the PDK 1010 interfaces with a computer 2002 through a secure RF link 2004. The computer 2002 is a standard personal computer, with integrated RDC, PDK-hard drive or RDC adaptor card. The computer 2002 communicates with the provider 1016 through a standard Internet connection 2006. The provider 1016 communicates with the database 1018 in a manner as described in the embodiment described above.

Once in possession of a PDK key, a user optionally registers the key with the key manufacturer or a central key database. No usage data, credit or bank account numbers, hard drive IDs, etc. is maintained in the manufacturer's database, only user verification information. This information includes a customer account number, indicating for some embodiments, a customer's record within the manufacturer's database, customer name, address and phone, key number, and status of key, in-use, stolen, lost and so forth. This information is used primarily for verification purposes during lost key replacement procedures.

The data fields stored in PDK keys include a user label which includes user text label in an unprotected field. The data fields also include an account number, which is a user's manufacturer account number, which is in a protected field. The data fields also include a key number which is a unique key identification and is a protected field.

The PDK key communicates with one of three basic implementations of a PDK-RDC which include POS RDC, a standard credit card swipe type device with an integrated RDC. A second implementation is an RDC

adaptor, which is an add-on PC board RDC, interfacing via USB, firewall, PC card, expansion slot and so forth. A third implementation is a PDK hard drive which is a standard hard drive with an integrated RDC.

POS RDC devices are used in stores at checkout lanes, purchase counters, hand-held swipes, and so forth. RDC adaptors or PDK hard drives are intended for PC based use.

Physical cards such as credit/debit card accounts, bank accounts, membership accounts, or similar types of accounts, intended for use with the PDK LAS technology are conventional cards. No changes are required to such cards in order to ready them for use with the PDK LAS technology. From a consumer standpoint, this feature, along with an ability for a PDK-key to be purchased and assigned to an object at any point, enables easy acceptance of the technology.

Additionally, the PDK-LAS technology offers great flexibility in how PDK-keys are distributed, assigned, and used. For example, providers may optionally allow dynamic key assignment, assigning keys at a later date, assigning multiple keys to the same account and so forth, and users may elect to use one PDK key for all their PDK based security needs, i.e. one PDK key can be assigned to multiple accounts, PDK hard drives, and other PDK based products.

Specific examples illustrating uses of the PDK linked account embodiments are described as follows. These examples are presented to show particular applications of the PDK linked accounts and are not intended to limit embodiments of the invention.

In a first example, a user wishes to assign a key to a new PDK linked account. The user logs onto a provider's site over the Internet via the user's personal computer, in one embodiment. The user inputs whatever validation the provider typically requires. Sufficient data is requested by the provider during this transaction to authenticate the user. An RDC reads the user's PDK key data and transmits the data to the provider. The provider confirms the user's request to link the PDK key to the account. Once confirmed, the

PDK key data is permanently stored in the provider's database as a master PDK key and can only be changed by directly contacting the provider.

In one other embodiment, users phone providers directly and verbally relay all required information, including master PDK key data, printed on a card included with the PDK key at purchase. For users with Internet access but no RDC, this information is hand entered on the provider's website.

In a second example, a user wishes to assign additional keys to a PDK linked account. The user logs onto a provider site and inputs whatever validation the provider typically requires. The user ensures that the assigned master PDK key is within the vicinity of RDC. The RDC reads the master and additional PDK key data and transmits the data to the provider. The provider confirms a user's request to link additional PDK keys to the account number, or change PDK keys or remove PDK keys. Once confirmed, the updated PDK key data is stored in the provider's database along with master PDK key data.

In an alternate embodiment, to facilitate users without an RCD equipped personal computer and Internet access, users may phone providers directly and verbally relay all required information, including both master and additional PDK key data, printed on cards (or similar) included with PDK keys at purchase. For users with Internet access but no RDC, this information may be hand entered on the provider's website.

In a third example, the user wishes to utilize a PDK linked account to purchase a product at a store. The user ensures that an assigned PDK key is within the vicinity of POS RDC at a checkout counter. The RDC reads the user's PDK key and transmits data, along with the user's account number, acquired using currently accepted procedures, to the provider for verification. If more than one PDK key is read at the counter, either data from all of the PDK keys may be transmitted to the provider or User Labels may be displayed on POS RDC to enable the user or clerk to select the appropriate PDK key. The provider looks up the account record in its database using the transmitted account number and compares the transmitted PDK key data to

information stored in the record. If a match is confirmed, the sales transaction is completed normally. If not confirmed, the transaction cannot be completed.

A fourth example is one where a user desires to utilize a PDK linked account to purchase a product on –line or the user wishes to access account information on line. The user must ensure that an assigned PDK key is within the vicinity of RDC. The RDC reads the user's PDK key and transmits data, along with the user's account number, acquired using conventional techniques, to the provider for verification. If more than one PDK key is read at RDC, either data from all PDK keys is transmitted to the provider or User Labels are displayed on a computer screen to enable the user to select the appropriate PDK key. The provider looks up the account record in its database using the transmitted account number and compares the transmitted PDK key data to information stored in the record. If a match is confirmed, the transaction/session is completed normally. If not confirmed, the transaction/session cannot be completed.

A fifth example is one where the user loses a PDK key. After an initial master PDK key setup, users are encouraged to immediately assign an additional PDK key, which serves as a day-to-day key, and store the master PDK key in a safe location. If the day-to-day key is lost, the master is usable to assign the new day-to-day key. As a last resort, for users losing all PDK keys, the key manufacturer may be contacted and, after authentication is performed, instructed to ship a replacement PDK key.

Turning now to the drawings and referring initially to FIG. 1, there is depicted a method of managing digital rights in accordance with the present invention. First, a new user requests a physical electronic key or data unit from a key provider (step 10). The key provider may offer a web site on the Internet, a toll free telephone number, and/or retail outlet where the key may be acquired. In addition, the key provider may allow a key to be requested in writing, preferably using a form designed by the key provider. In one model the user may acquire

as many keys as desired, while in another model each user is only entitled to a single key.

Second, in response to the user's request for a physical key, the key provider establishes a new secure account for that new user in a secure user account database (step 12). The new account may include the following data fields: account number, password, software encryption key, user label, number of users (linked to account), address, telephone number, e-mail address, and custom fields. The custom fields may, for example, include demographic information such as the user's age, gender, marital status, income level, interests, hobbies, etc. The physical key may include the following data fields: user label, account number, software decryption key, and a custom storage area. The user label and the account number serve as a first activation code (or key code) for the acquired physical key. All data fields on the physical key, except for the user label, are preferably encrypted. To allow the user to view his or her account in the future, the user is preferably assigned a login name and the above-noted password.

Third, the key provider ships the physical electronic key to the new user via a package courier such as the U.S. Postal Service, United Parcel Service, or Federal Express (step 14). In one pricing model the physical key is sent to the user at no charge, while in another pricing model the physical key must be purchased by the

user. If the physical key must be purchased by the user, either the user must provide credit/debit card information to the key provider in step 10 to pay with a credit/debit card, or the key provider includes an invoice with the shipped key in step 14.

FIG. 2 is a block diagram of a system for implementing steps 10, 12, and 14 of the method of managing digital rights. The system includes the new user 100, the key provider's web site 102, and the user account database 104.

Referring back to FIG. 1, fourth, the user transmits his or her activation code in the physical key to a digital content provider, who may have a cooperative relationship with the key provider, and requests to purchase digital

content (music, video, or software) from that content provider (step 16). The content provider may offer a web site on the Internet containing a listing of digital content available for purchase. To transmit the activation code to the content provider via the web site, the user may manually enter the activation code onto a secure page of the web site. Alternatively, the transmission of the activation code may be automatically implemented with wireless technology. Specifically, the user's computer may be outfitted with a detector that detects the activation code in the user's physical key and then relays the activation code to the content provider via the web site. The content provider may be affiliated with the key provider or may be separate from the key provider but have an arrangement therewith.

Fifth, the content provider requests the key provider to verify the activation code transmitted by the user (step 18). The content provider may send this request to the key provider's web site. Sixth, the key provider in turn accesses the user's account in the user account database and determines whether the activation code is in fact valid (step 20). The key provider may also determine whether the activation code is associated with the user that transmitted the activation code to the content provider. If the activation code is rejected as being invalid, the content provider is so informed and the content provider in turn will not honor any request by the user to purchase digital content. If, however, the activation code is accepted as being valid, the content provider is so informed and the purchase transaction proceeds. As used herein, the term "key provider" generically refers to the entity or entities that manufacture, distribute, and validate the physical keys. These functions may actually be performed by multiple entities at different locations or by a single entity at a single location.

Seventh, after securing validation of the first activation code in the physical key, the content provider pulls the requested digital content from a digital content database/library, marks the digital content with a second activation code (or unlock code) associated with the first activation code in the physical key, and encrypts the marked digital content (step 22). The second

activation code in the digital content may simply be the same as the first activation code in the physical key, but at least partially encrypted for security. In one embodiment, the "key-secured" content file includes the following data fields: user label, account number, and digital content. The user label and the account number serve as the second activation code for the digital content. If the content is merely for sampling (described in connection with FIG. 6), the file may include such additional data fields as a receiver/decoder circuit identification number, hour stamp, and life hours. All data fields on the content file, except for the user label, are preferably encrypted.

Eighth, the content provider delivers the encrypted digital content to the user (step 24). The encrypted digital content may be delivered by downloading the encrypted digital content to the user's computer while the user is online at the content provider's web site, by attaching the digital content to an e-mail addressed to the user, or by shipping a disk containing the encrypted digital content to the user via a package courier. The user may pay for the digital content either by providing credit/debit card information to the content provider in step 16 or by paying off of an invoice included with delivered digital content. If the digital content is delivered online, the user is preferably required to provide the credit/debit card information and have such information approved as a prerequisite to delivery of the digital content. If the user possesses more than one physical electronic key and would like the acquired digital content to function with each of the user's keys, all of the activation codes are applied to the digital content. The content provider charges the user based on the number of keys with which the user would like the digital content to function. For example, the user may be charged the same amount for each activation code, or may be charged a larger amount for one activation code and lesser amounts (e.g., surcharges) for additional activation codes.

FIG. 3 is a block diagram of a system for implementing steps 16, 18, 20, 22, and 24 of the method of managing digital rights. The system includes the new user 100, the content provider 106, the key provider's web site 102, the digital content database 108, and the acquired digital content 110.

Returning to FIG. 1, ninth, the user enters the encrypted digital content into a playing device of a type suitable for playing the digital content (step 26). The device may, for example, be an MP3 player, a personal computer, a DVD player, a CD player, a cellular phone, or other portable device. In one embodiment, the device contains a wireless transceiver adapted to receive a radio frequency signal transmitted by a corresponding wireless transceiver in the user's physical electronic key. The wireless transceiver in the device is optionally tracked and "secured" for audit purposes by permanently including a unique identifier assigned by the device manufacturer in the transceiver.

Tenth, with the user's physical electronic key within a short range (e.g., few meters) of the playing device, the playing device reads (1) the first activation code carried in a secure radio frequency signal transmitted by the transceiver in the physical key to the transceiver in the device and (2) the second activation code marked on the encrypted digital content (step 28). The device contains decryption software or hardware for decrypting the encrypted digital content to the extent necessary to read any encrypted portion of the second activation code.

Eleventh, the playing device compares the first activation code and the second activation code and determines whether the first activation code is associated with the second activation code (step 30). Steps 29 and 30 may be performed, for example, when the user presses a "play" button on the playing device or when the user first enters the encrypted digital content into the playing device. If the first activation code is associated with the second activation code, the device decrypts and plays the digital content. If the first activation code is not associated with the second activation code, the device does not play the digital content. If the second activation code is simply the same as the first activation code, then the foregoing comparison determines whether there is a match between the first activation code and the second activation code. In a preferred embodiment, the device continues to play the digital content only while the physical key is sufficiently close to the device to communicate the first activation code to the device and allow the device to compare the first activation

code to the second activation code at least partially encrypted with the digital content even while the digital content is being played. If the physical key is moved out of range, the device is no longer enabled to decrypt and play the digital content. In an alternative embodiment, once the device is initially enabled to decrypt and play the digital content, the device remains enabled until either the "play" function is stopped, a play track/song ends, or the digital content is removed from the device, even if the physical key is moved out of range such that the key can no longer communicate the first activation code to the device.

FIG. 4 is a block diagram of a system for implementing steps 26, 28, and 30 of the method of managing digital rights. The system includes the encrypted digital content 110, the key-enabled playing devices 112, and the user's physical electronic key 114.

As stated above, the user's physical electronic key and the key-enabled playing device contain respective wireless transceivers to communicate the activation code in the key to the device. In a preferred embodiment, the transceivers are small, inexpensive *Bluetooth* radio chips that operate in the unlicensed ISM band at 2.4 GHz and avoid interference from other signals by hopping to a new frequency after transmitting or receiving a packet. The radio chips are plugged into electronic devices, which can then communicate over short distances and through obstacles by means of radio waves. *Bluetooth* is a term used to describe the protocol of a short range (e.g., about 10 meters) frequency-hopping radio link between devices containing the radio chips. These devices are then termed "*Bluetooth*-enabled." The secure radio link replaces a cable that would otherwise be used to connect the devices. Further details concerning *Bluetooth* wireless technology may be obtained from www.bluetooth.com.

Wireless technologies other than *Bluetooth* may be used to communicate the activation code from the user's physical electronic key to the playing device. One example of an alternative wireless technology is known by a trade term "Wi-Fi," which is short for wireless fidelity and is another name for IEEE 802.11

b. Products certified as Wi-Fi by the Wireless Ethernet Compatibility Alliance (WECA) are interoperable with each other even if they are from different manufacturers. A user with a Wi-Fi product can use any brand of access point with any other brand of client hardware that is built to the Wi-Fi standard.

In other alternative embodiments, the communication between the user's physical electronic key and the playing device is not wireless. Rather, in one alternative embodiment, the user's physical electronic key communicates the activation code to the playing device via a transmission line such as a serial cable that plugs into the key at one end and the playing device at the other end. In another alternative embodiment, the key is a smart card or magnetic card into which the activation code is encoded, and the key is configured to physically fit into a card reader slot on the playing device.

