AO 120 (Rev. 08/10)

TO:	Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

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 _____ on the following

☐ Trademarks or ☐ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT

PLAINTIFF	DEFENDANT
GOTV STREAMING, LLC	NETFLIX, INC.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	8,103,865	1/24/12	GOTV STREAMING LLC
2	8,478,245	7/2/13	GOTV STREAMING LLC
3	8,989,715	3/24/15	GOTV STREAMING LLC
4			
5			

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**

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT3815634

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY INTEREST

CONVEYING PARTY DATA

Name	Execution Date
PHUNWARE, INC.	03/25/2016

RECEIVING PARTY DATA

Name:	WESTERN ALLIANCE BANK
Street Address:	55 ALMADEN BOULEVARD, SUITE 100
City:	SAN JOSE
State/Country:	CALIFORNIA
Postal Code:	95113

PROPERTY NUMBERS Total: 12

Property Type	Number
Patent Number:	9015692
Patent Number:	8989715
Patent Number:	8812027
Patent Number:	8788358
Patent Number:	8732619
Patent Number:	8560601
Application Number:	14336960
Patent Number:	8478245
Patent Number:	8060594
Patent Number:	8009619
Application Number:	14279269
Application Number:	14322331

CORRESPONDENCE DATA

Fax Number: (213)896-0400

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 2138915604
Email: aarnelle@buchalter.com
Correspondent Name: AMY ARNELLE
Address Line 1: 1000 WILSHIRE BOULEVARD, SUITE 1500
Address Line 4: LOS ANGELES, CALIFORNIA 90017

NAME OF SUBMITTER:	AMY ARNELLE
SIGNATURE:	/Amy Arnelle/
DATE SIGNED:	04/05/2016
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 8

source=Intellectual Property Security Agreement- Phunware#page1.tif
source=Intellectual Property Security Agreement- Phunware#page2.tif
source=Intellectual Property Security Agreement- Phunware#page3.tif
source=Intellectual Property Security Agreement- Phunware#page4.tif
source=Intellectual Property Security Agreement- Phunware#page5.tif
source=Intellectual Property Security Agreement- Phunware#page6.tif
source=Intellectual Property Security Agreement- Phunware#page7.tif
source=Intellectual Property Security Agreement- Phunware#page8.tif

INTELLECTUAL PROPERTY SECURITY AGREEMENT

This INTELLECTUAL PROPERTY SECURITY AGREEMENT, dated as of March 25, 2016, (the "Agreement") between WESTERN ALLIANCE BANK, an Arizona corporation ("Lender") and PHUNWARE, INC., a Delaware corporation ("Grantor"), is made with reference to the Business Financing Agreement, dated as of March 25, 2016 (as amended from time to time, the "Financing Agreement"), between Lender and Grantor. Terms defined in the Financing Agreement have the same meaning when used in this Agreement.

For good and valuable consideration, receipt of which is hereby acknowledged, Grantor hereby covenants and agrees as follows:

To secure the Obligations under the Financing Agreement, Grantor grants to Lender a security interest in all right, title, and interest of Grantor in any of the following, whether now existing or hereafter acquired or created in any and all of the following property (collectively, the "Intellectual Property Collateral"):

(a) copyright rights, copyright applications, copyright registrations and like protections in each work or authorship and derivative work thereof, whether published or unpublished and whether or not the same also constitutes a trade secret, now or hereafter existing, created, acquired or held (collectively, the "Copyrights"), including the Copyrights described in Exhibit A;

(b) trademark and servicemark rights, whether registered or not, applications to register and registrations of the same and like protections, and the entire goodwill of the business of Borrower connected with and symbolized by such trademarks (collectively, the "Trademarks"), including the Trademarks described in Exhibit B;

(c) patents, patent applications and like protections including without limitation improvements, divisions, continuations, renewals, reissues, extensions and continuations-in-part of the same (collectively, the "Patents"), including the Patents described in Exhibit C;

(d) mask work or similar rights available for the protection of semiconductor chips or other products (collectively, the "Mask Works");

(e) trade secrets, and any and all intellectual property rights in computer software and computer software products;

(f) design rights;

(g) claims for damages by way of past, present and future infringement of any of the rights included above, with the right, but not the obligation, to sue for and collect such damages for said use or infringement of the intellectual property rights identified above;

(h) licenses or other rights to use any of the Copyrights, Patents, Trademarks, or Mask Works, and all license fees and royalties arising from such use to the extent permitted by such license or rights;

(i) amendments, renewals and extensions of any of the Copyrights, Trademarks, Patents, or Mask Works; and

(j) proceeds and products of the foregoing, including without limitation all payments under insurance or any indemnity or warranty payable in respect of any of the foregoing.