The above-described DRM method and system for implementing the method are advantageous in that they afford the key holder with tremendous versatility in copying and using encrypted digital content for personal use. At the same time, the rights of the content provider are protected because only the key holder with a key-enabled device can use the encrypted digital content. The key holder can copy the encrypted digital content as many times as desired, but can only play the encrypted digital content on a key-enabled device that is enabled with the physical electronic key coded to decrypt the encrypted digital content. Thus, the digital content, even when copied, remains personal to the key holder. Individuals other than the key holder cannot use the encrypted digital content, even if they copy it, because both the original and copies of the encrypted digital content are still encrypted and the individuals do not hold the physical electronic key coded to decrypt the digital content.

A core element of the present invention is the concept of a portable, physical electronic key that is personal to a particular user. The physical key represents a DRM solution that fully addresses the needs of both consumers and publishers of digital content. The physical key is permanently associated with a user's digital content library. At the time of content acquisition, the physical key becomes permanently associated with the newly acquired content. The user is

now "linked" to that acquired content. A user (e.g., individual or family) may own as many physical keys as desired, but every piece of encrypted digital content purchased is tied to one specific key. The user may duplicate or transfer the acquired content to any media or device for playback as many times as desired, as long as the associated physical key is present. Thus, the present invention guarantees that the acquired content is played only by the user who has legitimately paid for it. The present invention gives consumers unprecedented freedoms and conveniences to use legitimately purchased content while still fully protecting content providers' rights.

Referring to FIG. 5, the present invention fully supports the use of "key-secured" digital content 125 with all core content acquisition options and all core playback options. The key-secured digital content 125 is encoded with a second activation code associated with a first activation code stored on the user's physical electronic key. The core acquisition options include downloaded content 120, store-bought content 122, and broadcast content 124. The core playback options include stand-alone devices 126 and networked devices 128. Each of these options are described in further detail below.

Referring to FIG. 6 generally, as already noted in FIGS. 1 through 4, a primary application of the present invention is its use in the downloading of digital content from the Internet. A consumer shops a content distributor's website and selects a piece of content they wish to purchase (music, movies, software, E-books, etc.). The consumer then provides the web site with standard on-line purchase information including the selection's title and method of payment, as well as their physical electronic key information. Transparent to the consumer, the distributor's web site links to the key provider's web site and transmits the physical key information for validation. The key provider's web site then provides the distributor's web site with the information required to prepare the acquired content for secure shipment to the consumer (or notification that the physical key was invalid). The key provider's web site records the transaction for later billing. Finally, the distributor's web site retrieves a copy of the digital content from its library, permanently links it to the consumer's

physical key (by using the key's information to encrypt it), and transmits the secured content to the consumer. The consumer is now free to duplicate the content as often as desired, and to play the content on any key-enabled playback device.

Referring to the specifics of FIG. 6, the process of implementing the core acquisition option of downloaded digital content 120 (see FIG. 5) proceeds as follows. At step 130, a receiver/decoder circuit 140 retrieves an account number from a consumer's physical key (transponder) 142 over a secure RF link. At step 131, the consumer enters such data as a password, purchase selection, and method of payment via the consumer's personal computer 144. The data is transmitted to a content distributor's web site 146 from the consumer's personal computer 144. At step 132, the content distributor's web site 146 transmits the account number and password to a key provider's web site 148. At step 133, the key provider's web site 148 authenticates all data against its database 150 and, if authentic, returns such information as the account number, user label, number of users, and software encryption key to the distributor's web site 146. If the data is not valid, the key provider's web site 148 sends a message to the distributor's web site 146 indicating the same. A counter, used for the key provider's billing purposes, is incremented. At step 134, the distributor's web site 146 pulls the purchased content file from its database 152, encrypts it with the software encryption key it received in step 133, and builds a final key-secured content file that is then transmitted to the consumer's personal computer 144. Charges are assessed based on the number of users, etc. and billed to the consumer according to the method of payment. At step 135, invoices 154 are generated and sent to content distributors by the key provider's web site 148 on a regular cycle.

Optionally, to enable content providers to offer sample content (e.g., limiting playback to the device on which the content was originally downloaded, for a specified period of time) a special "enhanced" version of a receiver/decoder circuit 140 can be produced. These enhanced receiver/decoder circuits (primarily for PC's) would each include a unique identification number and additional functionality enabling them to "talk" to a key provider's web site 148

to acquire secured timing information. Sample content files may include the following information (in their encrypted header section):

- identification number of enhanced receiver/decoder circuit used for downloading and transmitted by the receiver/decoder circuit to the key provider's web site at the time of content purchase;
- hour stamp (i.e., the hour in which the content was downloaded; and
- life hours (i.e., number of hours content remains valid, such as perpetual, one hour, 24 hours, 48 hours, etc.).

The above information is used by an "enhanced" receiver/decoder circuit during playback to determine whether a content file has "expired" or is attempting to play on an unauthorized device (i.e., any device except the device on which the content
was originally downloaded). This capability allows content distributor web sites to distribute limited-use samples with associated tiered-pricing models.

Referring to FIG. 7 generally, the present invention can be extended to store-bought content. To fully integrate store-bought content into the present invention, traditional store-bought content is modified in two ways. First, the content is distributed in a copy protected format (e.g., using any valid copy protection technology). Second, the content contains a unique content serial code. The content serial code may be contained either directly in the digital content or as a physical label. Each content serial code is designated by a content distributor during manufacturing and stored in the key provider's database. This database is later used to validate that each content serial code is unique and used only a prescribed number of times. To a consumer, a content serial code on their newly purchased store-bought content represents a download of a key-secured version of that content for free or a prescribed price. This key-secured copy provides the consumer with exactly the same advantages and freedoms as any other key-secured content. From the consumer's standpoint, the download process occurs exactly as any other standard key-secured content download with the exception of how the payment is handled. The "payment" is the content serial code. By providing all of the advantages of the present

invention to consumers of legacy-capable store-bought content (by way of "content serial code downloads"), the scheme provides the industry with the first complete DRM solution.

Referring to the specifics of FIG. 7, the process of implementing the core acquisition option of store-bought digital content 122 (see FIG. 5) proceeds as follows. At step 160, a receiver/decoder circuit 170 retrieves an account number from a consumer's physical key (transponder) 172 over a secure RF link, and the consumer's personal computer 174 reads a content serial code from the store-bought content 122. The store-bought content 122 contains the content serial code that uniquely identifies the content. The format of the content serial code may, for example, be PPPP.FFF.0123456789 where PPPP is a provider identification, FFF is a facility identification, and the numbers represent a sequence number. The store-bought content 122 incorporates a copy protection scheme such as Macrovision™, key2audio™, or SafeAudio™. Disc "copy flags" (specified in SDMI standards) may also be set to further inhibit duplication efforts.

At step 161, the consumer enters such data as a password and purchase selection via the consumer's personal computer 174. The previously-read content serial code specifies that the method of payment is to a "content serial code-credit" (i.e., there is typically no charge for this download because the content serial code confirms that the download in process is of content that the consumer has already legitimately purchased). The data is transmitted to a content distributor's web site 176 from the consumer's personal computer 174. At step 162, the distributor's web site 176 transmits the content serial code, account number, and password to a key provider's web site 178. At step 163, the key provider's web site 178 authenticates all data against its databases 180 and 182 and, if authentic, returns such information as the account number, user label, number of users, software encryption key, and paid-flag (indicating the content serial code has been validated) to the distributor's web site 176. The key provider's web site 178 now sets the paid-flag to disable any further downloads and records the account number field in the content serial code database 182 for

auditing purposes. If the data is not valid, the key provider's web site 178 sends a message to the distributor's web site 176 indicating the same. A counter, used for the key provider's billing purposes, is incremented. Each entry in the content serial code database 182 may include the following data fields: CDC #, paid-flag, and account number. At step 164, the distributor's web site 176 pulls the content file from its database 184, encrypts it with the software encryption key it received in step 163, and builds a final key-secured file that is then transmitted to the consumer's personal computer 174. No charge is typically assessed because a valid content serial code serves as "payment" for the download. At step 165, invoices 186 are generated and sent to content distributors by the key provider's web site 178 on a regular cycle.

Referring to FIG. 8 generally, the present invention can be extended to broadcast content. To fully integrate broadcast content into the present invention, traditional broadcast content is only minimally modified. The modification is that the broadcast content is transmitted in a copy protected format (such as the DVD standard known as Content Scramble System (CSS)). The remainder of the process is described below. A key-enabled recording device, incorporating a unique identifier, receives copy-protected broadcast content. If only playback of the broadcast content is desired, basic decoding (e.g., CSS) is performed and the broadcast content is sent on for playback. If the consumer wishes to record the broadcast content, however, the recording device performs additional steps prior to sending the broadcast content on for playback. The recording device connects to the key provider's web site to validate the recording device's internal identifier and the consumer's physical key. If both are valid, the recording device translates the broadcast content into a key-secured format by encoding it with the consumer's activation code, and then stores the key-secured content file, with its identifier permanently embedded within, for later use. The end result is key-secured broadcast content that provides the owner of the associated physical key all the freedoms and advantages of the present invention. Although the content was originally broadcast, it cannot be

illegally copied or distributed. The present invention can be applied to pay per view offerings, as well as standard broadcast material.

Referring to the specifics of FIG. 8, the process of implementing the core acquisition option of broadcast digital content 124 (see FIG. 5) proceeds as follows. At step 180, a receiver/translator/recording device 190 receives digitally broadcast content in copy-protected format from a source 192 such as satellite, cable, Internet, or over-air. The broadcast content may be copy-protected using a copy-protection technology such as an enhanced CSS scheme. If a consumer wishes to only play (not record) the broadcast content, basic decoding (e.g., CSS decoding) is performed and the broadcast content is passed through to presentation device 194 for playback. The remaining steps below may be skipped.

If, however, the consumer wishes to record the broadcast content, the following additional steps are performed prior to sending the broadcast content on for playback. At step 181, the receiver/translator/recording device 190 retrieves an account number from the consumer's physical key (transponder) 196 over a secure RF link. At step 182, the receiver/translator/recording device 190 transmits the account number and its recorder serial code to a key provider's web site 198. Each device 190 contains a recorder serial code that uniquely identifies the device. The format of the recorder serial code may, for example, be MMMM.FFF.0123456789 where MMMM is a manufacturer identification, FFF is a facility identification, and the numbers represent a sequence number. At step 183, the key provider's web site 198 authenticates the data against its databases 200 and 202 and returns an "approved" or "rejected" response. A counter, used for the key provider's billing purposes, is incremented. At step 184, if a "rejected" response is received, the broadcast content cannot be recorded. If an "approved" response is received, the receiver/translator/recording device 190 translates the decoded content into a key-secured format by encoding it with the consumer's activation code, and records the key-secured content, with the recorder serial code permanently embedded within, to a storage device (that can optionally be an external device).

The broadcast content can now be copied to and played back on any key-enabled playback device. At step 185, invoices 199 are generated and sent to content distributors by the key provider's web site 198 on a regular cycle. While providing excellent additional security and protections, steps 182 and 183 are not mandatory for the present invention to function with broadcast content. It may be desirable, for cost purposes, to produce receiver/translator/recording devices 190 not capable of communicating with the key provider's web site 198.

Referring to FIGS. 9a and 9b generally, having acquired key-secured digital content and produced copies for playback on various devices such as a portable CD player, personal computer, home theater, etc., a consumer is now ready to use the digital content. Playback of key-secured content occurs as follows. A key-enabled playback device transparently reads information from a consumer's physical key and from the content file the consumer has requested to play. The pieces of information are then compared to validate that the physical key "matches" the content to be played. If the elements match, the device begins playback of the content. If the elements do not match, the device will not play the content and, depending upon the device's capabilities, may display an "invalid content" message. From a consumer's point of view, when used with legitimately-acquired content, the process is entirely transparent, effortless, and non-intrusive. The consumer is free to use their content on any key-enabled playback device, with the only restriction being that the content can be played only when the associated physical key is present. As noted above, the present invention gives consumers unprecedented freedoms and conveniences to use legitimately purchased content while still fully protecting content providers' rights.

Referring to the specifics of FIGS. 9a and 9b, the process of implementing the core playback option of stand-alone devices 126 (see FIG. 5) proceeds as follows. At step 210, a consumer requests playback of a key-secured content file via a playback device 220. The playback device 220 may, for example, be the consumer's personal computer (FIG. 9a) or a stereo amplifier (FIG. 9b) with integrated compact disc reader/player. At step 211, a

receiver/decoder circuit 222 searches for a physical key (transponder) 224. The circuit 222 may be a separate component from the playback device 220 as in FIG. 9a or integrated into the playback device 220 as in FIG. 9b. If the physical key is not found, the playback device 220 displays an "invalid content" message. If the physical key is found, the receiver/decoder circuit 222 retrieves all available information from the physical key 224 over a secure RF link. At step 212, the user labels in the physical key 224 and the key-secured content file are compared. If the user labels do not match, the playback device 220 displays an "invalid" message. If the user labels do match, the receiver/decoder circuit 222 retrieves the software decryption key from the physical key 224 over the secure RF link between the physical key 224 and the playback device 220 and begins decryption of the encrypted portion of key-secured file. When the account number is decrypted, it is matched against the account number retrieved from the physical key 224. If the account numbers do not match, the playback device 220 displays an "invalid content" message. If the account numbers do match, the software decryption key is used by the playback device 220 to decrypt remaining data in the key-secured file for playback. The user label and the account number in the physical key serve as a first activation code, and the user label and the account number in the content file serve as a second activation code. These activation codes must match (or have some other predetermined association) in order for playback to proceed.

Referring to FIG. 10 generally, while stand-alone playback devices (e.g., CD players, PCs, DVD players, etc.) are currently the norm, the convergence of these devices and the Internet will lead to an environment where centralized digital distribution systems proliferate. Security of content in these environments is critical yet challenging to accomplish without imposing great restrictions. The present invention can provide security to a centralized digital distribution system and, in addition, offers many important enhancements that greatly increase the convenience and usability of such a system. These enhancements include integration of the physical key into a portable handheld computer which then doubles as the system remote. In addition to controlling all

networked components, the remote is used for tasks such as purchasing content from the Internet, and tracking the movement of a user throughout a facility to provide automatic "content following" (i.e., where content playback follows the user from room to room). The centralized nature of the digital content distribution system means that only one storage device is required to maintain a consumer's entire digital content library (e.g., music, movies, software, E-books, etc.) and to feed that content to any networked playback device.

Referring to the specifics of FIG. 10, there is shown a centralized digital content distribution system for implementing the core playback option of networked devices 128 (see FIG. 5). The system is used in an establishment such as a residence or entertainment facility. The system includes a digital content server 310, a distribution hub 312, a plurality of remote clients 314, and a portable remote control 316. The digital content server 310 stores digital content acquired from a source 318 such as satellite, cable, Internet, or over-air. In addition, the digital content server 310 may store digital content uploaded from a standard component 324. The plurality of remote clients 314 are located in different rooms of the establishment and linked to the digital content server 310 via the distribution hub 312 or switch. The remote clients 314 are linked to the distribution hub 312 by a backbone transmission network 315. The backbone transmission network 315 may be wireless or wired with fiber optic cables, coaxial cables, or twisted pair cables, may employ a networking protocol such as Ethernet, Wi-Fi, Arcnet, or ATM (Asynchronous Transfer Mode), and may employ a communications protocol such as TCP/IP. Each remote client 314 includes a network interface card (NIC) for interfacing with the backbone transmission network 315.

The remote control 316 is adapted to communicate with each of the remote clients 314 and select the digital content stored in the digital content server 310. The remote control 316 is essentially a personal digital assistant (i.e., hand-held computer) including a display and added remote control circuitry. The display may, for example, be a liquid crystal display (LCD). The

added remote control circuitry includes "system remote" circuitry and "universal remote" circuitry.

The "system remote" circuitry in the remote control 316 is for establishing a first wireless transmission link 320 with each of the remote clients 314. The first wireless transmission link 320 may be a secure radio link (RF) as shown or an infrared link (IR). Upon establishing the first wireless transmission link 320 with one of the remote clients 314, the remote control 316 serves as a system remote capable of (1) displaying, scanning, and selecting the digital content available on the digital content server 310 and downloading the selected digital content from the digital content server 310 to the linked remote client 314 and (2) controlling the digital content server 310 to acquire or download digital content from a source 318 such as satellite, cable, Internet, or over-air. As used herein, the term "download" and similar variations thereof (e.g., downloaded, downloading, etc.) is intended to cover the transfer of content from one device to a receiving device whether the content is stored on the receiving device or merely "streamed" to the receiving device for immediate playback. The remote control 316 preferably includes a display for displaying the digital content. The display may, for example, be a liquid crystal display (LCD). As a user holding the remote control 316 moves from room to room of the establishment, the remote control 316 successively establishes wireless transmission links 320 with the remote clients 314 in the respective rooms. In this way, the digital content available on the digital content server 310 follows the user's movement from room to room.

In a preferred embodiment, the first wireless transmission link 320 is a secure radio link established by matching transceivers in the remote control 316 and each remote client 314. The matching transceivers are preferably small, inexpensive Bluetooth™ radio chips that operate in the unlicensed ISM band at 2.4 GHz and avoid interference from other signals by hopping to a new frequency after transmitting or receiving a packet. The radio chips are integrated into the respective remote control 316 and each remote client 314, which can then communicate over short distances and through obstacles by means of radio

waves. Wireless technologies other than Bluetooth, such as Wi-Fi, may be used to communicate remote control signals between the remote control 316 and each remote client 314.

The "universal remote" circuitry in the remote control 316 is for establishing a second wireless transmission link 322 with standard components 324 connected to the remote clients 314. The second wireless transmission link 322 is preferably an infrared link (IR) as shown. Upon establishing the second wireless transmission link 322 with one of the standard components 324, the remote control 316 series as a universal remote capable of operating the standard component 324. The standard component 324 may, for example, be an audio receiver (stereo amplifier), an audiovisual receiver, a video monitor (television), etc. The standard components 324 may be physically separate from, but linked to, the respective remote clients 314 or may be physically integrated into the respective remote clients 314 like integrated device 324c.

The digital content stored on the digital content server 310 may be formatted as a compact disc (CD), digital video disc (DVD), MP3, electronic book, software, etc. When the remote control 316 is linked to one of the remote clients 314, a user may scan and select digital content to be downloaded from the digital content server 310 to the remote client 314 and converted by the remote client 314 to a standard playable format (e.g., analog format) that can be played on the associated standard component 324. The selected digital content is downloaded from the digital content server 310 to the remote client 314 as raw digital data packets. The remote client 314, in turn, converts the downloaded digital content to a standard component output(s) compatible with a standard component 324 connected to the remote client 314, and the standard component 324 plays the digital content. Ports may, for example, include S-Video, RCA jacks, serial ports, Universal Serial Bus, Ethernet, Wi-Fi, Firewire™, Bluetooth, RF, or other similar outputs. The standard component 324 incorporates, or is linked to, audio speakers for broadcasting any audio signals received from the remote client 314 and a video monitor for displaying any video signals received from the remote client 314.

All content is stored on the digital content server 310 digitally, and is key-secured if obtained via the download or broadcast acquisition options of FIGS. 6 and 8. If the digital content is key-secured, the plurality of remote clients 314 include decryption circuitry (i.e., receiver/decoder circuit) for unlocking the digital content. The digital content selected for download from the digital content server 310 to a remote client 314 preferably remains encrypted until converted to a standard component output(s) in the remote client 314. The remote client 314 acts as a converter between key-secured digital content from the digital content server 310 and the standard component output(s). To decrypt the selected digital content, the remote control 316 contains a physical key initially acquired from a key provider in accordance with the present invention. The digital content is initially acquired from a content provider 326 that marks the digital content with an activation code associated with the physical key. The decryption circuitry in the remote client 314 receives an activation code from the remote control 316 via the wireless transmission link 320 and is enabled to unlock and convert the digital content to a playable format if the activation code in the remote control 316 is associated with the activation code in the digital content. If the activation code in the remote control 316 is not associated with the activation code in the digital content, the remote client 314 will not unlock and convert the digital content.

In an alternative embodiment, the remote clients 314 are eliminated and the standard components 324 are linked directly to standard component outputs of the distribution hub 312 by the backbone transmission network 315. In this case, the distribution hub 312 serves as a switch, and the digital content server 310 contains the decryption circuitry for unlocking the digital content. As the digital content is decrypted, it is converted to a playable format and fed to the distribution switch 312 for delivery to the appropriate standard component 324. The decryption circuitry in the digital content server 310 receives the activation code from the remote control 316 and is only enabled to unlock and convert the digital content to a playable format if the activation code in the remote control 316 is associated with the activation code in the digital content.

Instead of decrypting the digital content so that it can be played, the digital content may be downloaded (or "passed through") in its encrypted format to a storage device such as a media burner 324a or computer hard disk 324b for storage thereon. When a user ultimately desires to play the stored digital content on a media player, the media player must contain the decryption circuitry for unlocking the digital content. After unlocking the digital content, the media player converts the unlocked digital content to a playable format and plays the digital content. The decryption circuitry in the media player receives the activation code from the remote control 316 or physical key with the same activation code. The media player is only enabled to unlock and convert the digital content to a playable format if the activation code in the remote control 316 or physical key is associated with the activation code in the digital content.

In addition to downloading selected digital content from the digital content server 310 to the remote clients 314, data (e.g., MP3, CD, DVD, software, etc.) from the standard components 324 can be uploaded to the digital content server 310 and stored digitally thereon. This allows for storage of legacy content on the digital content server 310.

Referring to FIG. 11 generally, a digital content security system and method protects computers from unauthorized use and protects the digital content stored on computers from being wrongfully accessed, copying, and/or distributed. The basic components of the Personal Digital Key Digital Content Security System (PDK-DCSS) are (1) a standard hard drive device 330, with the addition of a PDK Receiver/Decoder Circuit (PDK-RDC) 332 integrated into the controller 334, and (2) a PDK-Key 336 associated with the PDK-RDC as described above. The standard computer hard drive 330 incorporates the integrated PDK-RDC 332 for the purpose of enabling multiple methods of securing digital content. Hard drives 330 incorporating a PDK-RDC 332 are referred to herein as PDK hard drives. While the PDK-DCSS diagrams show the PDK-RDC 332 as being integrated with the hard drive's controller 334, all OS-level protections described below can be implemented using externally-based PDK-RDCs.

A PDK hard drive 330 is similar to any standard, currently available hard drive with the exception of the PDK-RDC 332 (which is integrated into the drive's controller circuit 334). A PDK-RDC 332 is an integrated circuit able to process PDK-Key information, as well as encrypt/decrypt PDK-compliant digital content. Additionally, this circuit 332 is able to secure the hard drive 330 itself. This is implemented by the circuit 332 enabling or disabling the hard drive's controller 334 depending on whether an associated PDK-Key 336 (one which is uniquely and permanently associated with the PDK hard drive 330) is present. Each PDK hard drive 330 would typically be delivered with its own PDK-Key 336.

Secure RF communications between a PDK-Key 336 and its associated hard drive 330 occurs in the same manner as described above. It should be noted that software drivers can optionally be designed to allow for dynamic key assignment (assigning of keys after purchase to enable key swapping, or assigning of individual keys to multiple devices).

The PDK-Key and RDC technology is utilized to provide two categories of protection:

1) Hard drive access control - where an entire drive 330 is either completely accessible (unlocked) or inaccessible (locked), and/or individual data sectors or clusters of data sectors are optionally encrypted/decrypted, depending on whether the specific PDK-Key 336 associated (and shipped) with the drive 330 is within range. This category of protection can be accomplished transparently to the operating system (OS) responsible for managing the drive.

2) OS-level independent file protection - where the drive's RDC 332 functions independently of the drive 330 to protect individual files (typically copyrighted material) from wrongful copying. In this role, the RDC 332 works with any PDK-Key 336 (not just the one delivered with the drive 330) and any PDK-compliant file (they do not have to be stored on or associated with the hard drive 330). This category of protection requires an OS-level software driver be run under the OS responsible for managing the drive.

By utilizing these two categories of protection in various ways, four unique levels of content protection are enabled. Two of the levels (Drive-Level and Sector-Level) do not require external software support, while the remaining two (File-Level and Network-Level) require software drivers, as well as a stand-alone application for Network-Level implementations. Each of the four levels is defined below.

Referring to FIGS. 12 and 13 for Drive-Level protection, when implemented, a PDK hard drive 330 will only function when the associated PDK-Key 336 is within range. The drive's controller 334 is disabled whenever the PDK-Key 336 is not present. The contents of files stored on the drive 330 are not encrypted. The Drive-Level protection feature is designed to protect the hard drive's owner by locking access to the PDK hard drive 330 whenever the associated PDK-Key 336 is not present (i.e. when the owner momentarily steps away from the computer, if the computer is stolen, etc.).

Referring to FIGS. 12 and 13 for Sector-Level protection, when enabled, every sector (or cluster of sectors) read or written is encrypted/decrypted by the RDC 332 using the drive's associated PDK-Key 336. Because the encryption is performed at Sector-Level as opposed to File-Level, the encoding can be accomplished without requiring any changes, involvement, or acknowledgement of the OS responsible for managing the drive. The Sector-Level protection feature is designed to further protect the hard drive's owner (beyond Drive-Level protection) by encrypting the contents of the files stored on the drive, without requiring any software modifications (OS, application, etc.). The security advantage is that if the drive access is in some way defeated, the contents of files on the drive are still protected. It should be noted that if users retrieve files from drive and purposely transfer them anywhere else (via email, memory sticks, etc.), the data will no longer be protected. Drive-Level protection and Sector-Level protection may be used individually or in combination. Also, as noted above, it should be understood that Sector-Level protection may be applied to individual data sectors or clusters of data sectors.

FIG. 13 illustrates the logic executed by the RDC 332 for implementing Drive-Level protection and Sector-Level protection. The logic ensures OS-level commands (save entire file, read entire file, etc.) are given adequate time to complete. This enables implementation of logic without requiring OS changes, involvement, or acknowledgement.

Referring to FIG. 14 for File-Level protection, implemented as an OS-level software driver utilizing the PDK-RDC 332 integrated in the PDK hard drive 330, File-Level protection provides standard PDK digital rights management services and functionality as described above. As needed, the driver instructs the RDC 332 to acquire PDK-Key information, validate the key-to-file match, and use the key's information to perform actual encryption/decryption of the file (as a whole, not at the sector level). In the illustrated example, the file ABC 338 (which can reside on any storage device, in memory, etc.) is compared to any PDK-Key 336 within range of the PDK-RDC 332. If a match is found, the PDK-RDC 332 will decrypt the file 338 for use with whatever playback mechanism placed the request. Any PDK-Key 336 can be utilized, not just the key 336 associated with the PDK hard drive 330. When employed for File-Level protection (and Network-Level protection as described below), the PDK-RDC 332 functions independently of the hard drive 330 in which it resides. While PDK-compliant files it encrypts or decrypts may reside on the resident hard drive 330 and may be associated with the drive's PDK-Key 336, they do not have to be. The PDK-RDC 332 can work with other PDK-Keys and files residing on other mediums. When used in this manner, the PDK-RDC 332 can be thought of as just coincidently residing within the hard drive 330. For File-Level and Network-Level protection, the RDC 332 may be implemented as a separate circuit board (not integrated within the hard drive 330) and still provide identical functionality.

The primary use of File-Level protection is to secure and protect private or copyrighted material from wrongful copying and distribution. Because copies of any PDK-compliant files can only be accessed when the associated PDK-Key is present, File-Level protection enables copies (intended for use by the holder of

the associated key) to be produced effortlessly and securely. In addition to the distribution of copyrighted content such as music and movies as described above, software developers can distribute their software products via the Internet with the same ease and security. Software distributed in this manner would allow the legal recipient to make unlimited copies (for backup purposes, use on a home computer, etc.), yet the copies would only function when the associated key is present, preventing unauthorized copies from being wrongfully distributed and used.

The File-Level protection feature is designed to protect publishers of private or copyrighted material. Users can protect any file by converting it to PDK-compliant format; however, security of document files can be compromised by key holders not wishing to maintain the file's integrity. Because, while a Microsoft Word document (as an example) may be stored in the PDK-compliant protected format, once opened the contents could be cut and pasted into another application (e.g., an email program) thereby defeating the protection. Therefore the use of File-Level protection for use with documents is only applicable for entrusted recipients (individuals desiring to protect the content of which they are in possession). Non-document files, however, are not subject to these limitations.