The rights and remedies of Lender with respect to the security interests granted hereunder are in addition to those set forth in the Financing Agreement, and those which are now or hereafter available to Lender as a matter of law or equity. Each right, power and remedy of Lender provided for herein or in the Financing Agreement, or now or hereafter existing at law or in equity shall be cumulative and concurrent and shall be in addition to every right, power or remedy provided for herein, and the exercise by Lender of any one or more of such rights, powers or remedies does not preclude the simultaneous or later exercise by Lender of any other rights, powers or remedies.

Lender agrees to release its security interest in the Intellectual Property Collateral when it releases its lien in the Collateral in accordance with the terms of the Financing Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

GRANTOR:

PHUNWARE, INC.,
a Delaware corporation

By: _____
Name: Alan J. Knitowski
Title: CEO

Address for Notices:

PHUNWARE, INC.
7800 Shoal Creek Blvd., Suite 210 W
Austin, TX 78757

LENDER:

WESTERN ALLIANCE BANK, an Arizona corporation

By: _____
Name: Josh Converse
Title: [illegible]

Address for Notices:

WESTERN ALLIANCE BANK
55 Almaden Blvd. Ste. 100
San Jose, CA 95113
Tel: (408) 423-8500
Fax:(408) 423-8520

EXHIBIT A

COPYRIGHTS

None

EXHIBIT B

TRADEMARKS

Owner	Trademark	Serial No./ Registration. No.	Filing Date/ Registration date
Phunware, Inc.	TAPIT BY PHUNWARE	85946861	May 30, 2013
Phunware, Inc.	TAPIT! BY PHUNWARE PW	85946857	May 30, 2013
Phunware, Inc.	TAPIT	85946855	May 30, 2013
Phunware, Inc.	PHUNWARE	85983562 / 4877948	May 30, 2013 / December 29, 2015
Phunware, Inc.	PHUNWARE	85983563 / 4720851	May 30, 2013 / April 14, 2015
Phunware, Inc.	PHUNWARE	85946868 / 4700492	May 30, 2013 / March 10, 2015
Phunware, Inc.	PHUNWARE	85946864 / 4700491	May 30, 2013 / March 10, 2015
Phunware, Inc.		85570625 / 4229728	March 15, 2012 / October 23, 2012

Owner	Trademark	Serial No./ Registration. No.	Filing Date/ Registration date
Phunware, Inc.		85570618 / 4337237	March 15, 2012 / May 21, 2013
Phunware, Inc.	PHUNWARE	85570612 / 4352509	March 15, 2012 / June 18, 2013
Phunware, Inc.	tapit.com	85311624 / 4123079	May 4, 2011 / April 3, 2012
Phunware, Inc.	tapit!	85303800 / 4148896	April 25, 2011 / May 29, 2012
Phunware, Inc.	PHUNDEALS	85256905 / 4143948	March 3, 2011 / May 15, 2012
Phunware, Inc.	DIVA	78737963 / 3432890	October 21, 2005 / November 27, 2007
Phunware, Inc.	GOTV	78583177 / 3298982	March 8, 2005 / September 25, 2007
Phunware, Inc.	TRUE COUNTRY	77803340 / 3783790	August 12, 2009 / May 4, 2010

Owner	Trademark	Serial No./ Registration No.	Filing Date/ Registration date
Phunware, Inc.	PRAISE	77766654 / 3951482	June 23, 2009 / April 26, 2011
Phunware, Inc.	PHLAMEWARE	77765064 / 3951479	June 22, 2009 / April 26, 2011
Phunware, Inc.	POCKETSHARE	77765048 / 4060441	June 22, 2009 / November 22, 2011
Phunware, Inc.	LIVE FROM YOU	77743172 / 3725473	May 22, 2009 / December 15, 2009
Phunware, Inc.	LIVE FROM YOU	77743157 / 3760294	May 22, 2009 / March 16, 2010
Phunware, Inc.	ES MUSICA	77187477 / 3517364	May 22, 2007 / October 14, 2008
Phunware, Inc.	ES MUSICA	77187465 / 3635876	May 22, 2007 / June 9, 2009
Phunware, Inc.	HIP HOP OFFICIAL	77187661 / 3535955	May 22, 2007 / November 25, 2008
Phunware, Inc.	HIP HOP OFFICIAL	77187655 / 3465603	May 22, 2007 / July 15, 2008

EXHIBIT C

PATENTS

Owner	Patent Title	Application No./ Patent No.	Filing Date/ Patent date
PHUNWARE, INC.	METHOD AND SYSTEM FOR CUSTOMIZING CONTENT ON A SERVER FOR RENDERING ON A WIRELESS DEVICE	12/018,141 / 9,015,692	April 18, 2013/ April 21, 2015
PHUNWARE, INC.	METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE	13865,987 / 8989715	April 18, 2013 / March 24, 2015
PHUNWARE, INC.	GEO-FENCE ENTRY AND EXIT NOTIFICATION SYSTEM	13/586,127 / 8,812,027	August 15, 2012 / August 19, 2014
PHUNWARE, INC.	SYSTEMS AND METHODS FOR ENTERPRISE BRANDED APPLICATION FRAMEWORKS FOR MOBILE AND OTHER ENVIRONMENTS	13/033,526 / 8,788,358	February 23, 2011 / July 22, 2014
PHUNWARE, INC.	METHODS AND SYSTEMS FOR INTERACTIVE USER INTERFACE OBJECTS	13076370 / 8732619	March 30, 2011 / May 20, 2014
PHUNWARE, INC.	SERVER METHOD AND SYSTEM FOR EXECUTING APPLICATIONS ON A WIRELESS DEVICE	13/440,240 / 8,560,601	April 5, 2012 / October 15, 2013

Owner	Patent Title	Application No./ Patent No.	Filing Date/ Patent date
PHUNWARE, INC.	SERVER METHOD AND SYSTEM FOR EXECUTING APPLICATIONS ON A WIRELESS DEVICE	14336960 / ***	July 21, 2014 / ***
PHUNWARE, INC.	METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE	11/888,803 / 8,478,245	August 1, 2007 / July 2, 2013
PHUNWARE, INC.	CLIENT-SIDE WIRELESS COMMUNICATIONS LINK SUPPORT FOR MOBILE HANDHELD DEVICES	11/977,212 / 8,060,594	October 23, 2007 / November 15, 2011
PHUNWARE, INC.	SERVER-SIDE WIRELESS COMMUNICATIONS LINK SUPPORT FOR MOBILE HANDHELD DEVICES	11/977,319 / 8,009,619	October 23, 2007 / August 30, 2011
PHUNWARE, INC.	METHODS AND SYSTEMS FOR INTERACTIVE USER INTERFACE OBJECTS	14/279269 / ***	May 15, 2014 / ***
PHUNWARE, INC.	GEO-FENCE ENTRY AND EXIT NOTIFICATION SYSTEM	14322331 / ***	July 2, 2014 / ***

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/888,803	07/02/2013	8478245	38285-705.201	5085

21971 7590 06/12/2013
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

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 1638 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):

Pierre Carion, La Jolla, CA;
Kevin Smith, San Diego, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Change(s) applied to document, /M.C.R./ 1/29/2013

HOMI-P003

A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

RELATED U.S. PATENT APPLICATION

This Application is related to US Patent Application 11/888799 filed on August 1, 2007, by Carion et al., and entitled "A SERVER METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE" with the Attorney Docket No. HOMI-P004 and assigned to the assignee of the present invention.

TECHNICAL FIELD

Embodiments of the present invention relate to the field of wireless communication systems. More particularly, embodiments of the present invention relate to a method and system for rendering applications on a wireless device.

BACKGROUND ART

The widespread and increase in popularity of wireless devices have led to an increase in the number of wireless device types in the world. For example, the use of cellular phones, personal digital assistants (PDAs), PalmPilots, BlackBerrys, laptops, IPods, etc., have become prevalent in the market. The

PTO/SB/08a (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Substitute for form 1449/PTO				*Complete if Known*	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				Application Number	11/888,803
				Filing Date	August 1, 2007
				First Named Inventor	Pierre Carion
				Art Unit	2646
				Examiner Name	Kashif Siddiqui
Sheet	1	of	2	Attorney Docket Number	38285-705.201

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
	1.	US 2010/0174974 A1	07/08/2010	Brisebois et al.	