Referring to FIG. 15 for Network-Level protection, File-Level Protection can be expanded to a network environment by employing a centralized software application / database called a PDK Document Controller (DC) 340 ruing on a server 342. A DC 340 enables the creation of Groups 342 that list which PDK-Keys 344 are allowed access to files in specific directories. All files stored in directories controlled by the DC 340 are automatically encrypted using the DC administrator's PDK-Key and thereby become PDK-compliant files. This process places all files stored in the DC 340 in a uniformly encrypted format.

Each user request for a file residing in a directory listed in a DC Group 342 results in the following steps. An RDC located in the requester's workstation 346 acquires information from the user's PDK-Key 344 and relays that information to the DC 340. The DC then enables appropriate access as

defined by the DC's Group database information. Specifically, the DC 340 performing a lookup of the requester's PDK-Key 344 in the appropriate Group's tables. If the DC 340 determines that the PDK-Key 344 is listed in a Group 342 that also lists the directory containing the file the user wishes to access, the DC 340 knows that a valid PDK-Key 344 was used in the file request and grants access. The requested file is first decrypted with the administrator's PDK-Key, re-encrypted with the requester's PDK-Key 344, and then downloaded to the user's workstation 346. The foregoing process mirrors the process employed when using PDK to download digital media files from the Internet.

The Network-Level protection feature is designed to protect publishers of private or copyrighted material. Users can protect any file by converting it to PDK-compliant format; however, security of document files can be compromised by key holders not wishing to maintain the file's integrity. Because, while a Microsoft Word document (as an example) may be stored in the PDK-compliant protected format, once opened the contents could be cut and paste into another application (e.g., an email program) thereby defeating the protection. Therefore, the use of File-Level protection for use with documents is only applicable for entrusted recipients (individuals desiring to protect the content of which they are in possession). Non-document files, however, are not subject to these limitations. The system is well suited for establishing centralized databases of secure documents intended for distribution to entrusted recipients such as personnel in a law firm or medical facility.

While the present invention has been described with reference to one or more particular embodiments, those skilled in the art will recognize that many changes may be made thereto without departing from the spirit and scope of the present invention. A number of enhancements and variations can be implemented/utilized that effectively broaden the PDK technology's scope and utility. These enhancements and alternative embodiments are summarized below.

Integration of RDCs into Alternative Storage Devices. This embodiment involves integrating RDCs into alternative storage mechanisms

beyond those of basic hard drives. These storage mechanisms include pure RAM/ROM-based storage commonly included/used in devices such as PDAs, cell phones, printer, copiers, faxes, scanners, MP3 players, GPS systems, digital cameras, computer motherboards, and DVR players, as well as portable storage devices such as Memory Sticks, Secure Digital memory cards, or any similar such product, in which case the RDC is either directly installed on the device, or integrated into the device in which the memory cards/sticks are inserted.

When an RDC is utilized in this manner, File-Level and Network-Level security function in the same manner as that described above for PDK hard drives. Drive-Level and Sector-Level security function in the same *logical* manner as that described for hard drives, but the *physical* implementation varies so as to control the bus structure that provides the communications path between the storage mechanisms and their hosting devices. As with PDK hard drives, access to the storage is enabled/disabled by interrupting the communications path, signaling to the hosting device that the storage is either "ready" or "busy," effectively enabling/disabling the device itself. To save batteries, RDCs used in this manner may only check for the presence of the associated PDK-Key on some periodic basis (versus every read or write sequence). And similar to PDK hard drives, Sector-Level security can be optionally utilized to encrypt/decrypt data traveling over the bus prior to writes and after reads to provide PDK's standard Sector-
Level data encoding functionality.

As when utilized in PDK hard drives, the PDK's security features provide the same convenient, non-intrusive, wireless security mechanism for the above-defined devices. This security mechanism protects any data stored on such devices in the event they are ever stolen, left unattended, or even purposely "disabled" to prevent access to sensitive content (i.e. preventing minors from accessing adult files, websites, etc.). When the associated PDK-Key(s) is not present, these devices and their storage means are locked and disabled.

Dynamic PDK-Key Management. Utilizing dynamic PDK-Key management, PDK-Keys can be assigned to an RDC (whether integrated into a

PDK hard drive or some other hosting device, or implemented independently) by a user (versus requiring such assignment at time of production). This capability is accomplished by including the required logic within the RDC's internal firmware (versus using an externally-based software driver to supply such capability).

Using this capability, a user can optionally assign any PDK-Key to act as the RDC's *master* key (the first key assigned to the device). Then by involving this *master* key (to prove the original "owner's" validation of the process), the user can assign (or remove) *additional* keys to the PDK-device. The general benefits of this feature include:

- The ability for the individual possessing the *master* key to create backup keys (to be stored and later retrieved in the event the *master* is ever lost), and to allow other users (those possessing *additional* keys) to also access their PDK device(s).
- The option to ship PDK-RDCs (in any configuration, host devices, etc.) without any PDK-Keys. And to allow such devices containing these RDCs (such as PDK hard drives) to optionally function with all or part of the PDK-technology never enabled or utilized. For instance, a user may elect to not enable Drive-Level and Sector-Level security features, but still utilize the functionalities of File-Level and Network-Level security.
- Giving users the option to purchase and associate a PDK-Key at a later time, or importantly, assign a PDK-Key they *already* utilize for another PDK-based device. This allows a user to utilize a single PDK-Key to provide access to all their PDK-based devices.

This built-in (firmware-based) PDK-Key configuration/management capability greatly enhances PDK's overall flexibility and ease of setup/use.

Independent RDC configuration. While integrating an RDC into a hard drive offers numerous benefits, RDCs may exist separately from hard drive mechanisms. In this configuration (as previously defined) an RDC's physical circuitry may exist in the form of a PC Card, a PC expansion board that plugs into a standard PC expansion slot, a USB-based plug-in board, or any other

similar design able to interface with a hosting device. Used in this manner, RDCs provide all previously defined functionalities with the exception of basic hard drive access-control.

Buffer Flush & Notification Software Driver. This enhancement involves using a simple software device driver to recognize when a PDK-Key is out of range (by "watching" for signals from the RDC), and when such a condition is detected to flush (empty) the host system's "read" buffer (effectively clearing any data the system may have been cached in internal memory in order to speed data access), and display a simple message indicating the PDK-Key is in/out of range. This optional mechanism can be utilized with any RDC configuration and on any PDK-protected device.

Each of these embodiments and obvious variations thereof is contemplated as falling within the spirit and scope of the claimed invention, which is set fort in the following claims.

CLAIMS:

1. A system comprising: a personal digital key and a computer readable medium that is accessible when authenticated by the personal digital key.
2. The system of claim 1, further comprising a reader/decoder circuit wherein the personal digital key is a tangible object, capable of wireless communication with the reader/decoder circuit.
3. The system of claim 2 further comprising a computer with a computer hard drive, wherein the reader/decoder circuit is located in the computer hard drive.
4. The system of claim 2 further comprising a swipe unit, wherein the reader/decoder circuit is located in the swipe unit.
5. The system of claim 1, further comprising a second personal digital key wherein the second digital key also authenticates a user attempting to access the computer readable medium.
6. The system of claim 1 wherein the personal digital key is a tangible article.
7. The system of claim 3, wherein the reader/decoder circuit is integrated with the computer.
8. The system of claim 3, wherein the computer comprises a personal digital key hard drive.
9. The system of claim 3, wherein the computer further comprises a reader/decoder circuit card.
10. The system of claim 3 wherein data from the personal digital key transfers and receives data through a secure RF port on the computer.
11. The system of claim 3 wherein the computer transmits and receives data from a provider through an Internet connection.
12. The system of claim 3, further comprising a database wherein the database includes an account identifier and a personal digital key identifier.

13. The system of claim 3 wherein data transmitted by the personal digital key to the computer is authenticated by personal digital key data stored in the database.

14. The system of claim 4 wherein the swipe unit transfers and receives data from a provider through an Internet connection.

15. The system of claim 4 wherein wherein data transmitted by the personal digital key to the reader is authenticated by personal digital key data stored in the database.

16. A method for securing computer readable media from unauthorized access, comprising:

Providing a tangible, personal digital key to a user, wherein the personal digital key is stores information unique to the user; and,

Authenticating the user if the information relayed from the personal digital key matches identification data separately provided.

17. The method of claim 16, wherein the identification data is data from a credit card.

18. The method of claim 16 wherein the personal digital key transmits the unique information through a wireless link.

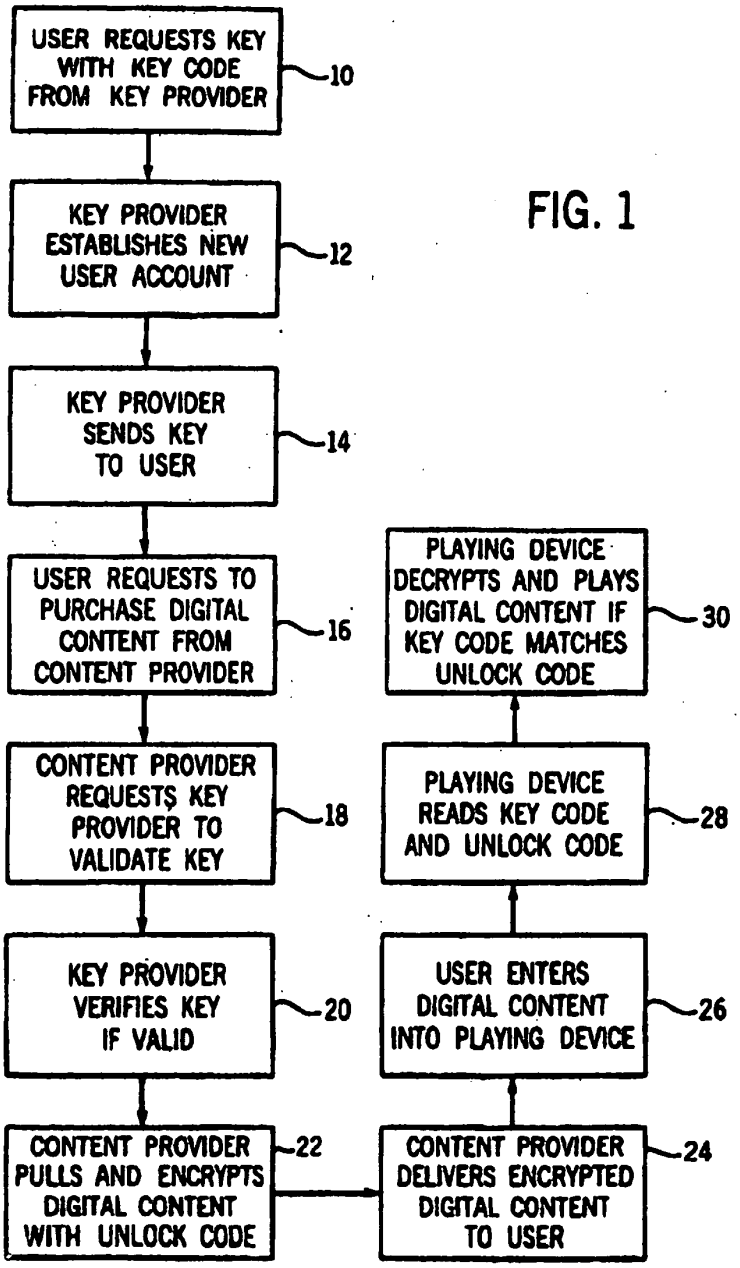

USER REQUESTS KEY WITH KEY CODE FROM KEY PROVIDER
10
KEY PROVIDER ESTABLISHES NEW USER ACCOUNT
12
KEY PROVIDER SENDS KEY TO USER
14
USER REQUESTS TO PURCHASE DIGITAL CONTENT FROM CONTENT PROVIDER
16
CONTENT PROVIDER REQUESTS KEY PROVIDER TO VALIDATE KEY
18
KEY PROVIDER VERIFIES KEY IF VALID
20
CONTENT PROVIDER PULLS AND ENCRYPTS DIGITAL CONTENT WITH UNLOCK CODE
22
CONTENT PROVIDER DELIVERS ENCRYPTED DIGITAL CONTENT TO USER
24
USER ENTERS DIGITAL CONTENT INTO PLAYING DEVICE
26
PLAYING DEVICE READS KEY CODE AND UNLOCK CODE
28
PLAYING DEVICE DECRYPTS AND PLAYS DIGITAL CONTENT IF KEY CODE MATCHES UNLOCK CODE
30