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]
	2.	None.				

Continued on the next page with more references.

Examiner Signature	/Kashif Siddiqui/	Date Considered	04/02/2013

*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.

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 2 hours 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, 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 (1-800-786-9199) and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.S./

PTO/SB/08b (07-09)
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 required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO				*Complete if Known*	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				Application Number	11/888,803
				Filing Date	August 1, 2007
				First Named Inventor	Pierre Carion
				Art Unit	2646
				Examiner Name	Kashif Siddiqui
Sheet	2	of	2	Attorney Docket Number	38285-705.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.[1]	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, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	3.	Office Action mailed 01/04/2013 for U.S. Application No. 12/018,141.	

Examiner Signature	/Kashif Siddiqui/	Date Considered	04/02/2013

*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]Applicant is to place a checkmark here if English language Translation is attached.

This collection of information is required by 37 CFR 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 2 hours 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, 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 (1-800-786-9199) and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.S./

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/888,803	08/01/2007	Pierre Carion	38285-705.201	5085

21971 7590 04/04/2013
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

EXAMINER
SIDDIQUI, KASHIF

ART UNIT	PAPER NUMBER
2646	

MAIL DATE	DELIVERY MODE
04/04/2013	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 DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office
Address : COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
11/888,803	01 August, 2007	CARION ET AL.	38285-705.201

		EXAMINER	
WILSON, SONSINI, GOODRICH & ROSATI 650 PAGE MILL ROAD PALO ALTO, CA 94304-1050		KASHIF SIDDIQUI	
		ART UNIT	PAPER
		2646	20130402

DATE MAILED:

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

Commissioner for Patents

The information disclosure statement (IDS) Form PTO-1449, filed on 3/28/2013 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

/KASHIF SIDDIQUI/
Examiner, Art Unit 2646

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)

21971 7590 12/31/2012
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

ELECTRONICALLY FILED ON MARCH 29, 2013

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.
11/888,803	08/01/2007	Pierre Carion	38285-705.201	5085

TITLE OF INVENTION: METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1770	$300	$0	$2070	04/01/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
SIDDIQUI, KASHIF	2646	455-414100

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 WILSON SONSINI GOODRICH & ROSATI
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: PHUNWARE, INC.
(B) RESIDENCE: (CITY and STATE OR COUNTRY): AUSTIN, TEXAS

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 credit any overpayment, to Deposit Account Number 23-2415 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date March 29, 2013

Typed or printed name DAVID L. WANG Registration No. 57,405

This collection of information 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.

Electronic Patent Application Fee Transmittal

Application Number:	11888803
Filing Date:	01-Aug-2007
Title of Invention:	METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE
First Named Inventor/Applicant Name:	Pierre Carion
Filer:	Um Ping Peter Eng/Lydia Vosburgh (UPE/DLW/lcv)
Attorney Docket Number:	38285-705.201

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

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	1501	1	1780	1780
Publ. Fee- Early, Voluntary, or Normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**2080**

Electronic Acknowledgement Receipt

EFS ID:	15392449
Application Number:	11888803
International Application Number:	
Confirmation Number:	5085
Title of Invention:	METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE
First Named Inventor/Applicant Name:	Pierre Carion
Customer Number:	21971
Filer:	Um Ping Peter Eng/Lydia Vosburgh (UPE/DLW/lcv)
Filer Authorized By:	Um Ping Peter Eng
Attorney Docket Number:	38285-705.201
Receipt Date:	29-MAR-2013
Filing Date:	01-AUG-2007
Time Stamp:	17:06:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$2080
RAM confirmation Number	3117
Deposit Account	232415
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 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	Issue Fee Payment (PTO-85B)	38285-705-201-IssueFeeTransmittal.pdf	114545 8b0a794e9d914e4190b5af93fbdf1ee28fd9efbf	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32043 3c4b79bae0359749d913f9df61833435a11520df	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	146588	

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.

Under the Paperwork Reduction Act of 1995, no persons required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** *(Use as many sheets as necessary)*				***Complete if Known***	
				Application Number	11/888,803
				Filing Date	August 1, 2007
				First Named Inventor	Pierre Carion
				Art Unit	2646
				Examiner Name	Kashif Siddiqui
Sheet	1	of	2	Attorney Docket Number	38285-705.201

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
	1.	US 2010/0174974 A1	07/08/2010	Brisebois et al.	

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]
	2.	None.				

Continued on the next page with more references.

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.

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 2 hours 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, 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 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** *(Use as many sheets as necessary)*				***Complete if Known***	
				Application Number	11/888,803
				Filing Date	August 1, 2007
				First Named Inventor	Pierre Carion
				Art Unit	2646
				Examiner Name	Kashif Siddiqui
Sheet	2	of	2	Attorney Docket Number	38285-705.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.[1]	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, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	3.	Office Action mailed 01/04/2013 for U.S. Application No. 12/018,141.	

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]Applicant is to place a checkmark here if English language Translation is attached.
This collection of information is required by 37 CFR 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 2 hours 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, 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 (1-800-786-9199) and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	11888803
Filing Date:	01-Aug-2007
Title of Invention:	METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE
First Named Inventor/Applicant Name:	Pierre Carion
Filer:	Um Ping Peter Eng/Steven Dieu (DLWA)
Attorney Docket Number:	38285-705.201

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

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:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	15384103
Application Number:	11888803
International Application Number:	
Confirmation Number:	5085
Title of Invention:	METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE
First Named Inventor/Applicant Name:	Pierre Carion
Customer Number:	21971
Filer:	Um Ping Peter Eng/Steven Dieu (DLWA)
Filer Authorized By:	Um Ping Peter Eng
Attorney Docket Number:	38285-705.201
Receipt Date:	28-MAR-2013
Filing Date:	01-AUG-2007
Time Stamp:	18:27:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$180
RAM confirmation Number	5837
Deposit Account	232415
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		IDS38285-705-201-03-28-13.pdf	184283 8b58cacf5a0af962b93ed0c7ddf70b1707d14938	yes	7
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Transmittal Letter		1	5	
	Information Disclosure Statement (IDS) Form (SB08)		6	7	
Warnings:					
Information:					
2	Non Patent Literature	Z-OA-01-04-13-USApp-12-018141.pdf	543875 c18cc393559a2cb3687148b74073c7b1da17c6bd	no	16
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30418 e221da3e4a2d869d585405a2a9de073432270025	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	758576		

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.

<u>New Applications Under 35 U.S.C. 111</u>
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.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
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.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
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

Inventor: Pierre CARION, et al.	Group Art Unit: 2646
Serial Number: 11/888,803	Examiner: Kashif Siddiqui
Filing Date: August 1, 2007	**CONFIRMATION NO: 5085**
Title: METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE	

FILED ELECTRONICALLY ON: March 28, 2013

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.97

Sir:

An Information Disclosure Statement along with attached PTO/SB/08 is hereby submitted. A copy of each listed publication is submitted, if required, pursuant to 37 CFR §§1.97-1.98, as indicated below.

The Examiner is requested to review the information provided and to make the information of record in the above-identified application. The Examiner is further requested to initial and return the attached PTO/SB/08 in accordance with MPEP §609.

The right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered, is hereby reserved.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, prior art or material to patentability as defined in §1.56.

A. ☐ *37 CFR §1.97(b).* This Information Disclosure Statement should be considered by the Office because:

☐ (1) It is being filed within 3 months of the filing date of a national application and is other than a continued prosecution application under §1.53(d);

-- OR --

☐ (2) It is being filed within 3 months of entry of the national stage as set forth in §1.491 in an international application;

-- OR --

☐ (3) It is being filed before the mailing of a first Office action on the merits;

-- OR --

☐ (4) It is being filed before the mailing of a first Office action after the filing of a request for continued examination under §1.114.

B. ☐ *37 CFR §1.97(c).* Although this Information Disclosure Statement is being filed after the period specified in *37 CFR §1.97(b),* above, it is filed before the mailing date of the earlier of (1) a final office action under §1.113, (2) a notice of allowance under §1.311, or (3) an action that otherwise closes prosecution on the merits, this Information Disclosure Statement should be considered because it is accompanied by one of:

☐ a statement as specified in §1.97(e) provided concurrently herewith;

-- OR --

☐ a fee of $180.00 as set forth in §1.17(p) authorized below, enclosed, or included with the payment of other papers filed together with this statement.