FIG. 1

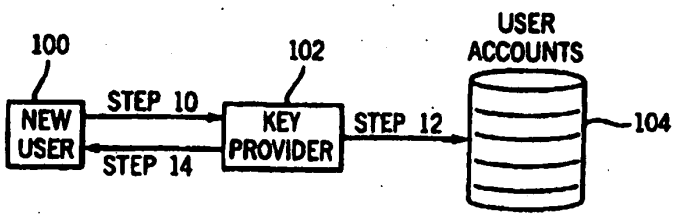


FIG. 2

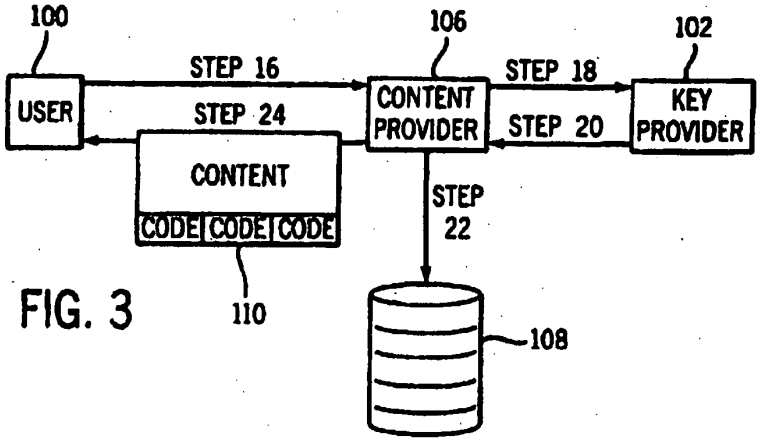


FIG. 3

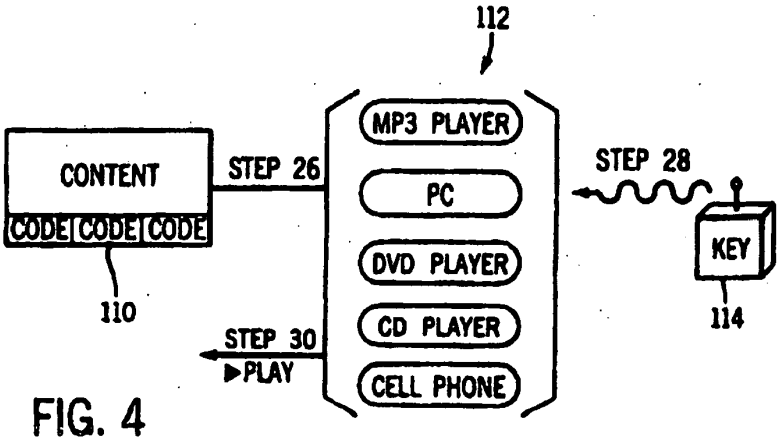


FIG. 4

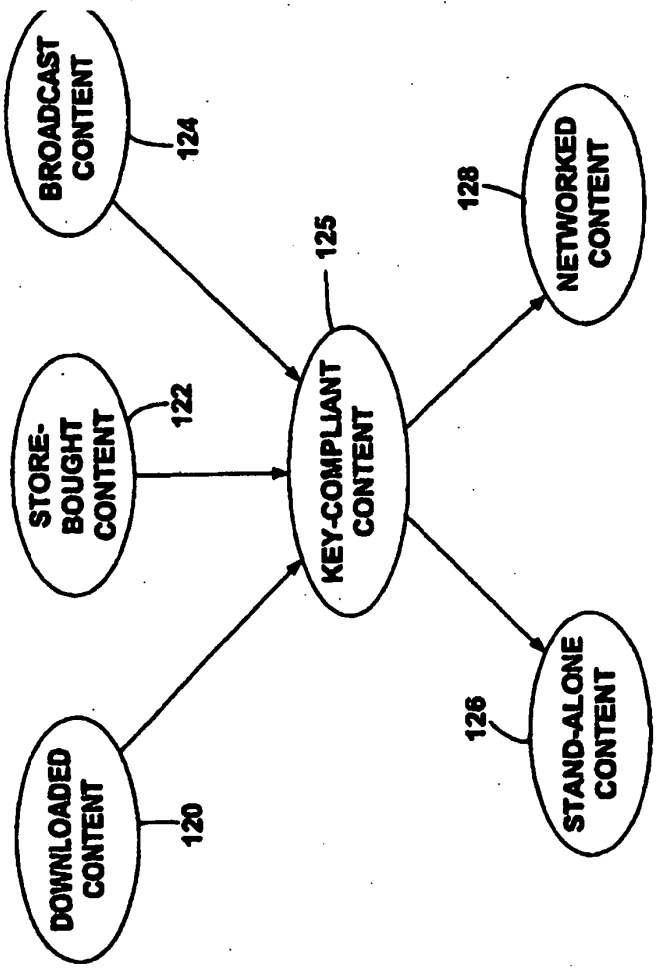

BROADCAST CONTENT
124
STORE-BOUGHT CONTENT
122
DOWNLOADED CONTENT
120
KEY-COMPLIANT CONTENT
125
NETWORKED CONTENT
128
STAND-ALONE CONTENT
126

FIG. 5

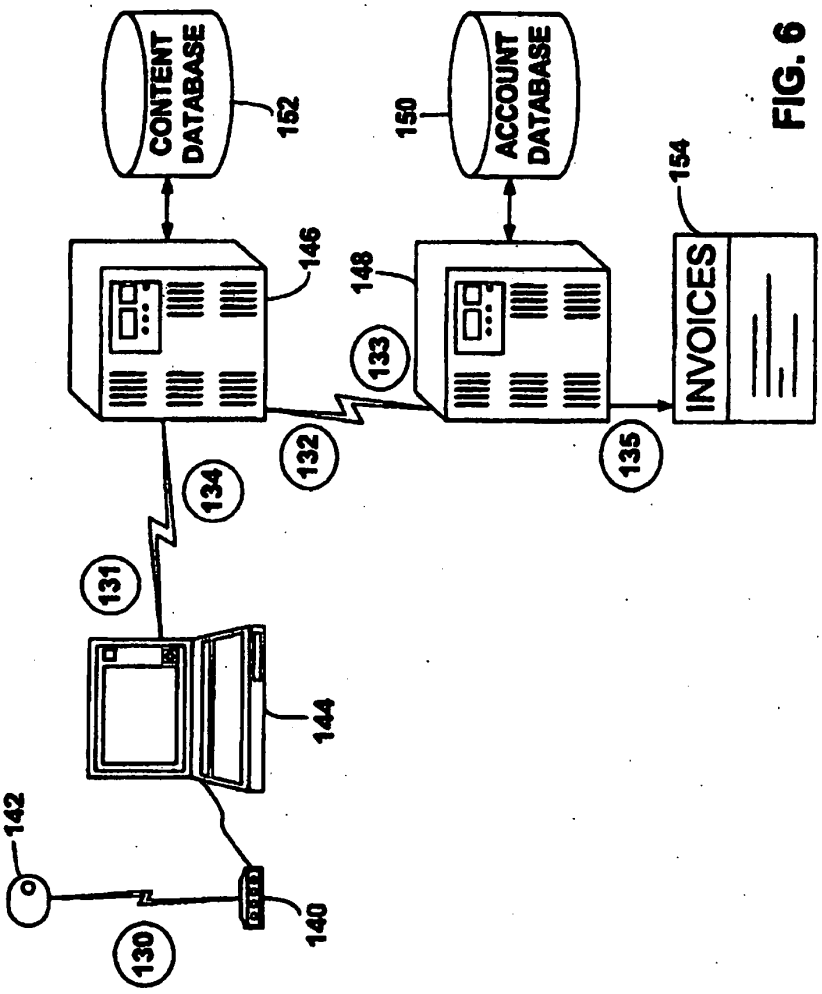

CONTENT DATABASE
152
ACCOUNT DATABASE
150
154
INVOICES
146
148
133
132
134
135
131
144
142
140
130

FIG. 6

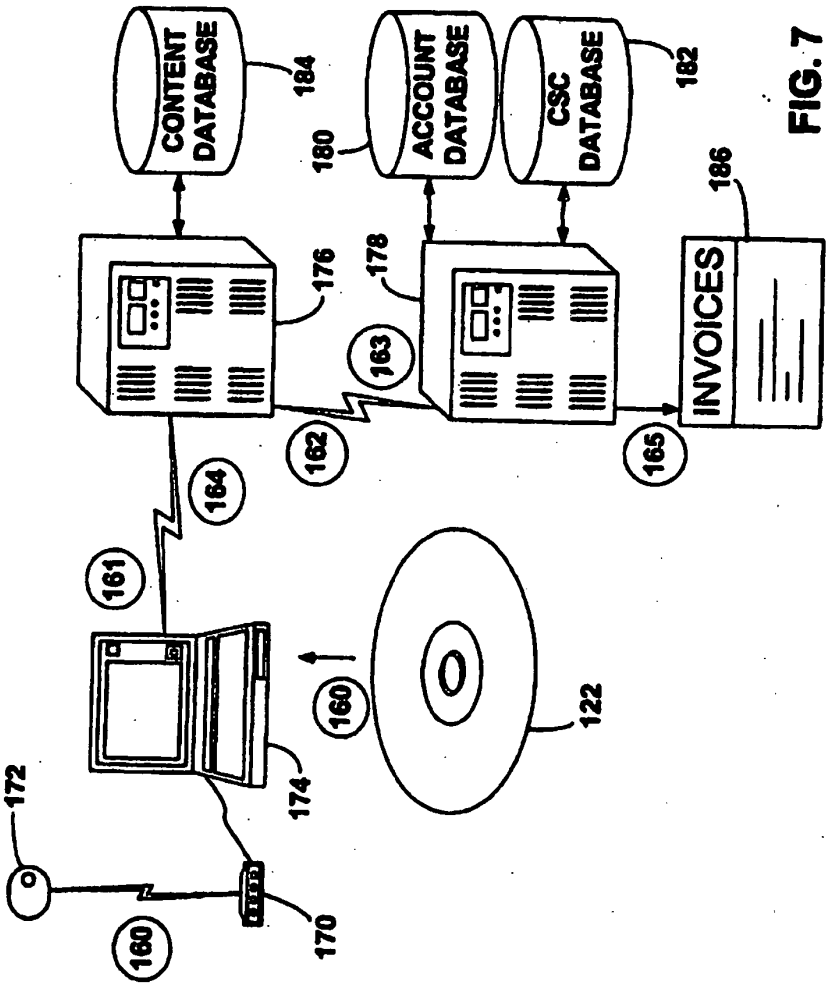

CONTENT DATABASE
184
ACCOUNT DATABASE
180
CSC DATABASE
182
186
INVOICES
176
178
163
162
165
164
161
160
122
174
172
160
170

FIG. 7

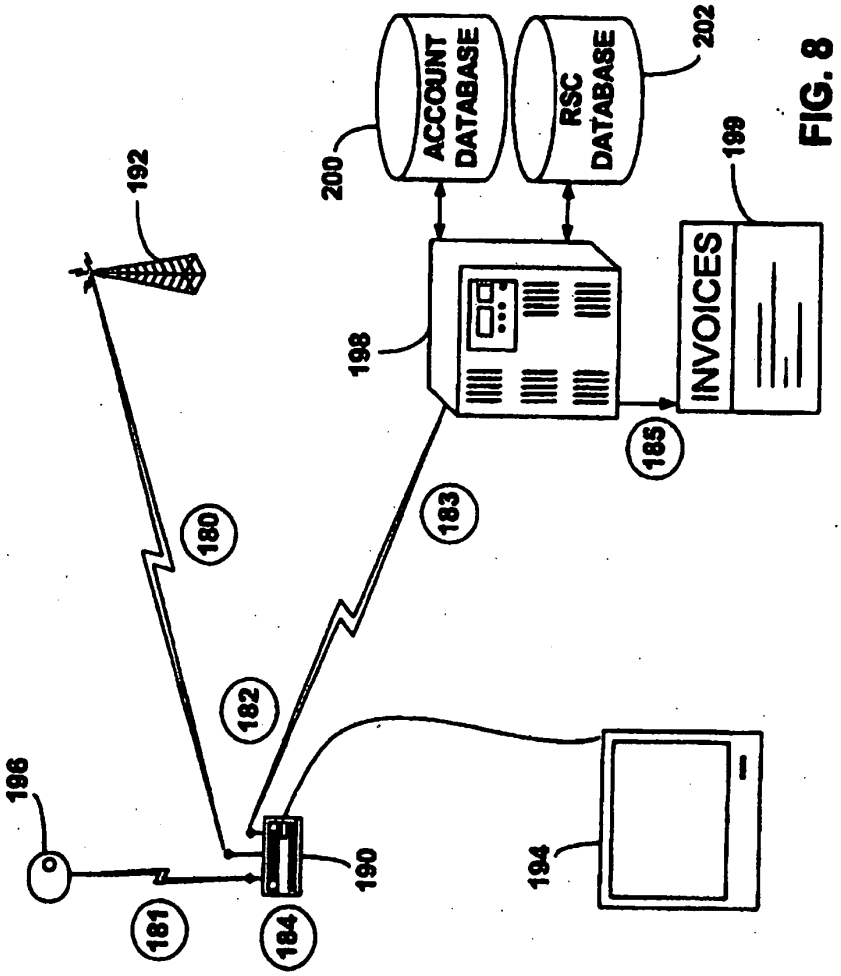

ACCOUNT DATABASE
RSC DATABASE
INVOICES
200
202
199
192
198
180
183
182
185
196
190
194
181
184

FIG. 8

FIG. 9a

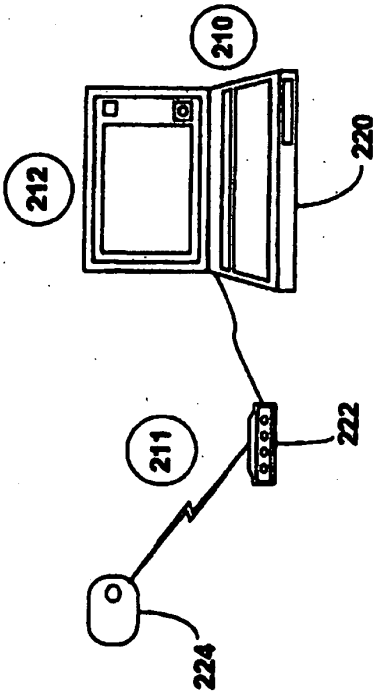
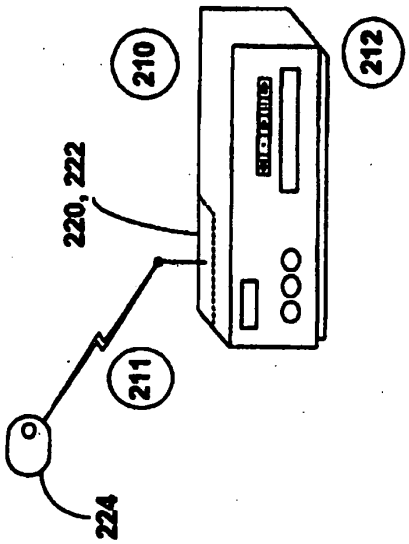