C. ☒ *37 CFR §1.97(d).* Although this Information Disclosure Statement is being filed after the mailing date of the earlier of (1) a final office action under §1.113 or (2) a notice of allowance under §1.311, it is being filed before payment of the issue fee and should be considered because it is accompanied by:

i. a statement as specified in §1.97(e);

-- AND --

ii. a fee of $180.00 as set forth in §1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this Statement.

D. ☒ *37 CFR §1.97(e).* Statement.

☐ A statement is provided herewith to satisfy the requirement under 37 CFR §§1.97(c);

-- AND/OR --

☒ A statement is provided herewith to satisfy the requirement under 37 CFR §§1.97(d);

-- AND/OR --

☐ A copy of a dated communication from a foreign patent office clearly showing that the information disclosure statement is being submitted within 3 months of the filing date on the communication is provided in lieu of a statement under 37 C.F.R. § 1.97(e)(1) as provided for under MPEP 609.04(b) V.

E. ☐ *Statement Under 37 C.F.R. §1.704(d).* Each item of information contained in the information disclosure statement was first cited in a communication from a foreign patent office in a counterpart application that was received by an individual designated in § 1.56(c) not more than thirty (30) days prior to the filing of this information disclosure statement. This statement is made pursuant to the

requirements of 37 C.F.R. §1.704(d) to avoid reduction of the period of adjustment of the patent term for Applicant(s) delay.

F. ☒ *37 CFR §1.98(a)(2).* The content of the Information Disclosure Statement is as follows:

☐ Copies of each of the references listed on the attached Form PTO/SB/08 are enclosed herewith.

-- OR --

☒ Copies of U.S. Patent Documents (issued patents and patent publications) listed on the attached Form PTO/SB/08 are NOT enclosed.

-- AND/OR --

☒ Copies of Foreign Patent Documents and/or Non Patent Literature Documents listed on the attached Form PTO/SB/08 are enclosed in accordance with 37 CFR §1.98 (a)(2).

-- AND/OR --

☐ Copies of pending unpublished U.S. patent applications are enclosed in accordance with 37 CFR §1.98(a)(2)(iii).

G. ☐ *37 CFR §1.98(a)(3).* The Information Disclosure Statement includes non-English patents and/or references.

☐ Pursuant to 37 CFR §1.98(a)(3)(i), a concise explanation of the relevance of each patent, publication or other information provided that is not in English is provided herewith.

☐ Pursuant to MPEP 609(B), an English language copy of a foreign search report is submitted herewith to satisfy the requirement for a concise explanation where non-English language information is cited in the search report.

-- OR --

☐ A concise explanation of the relevance of each patent, publication or other information provided that is not in English is as follows: _____

☐ Pursuant to 37 CFR §1.98(a)(3)(ii), a copy of a translation, or a portion thereof, of the non-English language reference(s) is provided herewith.

H. ☐ *37 CFR §1.98(d).* Copies of patents, publications and pending U.S. patent applications, or other information specified in 37 C.F.R. § 1.98(a) are not provided herewith because:

☐ Pursuant to 37 CFR §1.98(d)(1) the information was previously submitted in an Information Disclosure Statement, or cited by examiner for another application under which this application claims priority for an earlier effective filing date under 35 U.S.C. 120.

Application in which the information was submitted: _____

Information Disclosure Statement(s) filed on: _____

AND

☐ The information disclosure statement submitted in the earlier application complied with paragraphs (a) through (c) of 37 CFR §1.98.

I. ☒ *Fee Authorization*. The Commissioner is hereby authorized to charge the above-referenced fees of $180.00 and charge any additional fees or credit any overpayment associated with this communication to Deposit Account No. 23-2415 (Docket No. 38285-705.201).

Respectfully submitted,

WILSON SONSINI GOODRICH & ROSATI

Dated: March 28, 2013

By: /David Wang/
David L. Wang
Reg. No. 57,405

650 Page Mill Road
Palo Alto, CA 94304-1050
(650) 493-9300
Customer No. 021971

STATEMENTS UNDER 37 C.F.R. § 1.97(E)

(Attachment to Information Disclosure Statement)

☐ *37 CFR §1.97(e)(1)*. **THE UNDERSIGNED HEREBY STATES THAT** each item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement:

☐ All references cited herein;

-- OR --

☐ The following subset of references: _____

--AND/OR--

☒ *37 CFR §1.97(e)(2)*. **THE UNDERSIGNED HEREBY STATES THAT** no item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, no item of information contained in this Information Disclosure Statement was known to any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of this Information Disclosure Statement:

☒ All references cited herein;

-- OR --

☐ The following subset of references: _____

Respectfully submitted,

Dated: March 28, 2013

By: /David Wang/
David L. Wang
Reg. No. 57,405

650 Page Mill Road
Palo Alto, CA 94304-1050
(650) 493-9300
Customer No. 021971

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

21971 7590 12/31/2012
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

EXAMINER
SIDDIQUI, KASHIF

ART UNIT	PAPER NUMBER
2646	

DATE MAILED: 12/31/2012

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/888,803	08/01/2007	Pierre Carion	38285-705.201	5085

TITLE OF INVENTION: METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1770	$300	$0	$2070	04/01/2013

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 SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

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)

21971 7590 12/31/2012
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

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.
11/888,803	08/01/2007	Pierre Carion	38285-705.201	5085

TITLE OF INVENTION: METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1770	$300	$0	$2070	04/01/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
SIDDIQUI, KASHIF	2646	455-414100

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 credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- ❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information 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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/888,803	08/01/2007	Pierre Carion	38285-705.201	5085

21971 7590 12/31/2012
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

EXAMINER
SIDDIQUI, KASHIF

ART UNIT	PAPER NUMBER
2646	

DATE MAILED: 12/31/2012

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1263 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1263 day(s).

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 Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

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.

Notice of Allowability	Application No.	Applicant(s)	
	11/888,803	CARION ET AL.	
	Examiner	Art Unit	
	KASHIF SIDDIQUI	2646	

-- 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 *12/13/2012*.

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 *1-8,10-20,22-32 and 34-36*. 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).
   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 _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/KASHIF SIDDIQUI/
Examiner, Art Unit 2646

DETAILED ACTION

Allowable Subject Matter

1. In view of amended claims and further search, Claims 1-8, 10-20, 22-32, and 34-36 are allowed.

2. The following is an examiner's statement of reasons for allowance:

With respect to claim 1, the prior art of record fails to disclose singly or in combination or render obvious that said receiving compiled content comprises: receiving first compiled content specific to a first page of said application; and receiving second compiled content specific to a second page of said application, wherein said custom configuration is applicable to both said first and second compiled content. US 20080134018 A1 to Kembel; John Albert et al. (herein Kembel) and US 5430836 A to Wolf; Julie M. et al. (herein Wolf) are the closest prior art relating to Applicant's claimed invention. Kembel discloses a software application component for coordinating the accessing and displaying of Internet content operates to acquire and render media packages which include a definition of a graphical user interface and a network reference, such as a URL, pointing to Internet content to be downloaded and presented within said user interface. The application component may also manage the collection, organization, sharing, and rendering of a plurality of such media packages. Wolf discloses an application management system for achieving a common user access (CUA) interface throughout multiple applications of a computer system. The system includes an operating environment having an application control module (ACM) that is

run-time bound and executable by the applications. The ACM furnishes generalized procedural codes for each application. The application uses data structures to define the appearance and operation of the application to the ACM. The system also integrates the application program interfaces (API's) of an operating environment graphic user interface (GUI) system and a database management system (DBMS) within the ACM. The invention reduces the programming required for applications and improves consistency in programming across multiple applications. The claimed invention distinguishes over Kembel and Wolf in that the custom configuration derived from the compiled content results in content specific for a first page and content specific to a second page of the same application.

With respect to claim 13, the prior art of record fails to disclose singly or in combination or render obvious that said receiving compiled content comprises: receiving first compiled content specific to a first page of said application; and receiving second compiled content specific to a second page of said application, wherein said custom configuration is applicable to both said first and second compiled content. US 20080134018 A1 to Kembel; John Albert et al. (herein Kembel) and US 5430836 A to Wolf; Julie M. et al. (herein Wolf) are the closest prior art relating to Applicant's claimed invention. Kembel discloses a software application component for coordinating the accessing and displaying of Internet content operates to acquire and render media packages which include a definition of a graphical user interface and a network reference, such as a URL, pointing to Internet content to be downloaded and presented within said user interface. The application component may also manage the collection,