FIG. 9b



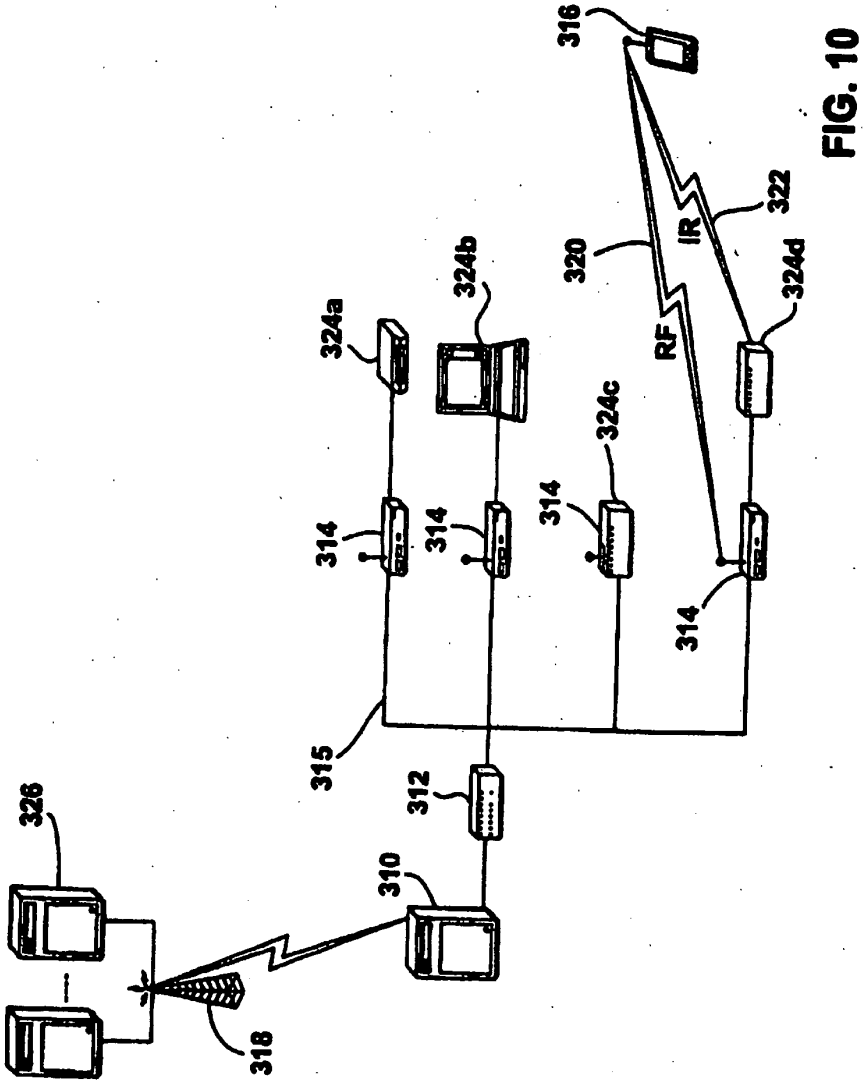

316
322
IR
320
RF
324d
324b
324a
324c
314
314
314
314
315
312
310
326
318

FIG. 10

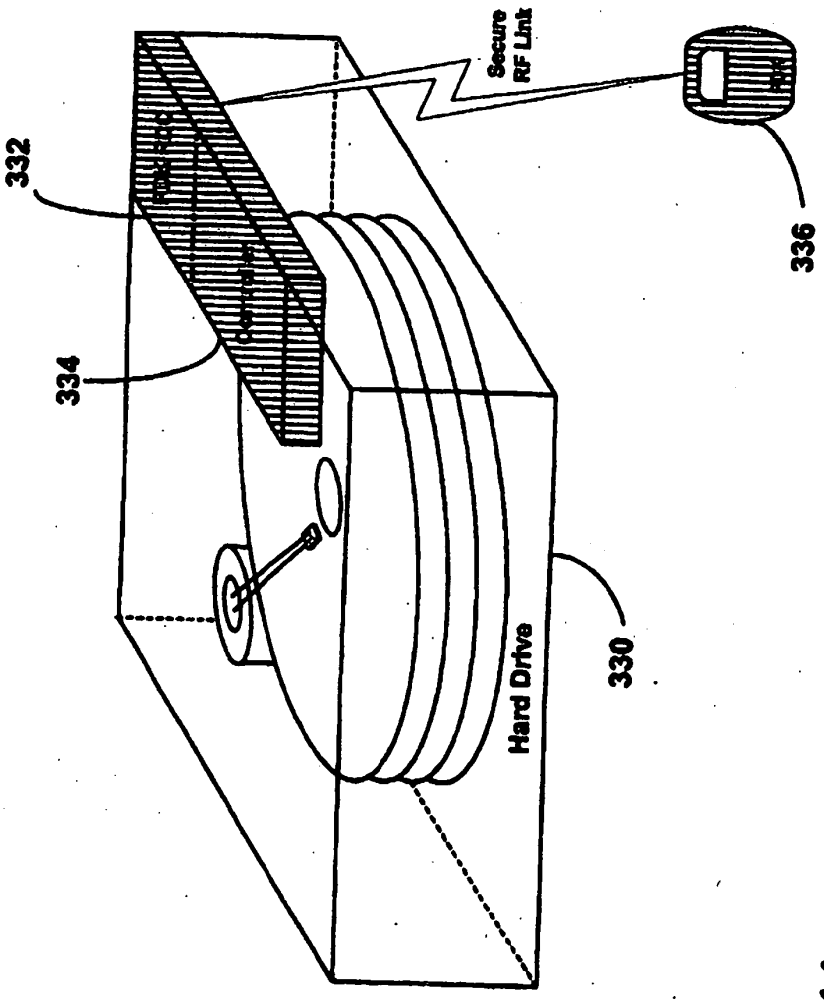


FIG. 11

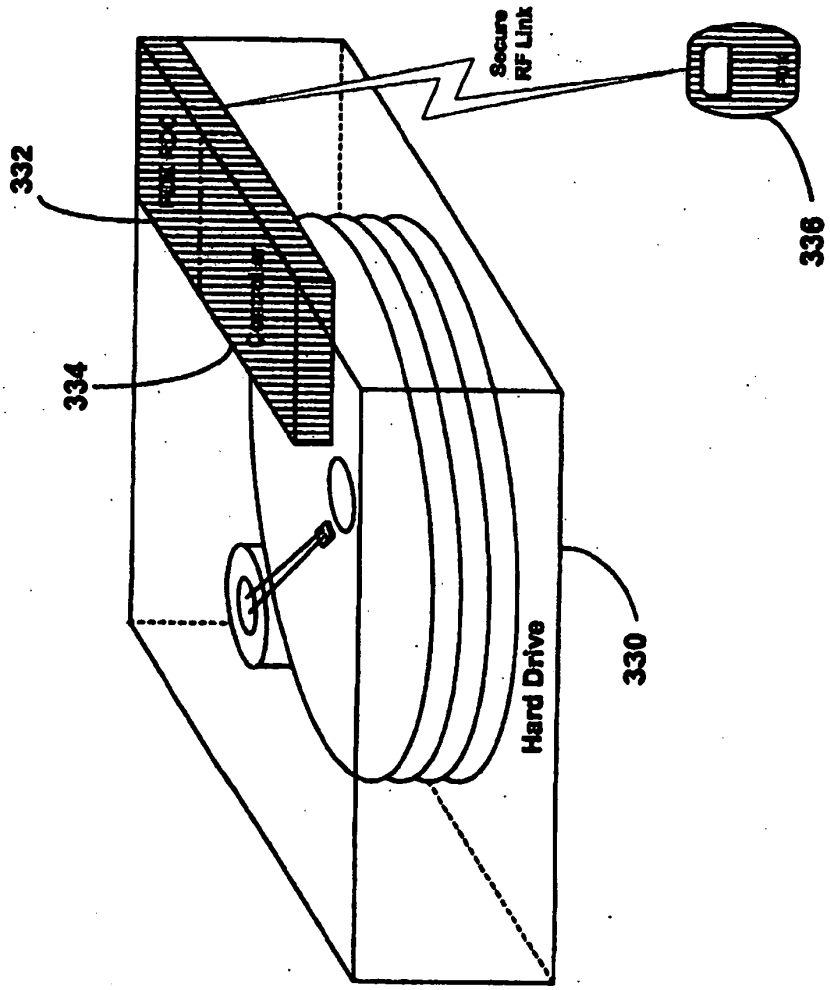


FIG. 12

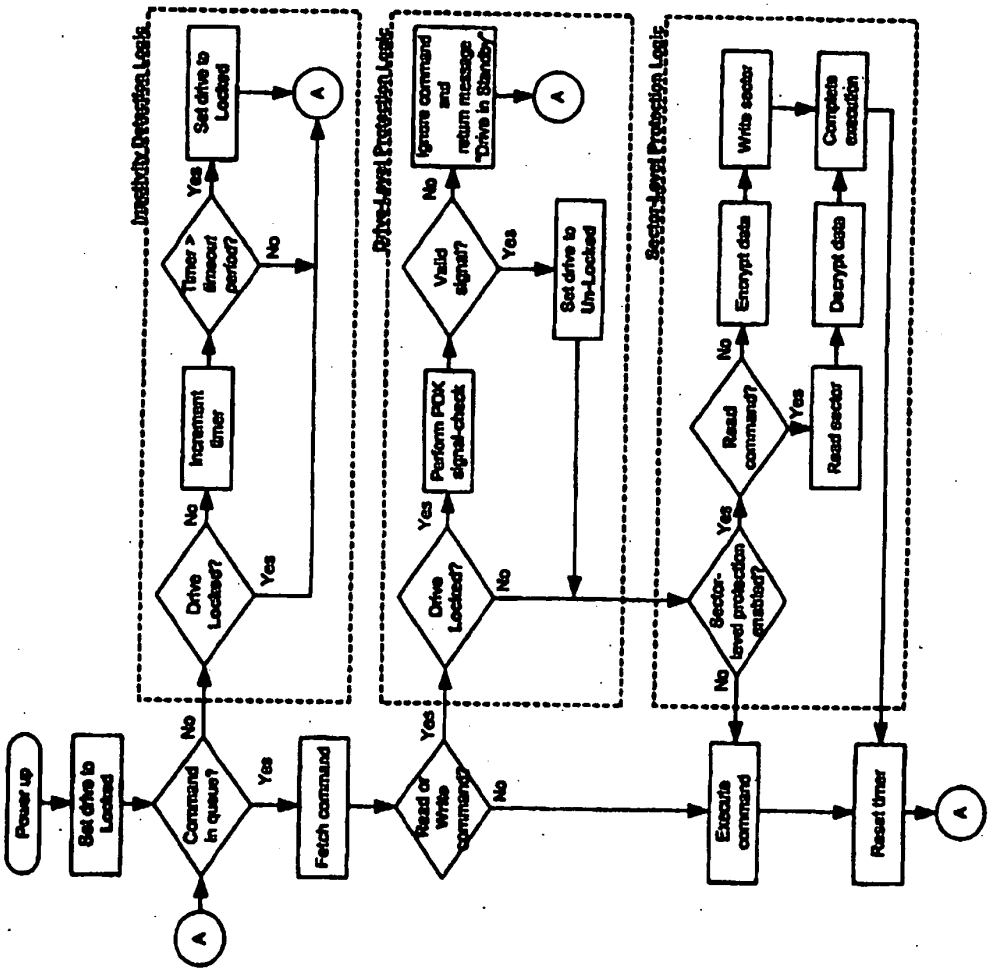

Power up
Set drive to Locked
Command in queue?
No
Yes
Fetch command
Read or Write command?
Yes
No
Inactivity Protection Logic
Drive Locked?
No
Yes
Increment timer
Timer > timeout period?
Yes
No
Set drive to Locked
Drive-Level Protection Logic
Drive Locked?
Yes
No
Perform PDK signal-check
Valid signal?
No
Yes
Ignore command and return message "Drive in Standby"
Set drive to Un-Locked
Sector-Level Protection Logic
Sector-level protection enabled?
Yes
No
Read command?
No
Yes
Encrypt data
Write sector
Read sector
Decrypt data
Complete execution
Execute command
Reset timer
A

FIG. 13

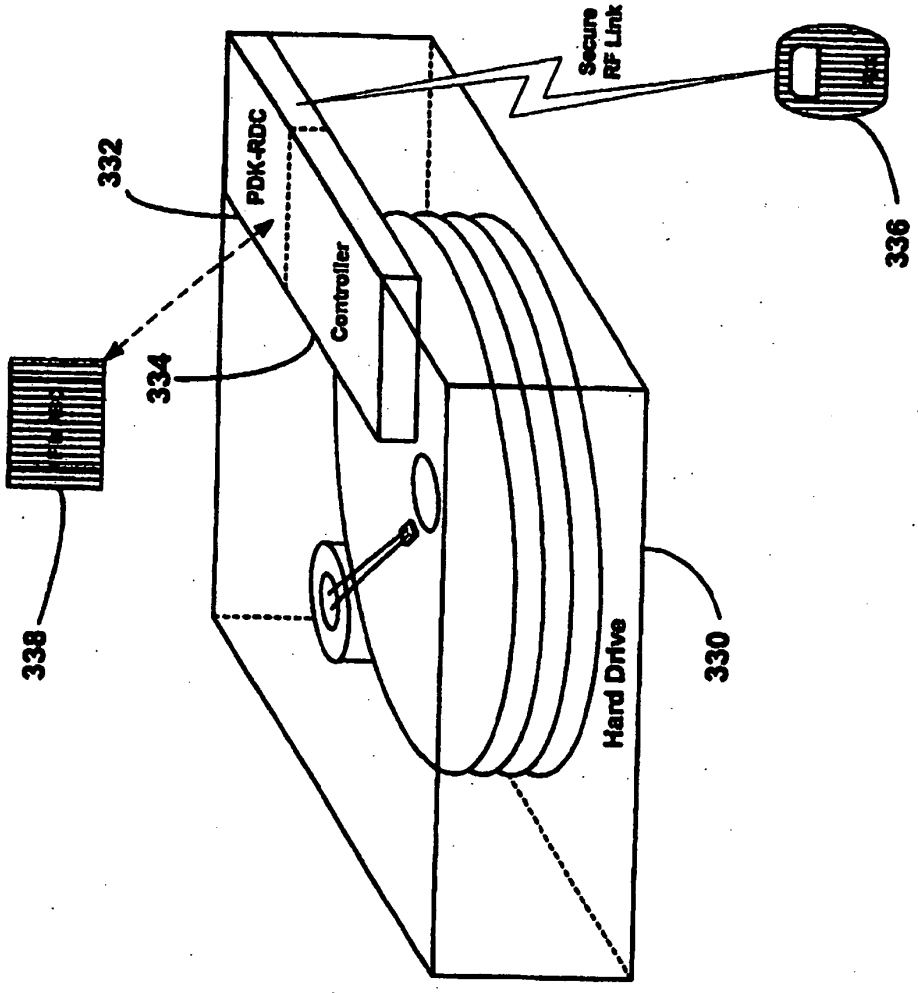

Secure
RF Link
PDK-RDC
332
Controller
334
336
338
330
Hard Drive

FIG. 14

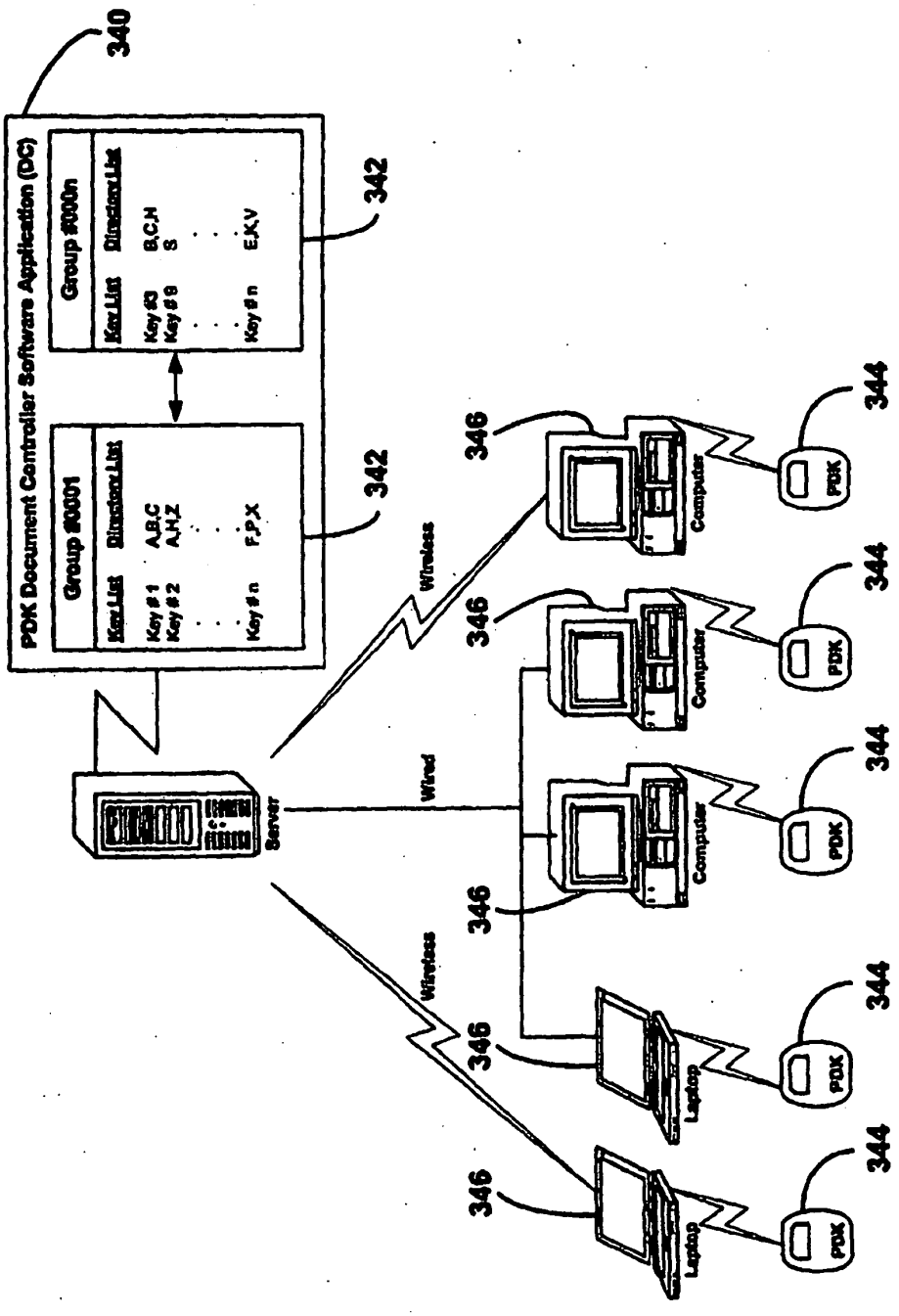

340
PDK Document Controller Software Application (DC)
Group #0001
Key List
Directory List
Key #1
Key #2
Key #n
A,B,C
A,H,Z
F,P,X
342
Group #000n
Key List
Directory List
Key #3
Key #6
Key #n
B,C,H
S
E,K,V
342
Server
Wired
Wireless
Wireless
346
Computer
346
Computer
346
Computer
346
Laptop
346
Laptop
344
PDK
344
PDK
344
PDK
344
PDK
344
PDK

FIG. 15

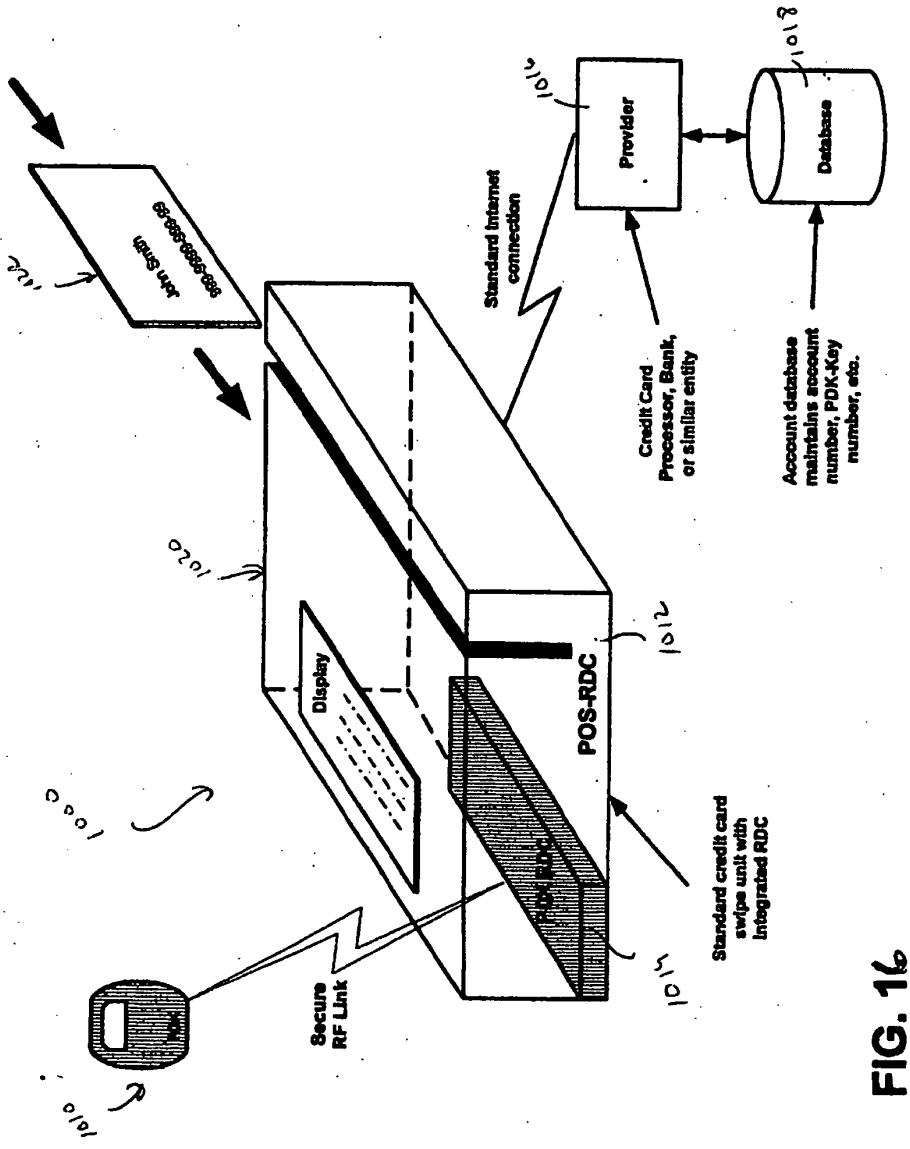

Provider
Database
Standard Internet connection
Credit Card Processor, Bank, or similar entity
Account database maintains account number, PDK-Key number, etc.
Display
POS-RDC
Standard credit card swipe unit with integrated RDC
Secure RF Link

FIG. 16

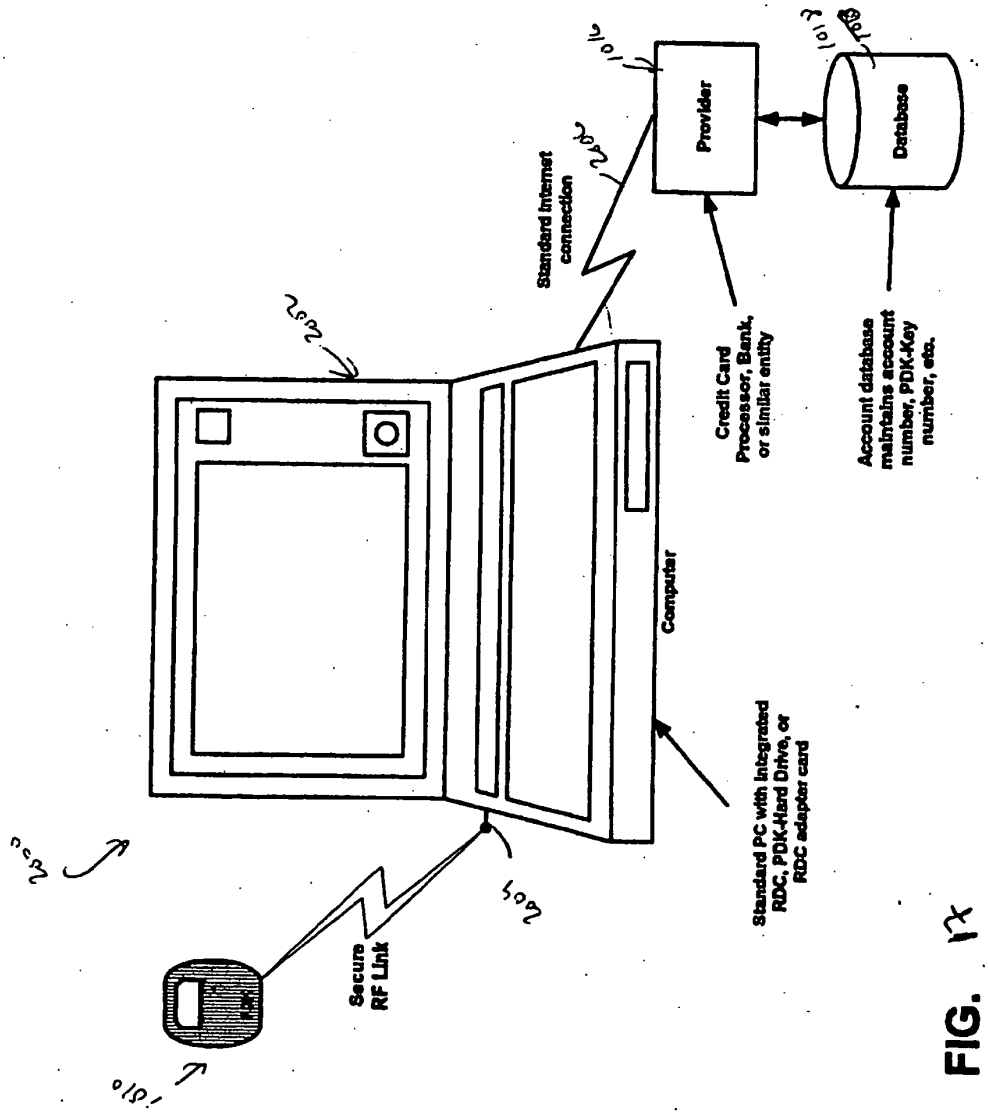

Provider
Database
Standard Internet connection
Credit Card Processor, Bank, or similar entity
Account database maintains account number, PDK-Key number, etc.
Computer
Standard PC with integrated RDC, PDK-Hard Drive, or RDC adapter card
Secure RF Link

FIG. 17

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
22 September 2005 (22.09.2005)

PCT

(10) International Publication Number
WO 2005/086802 A3

(51) International Patent Classification[7]: G06F 17/60

(21) International Application Number:
PCT/US2005/007535

(22) International Filing Date: 8 March 2005 (08.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/551,320 8 March 2004 (08.03.2004) US

(71) Applicant *(for all designated States except US)*: MARGENT DEVELOPMENT, LLC [US/US]; 391 Taylor Boulevard, Suite 105, Pleasant Hill, California 94523 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: GIOBBI, John, J. [US/US]; 689 NW Stonepine Drive, Bend, Oregon 97701 (US).

(74) Agents: STEFFEY, Charles, E. et al.; P.O. Box 2938, Minneapolis, MN 55402 (US).

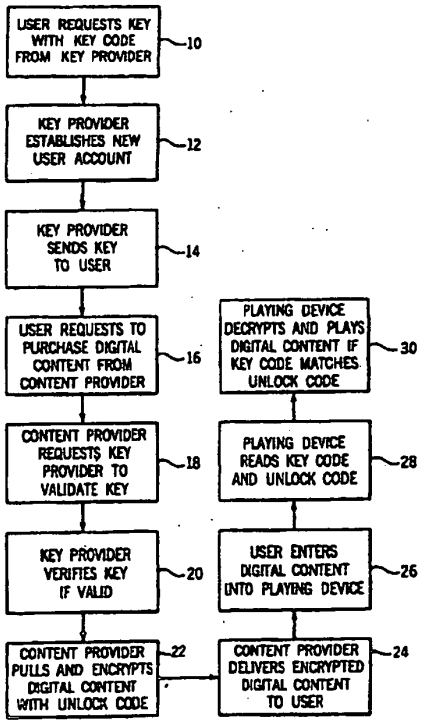
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

[Continued on next page]

(54) Title: LINKED ACCOUNT SYSTEM USING PERSONAL DIGITAL KEY (PDK-LAS)



(57) Abstract: One embodiment of the invention includes a system comprising: a personal digital key and a computer readable medium that is accessible when authenticated by the personal digital key.

WO 2005/086802 A3

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
26 January 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US05/07535

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : G06F 17/60
US CL : 705/51
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 705/51

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 20020124251 A1 (Hunter ET AL.) 05 September 2002 (05.09.2002) PARAGRAPHS 0001-0017 AND 0014	1-18
X	US 20030079133 A1 (Breiter ET AL.) 24 April 2003 (24.04.2003) PARAGRAPHS 0018 AND 0025.	1-18

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
07 October 2005 (07.10.2005)	06 DEC 2005
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer James Trammel Telephone No. 571-272-3600

Form PCT/ISA/210 (second sheet) (April 2005)

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
CHARLES E. STEFFEY
P.O. BOX 2938
MINNEAPOLIS, MN 55402

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing (*day/month/year*) 07 APR 2005
Applicant's or agent's file reference 2012.008WO1	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US04/38124	International filing date (*day/month/year*) 15 November 2004 (15.11.2004)
Applicant MARGENT DEVELOPMENT, LLC	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 740 14 35

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230	Authorized officer Michelle L. Eason for Gilberto Barron Telephone No. 571-272-3799

(See notes on accompanying sheet)

Form PCT/ISA/220 (January 2004)

P a20

Schwegman, Lundberg
Woessner & Kluth, P.A.
APR 18 2005
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APR 11 2005
PORTFOLIO IP

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
CHARLES E. STEFFEY
P.O. BOX 2938
MINNEAPOLIS, MN 55402

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 2012.008WO1	Date of mailing *(day/month/year)* **FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US04/38124	International filing date *(day/month/year)* 15 November 2004 (15.11.2004)
Applicant MARGENT DEVELOPMENT, LLC	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 740 14 35

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230	Authorized officer for Michelle L. Eason Gilberto Barron Telephone No. 571-272-3799

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

PORTFOLIO I.P.
APR 11 2005
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 2012.008WO1	**FOR FURTHER ACTION** see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US04/38124	International filing date (*day/month/year*) 15 November 2004 (15.11.2004)	(Earliest) Priority Date (*day/month/year*) 17 November 2003 (17.11.2003)
Applicant MARGENT DEVELOPMENT, LLC		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the Report**
   a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
      ☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
   b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.
2. ☐ **Certain claims were found unsearchable** (See Box No. II)
3. ☐ **Unity of invention is lacking** (See Box No. III)
4. With regard to the **title**,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,
   ☐ the text is approved as submitted by the applicant. D✓ 5/7/05
   ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,
   a. the figure of the **drawings** to be published with the abstract is Figure No. 2
      ☐ as suggested by the applicant.
      ☐ as selected by this Authority, because the applicant failed to suggest a figure.
      ☒ as selected by this Authority, because this figure better characterizes the invention.
   b. ☐ none of the figures is to be published with the abstract.

Form PCT/ISA/210 (first sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/38124

Box IV TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

NEW ABSTRACT

A Personal Digital Key Digital Content Security System (PDK-DCSS) is used to protect computers from unauthorized use and protect the digital content (110) stored on computers from being wrongfully accessed, copied, and/or distributed. The basic components of the PDK-DCSS are 1) a standard hard drive device (108), with the addition of a PDK Receiver/Decoder Circuit (PDK-RDC) optionally integrated into the hard drive's controller, and 2) a PDK-Key associated with the PDK-RDC. The PDK-Key and RDC technology is utilized to provide two categories of protection: 1) hard drive (108) access control for providing Drive-Level and Sector-Level protection and 2) operating system-level independent file protection for providing File-Level and Network-Level protection.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/38124

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : G06F 11/30
US CL : 713/193
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 713/193

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,385,596 B1 (WISER et al) 07 May 2002, fig.1b block 106,120,130 and associated text; col.4, lines 3-13; col.3, lines 5-10; col.4, lines 12-27, 51-67; col.5, lines 11-17; fig.2 and 4,9b-13 and associated text; col.8, lines 46-56; col.18, lines 66-67; col.19, lines 1-25;col.6, lines 4-65.	1-4,7-12-14, 17-20
Y	PAGET, THE SECURITY BEHIND SECURE EXTRANETS,ENTERPRISE SYSTEM JOURNAL,14,12,74, December 1999. entire reference	1-4, 7-14 and 17-20
Y	US 6,632,992 B2 (HASEGAWA) 14 October 2003, col.3, lines 22-39.	3 and 13

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
17 March 2005 (17.03.2005)

Date of mailing of the international search report
07 APR 2005

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (703)305-3230

Authorized officer
Gilberto Barron

Telephone No. 571-272-3799

Form PCT/ISA/210 (second sheet) (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
CHARLES E. STEFFEY
P.O. BOX 2938
MINNEAPOLIS, MN 55402

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing (*day/month/year*)	07 APR 2005
Applicant's or agent's file reference 2012.008WO1	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date (*day/month/year*)	Priority date (*day/month/year*)
PCT/US04/38124	15 November 2004 (15.11.2004)	17 November 2003 (17.11.2003)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): G06F 11/30 and US Cl.: 713/193

Applicant

MARGENT DEVELOPMENT, LLC

1. This opinion contains indications relating to the following items:

- [X] Box No. I — Basis of the opinion
- [ ] Box No. II — Priority
- [ ] Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [ ] Box No. IV — Lack of unity of invention
- [X] Box No. V — Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI — Certain documents cited
- [ ] Box No. VII — Certain defects in the international application
- [ ] Box No. VIII — Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(*b*) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230	Authorized officer Gilberto Barron Telephone No. 703-305-3900

Form PCT/ISA/237 (cover sheet) (January 2004)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International Application No.
PCT/US04/38124

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

Form PCT/ISA/237(Box No. I) (January 2004)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US04/38124

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-20	YES
	Claims NONE	NO
Inventive step (IS)	Claims 5, 6, 15 and 16	YES
	Claims 1-4, 7-14 and 17-20	NO
Industrial applicability (IA)	Claims 1-20	YES
	Claims NONE	NO

2. Citations and explanations:

Please See Continuation Sheet

Form PCT/ISA/237 (Box No. V) (January 2004)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US04/38124

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:
Claims 1, 2, 4, 7-12, 14, 17-20 lacks an inventive step under PCT Article 33(3) as being obvious over Wiser et al (6, 385, 596 B1) in view of Paget (The security behind Secure Extranets, Enterprise System Journal, 14, 12, 74, December 1999).

As per claims 1, 2, 4, 7-12, 14 and 17-20 Wiser et al (6, 385, 596 B1) teach a method, system of securing a hard drive (see fig.1b, blocks 106, 120 and 130; col.4, lines 3-13) of a computer, comprising: detecting a key with a receiver/decoder circuit associated with the hard drive; validating the detected key with the receiver/decoder circuit; and permitting access to the hard drive or a portion thereof with the receiver/decoder circuit if the detected key is validated (see col.3, lines 5-10; col.4, lines 15-18 where the passport corresponds to Applicant's key; col.4, lines 12-27, 51-67; col.5, lines 11-17; col.8, lines 46-56 where decryption process is being done and where the decoding or decrypting circuit is inherent part of the system in order to do the decoding and decryption; Also see the entire reference for more detail);wherein the receiver/decoder circuit resides in the computer (see fig.9b-13 and associated text); wherein the validating step includes determining whether or not the detected key is associated with the hard drive (see fig.1b and associated text; col.3, lines 37-39; col.5, lines 11-17; col.18, lines 66-67 and col.19, lines 1-25); wherein digital content read from or written to the hard drive is decrypted or encrypted by the receiver/decoder circuit using the key associated with the hard drive in order to provide sector-level protection (see col.6, lines 4-65; fig.9b and associated text where the storing corresponds to applicant's write and retrieving media files corresponds to applicant's read); wherein the key associated with the hard drive is initially delivered with the hard drive (see fig.2-4 and associated text); wherein the storage medium is a hard drive of a computer, and the receiver/decoder circuit resides in the computer (see fig.1b; 2 and associated text); wherein a software driver in the computer's operating system instructs the receiver/decoder circuit to perform the detecting, validating, and decrypting steps (see abstract; col.3-4); wherein the validating step includes determining whether or not the detected key is associated with the file (fig.1b, 2 and associated text; col.3-4). but do not explicitly disclose the key is a physical, portable key. However Paget (The security behind Secure Extranets, Enterprise System Journal, 14, 12, 74, December 1999) disclose the key is a physical portable key (see the entire reference pages with close attention to where the passport and digital certificate that contains the key are installed on a smart card on the second page where examiner considers such smart card as corresponding to Applicant's physical, portable key). It would have been obvious to one of ordinary skilled in the art at the time the invention was made to utilize Paget's portable key such as the smart card in Wiser's secure access to on-line music files on the storage (hard disk) in order to extends extranet access and authority to users based on their roles and business privileges, while ensuring confidentiality and integrity of the data users send, receive and access.
Claims 3 and 13 lacks an inventive step under PCT Article 33(3) as being obvious over the prior art as applied in the immediately preceding paragraph and further in view of Hasegawa (6,632,992 B2).

As per claims 3 and 13 Wiser et al (6, 385, 596 B1) in view of Paget (The security behind Secure Extranets, Enterprise System Journal, 14, 12, 74, December 1999) teach all limitation of the method, system of claims 1, 9, 17 and 22 as applied above but do not explicitly disclose wireless communication. However Hasegawa (6,632,992 B2) wireless communication (see col.3, lines 22-39). It would have been obvious to one of ordinary skilled in the art at the time the invention was made to utilize Hasegawa's wireless communication in Wiser's secure access to on-line music files on the storage (hard disk) in view of Paget's portable key such as the smart card in order to extends extranet access and authority to users based on their roles and business privileges, while ensuring confidentiality and integrity of the data users send, receive and access without the use of wires or cables.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US04/38124

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

Claims 5, 6, 15 and 16 meets the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest disabling of the storage or hard-disk in case of non validation of the physical key.

Form PCT/ISA/237 (Supplemental Box) (January 2004)

PATENT COOPERATION TREATY

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FEB 26 2007
FENWICK & WEST

From the INTERNATIONAL SEARCHING AUTHORITY

To:
WASIF H. QURESHI
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

11163/PCT

	Date of mailing (*day/month/year*)
Applicant's or agent's file reference PROXE-72586	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US05/43447	International filing date (*day/month/year*) 30 November 2005 (30.11.2005)
Applicant PROXENSE, LLC	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 338.82.70.

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

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   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

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   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer James Trammel Telephone No. (571) 272-3600

Form PCT/ISA/220 (January 2004) (*See notes on accompanying sheet*)

M

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
WASIF H. QURESHI
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing (*day/month/year*) 22 FEB 2007
Applicant's or agent's file reference PROXE-72586	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US05/43447	International filing date (*day/month/year*) 30 November 2005 (30.11.2005)
Applicant PROXENSE, LLC	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

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Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer James Trammel Telephone No. (571) 272-3600

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PROXE-72586	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US05/43447	International filing date (*day/month/year*) 30 November 2005 (30.11.2005)	(Earliest) Priority Date (*day/month/year*) 01 December 2004 (01.12.2004)
Applicant PROXENSE, LLC		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 7 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the Report**
   a. With regard to the **language**, the international search was carried out on the basis of:
      ☒ the international application in the language in which it was filed.
      ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.
2. ☐ **Certain claims were found unsearchable** (See Box No. II)
3. ☐ **Unity of invention is lacking** (See Box No. III)
4. With regard to the **title**,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,
   a. the figure of the **drawings** to be published with the abstract is Figure No. 1
      ☒ as suggested by the applicant.
      ☐ as selected by this Authority, because the applicant failed to suggest a figure.
      ☐ as selected by this Authority, because this figure better characterizes the invention.
   b. ☐ none of the figures is to be published with the abstract.

Form PCT/ISA/210 (first sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US05/43447

A. CLASSIFICATION OF SUBJECT MATTER
IPC: **G06Q 99/00**(2006.01);**H04K 1/00**(2006.01);**H04L 9/00**(2006.01)

USPC: 705/59
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 705/59

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/0109580 A1 (SHREVE ET AL.) 15 AUGUST 2002 (15.08.2002) PARAGRAPKS 0001 TO 0007.	1-55
X	US 2002/0073042 A1 (MARIITZEN ET AL.) 13 JUNE 2002 (13.06.2002) PARAGRAPHS 0001-0005.	1-55
X	US 5,991,749 A (MORRILL, JR) 23 NOVEMBER 1999 (23.11.1999), COLUMN 1 LINE 5-58.	1-55

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
14 November 2006 (14.11.2006)

Date of mailing of the international search report
22 FEB 2007

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (571) 273-3201

Authorized officer
James Trammel

Telephone No. (571) 272-3600

Form PCT/ISA/210 (second sheet) (April 2005)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
WASIF H. QURESHI
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	22 FEB 2007
Applicant's or agent's file reference PROXE-72586	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US05/43447	30 November 2005 (30.11.2005)	01 December 2004 (01.12.2004)

International Patent Classification (IPC) or both national classification and IPC

IPC: **G06Q 99/00**(2006.01);**H04 K 1/00;H04 L 9/ 00**

USPC: 705/59

Applicant

PROXENSE, LLC

1. This opinion contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis(b)* that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	15 November 2006 (15.11.2006)	James Tramme Telephone No. (571) 272-3600

Form PCT/ISA/237 (cover sheet) (April 2005)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/43447

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

☒ the international application in the language in which it was filed

☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ on paper

☐ in electronic form

c. time of filing/furnishing

☐ contained in the international application as filed.

☐ filed together with the international application in electronic form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/43447

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims NONE	YES
	Claims 1-55	NO
Inventive step (IS)	Claims NONE	YES
	Claims 1-55	NO
Industrial applicability (IA)	Claims 1-55	YES
	Claims NONE	NO

2. Citations and explanations:

Claims 1-55 lack novelty under PCT Article 33(2) as being anticipated by Morrill, Jr (US 5,991,749 A). Morrill, in at least column 1, lines 25-58 discloses a system for collecting funds by passing within a proximity of a wireless computing and transactional device.

Claims 1-55 lack novelty under PCT Article 33(2) as being anticipated by Maritzen et al. (US 2002/0073042 A1). Maritzen, in at least paragraphs 0001-0006, discloses conducting e-commerce transactions across wireless devices.

Claims 1-55 lack novelty under PCT Article 33(2) as being anticipated by Shreve et al. (US 2002/0109580 A1). Shreve, in at least paragraphs 0001-0007 discloses remote keyless entry devices for granting access to secure domains.

RECEIVED
MAR 2007
FENWICK & WEST

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
JOHN T. MCNELIS
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing (*day/month/year*) 01 MAR 2007
Applicant's or agent's file reference 11062 PCT	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US05/46843	International filing date (*day/month/year*) 20 December 2005 (20.12.2005)
Applicant PROXENSE, LLC	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

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Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Emmanuel Moise Telephone No. (571)-305-3900

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
JOHN T. MCNELIS
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing (*day/month/year*) 01 MAR 2007
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International application No. PCT/US05/46843	International filing date (*day/month/year*) 20 December 2005 (20.12.2005)
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Form PCT/ISA/220 (January 2004) (*See notes on accompanying sheet*)