organization, sharing, and rendering of a plurality of such media packages. Wolf discloses an application management system for achieving a common user access (CUA) interface throughout multiple applications of a computer system. The system includes an operating environment having an application control module (ACM) that is run-time bound and executable by the applications. The ACM furnishes generalized procedural codes for each application. The application uses data structures to define the appearance and operation of the application to the ACM. The system also integrates the application program interfaces (API's) of an operating environment graphic user interface (GUI) system and a database management system (DBMS) within the ACM. The invention reduces the programming required for applications and improves consistency in programming across multiple applications. The claimed invention distinguishes over Kembel and Wolf in that the custom configuration derived from the compiled content results in content specific for a first page and content specific to a second page of the same application.

With respect to claim 25, the prior art of record fails to disclose singly or in combination or render obvious that said receiving compiled content comprises: receiving first compiled content specific to a first page of said application; and receiving second compiled content specific to a second page of said application, wherein said custom configuration is applicable to both said first and second compiled content. US 20080134018 A1 to Kembel; John Albert et al. (herein Kembel) and US 5430836 A to Wolf; Julie M. et al. (herein Wolf) are the closest prior art relating to Applicant's claimed invention. Kembel discloses a software application component for coordinating the

accessing and displaying of Internet content operates to acquire and render media packages which include a definition of a graphical user interface and a network reference, such as a URL, pointing to Internet content to be downloaded and presented within said user interface. The application component may also manage the collection, organization, sharing, and rendering of a plurality of such media packages. Wolf discloses an application management system for achieving a common user access (CUA) interface throughout multiple applications of a computer system. The system includes an operating environment having an application control module (ACM) that is run-time bound and executable by the applications. The ACM furnishes generalized procedural codes for each application. The application uses data structures to define the appearance and operation of the application to the ACM. The system also integrates the application program interfaces (API's) of an operating environment graphic user interface (GUI) system and a database management system (DBMS) within the ACM. The invention reduces the programming required for applications and improves consistency in programming across multiple applications. The claimed invention distinguishes over Kembel and Wolf in that the custom configuration derived from the compiled content results in content specific for a first page and content specific to a second page of the same application.

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 KASHIF SIDDIQUI whose telephone number is (571)270-3188. The examiner can normally be reached on Monday through Thursday 6:30-16:30 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamran Afshar can be reached on (571)272-7796. 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.

/KASHIF SIDDIQUI/
Examiner, Art Unit 2646

***

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11888803	CARION ET AL.
	Examiner	**Art Unit**
	KASHIF SIDDIQUI	2646

SEARCHED

Class	Subclass	Date	Examiner
709	246	6/11/2012	KS
455	414.1-414.4, 566	6/11/2012	KS
715	200, 234-240, 744-747	6/11/2012	KS
All Above	Updated	12/27/2012	KS

SEARCH NOTES

Search Notes	Date	Examiner
Searched EAST	6/11/2012	KS
Searched Google Patents	6/11/2012	KS
Assignee Search	6/11/2012	KS
Inventor Search	6/11/2012	KS
Searched EPO/WIPO	6/11/2012	KS
Consulted with K. Afshar (SPE)	6/7/2012	KS
Updated Search	12/27/2012	KS

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner
709	246	12/27/2012	KS
455	414.1-414.4, 566	12/27/2012	KS
715	200, 234-240, 744-747	12/27/2012	KS
	keyword search of the claims using clam terms and language	12/27/2012	KS

/KASHIF SIDDIQUI/ Examiner.Art Unit 2646	

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	"11888803"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/12/27 10:09
L2	2	US-6345279-$.DID. OR US-20020109718-$.DID.	US-PGPUB; USPAT	ADJ	ON	2012/12/27 10:09
L3	1	US-6884172-$.DID.	US-PGPUB; USPAT	ADJ	ON	2012/12/27 10:09
L4	3	L2 or L3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/12/27 10:09
L5	4	US-7636792-$.DID. OR US-7506070-$.DID. OR US-20020103881-$.DID. OR US-20020131404-$.DID.	US-PGPUB; USPAT	ADJ	ON	2012/12/27 10:09
L6	2	"20030151621"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/12/27 10:09
L7	2	"20080134018"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/12/27 10:09
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		(scroll$bar and input$box)	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			10:09
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L12	0	L11 and (scroll$bar and input$box)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/12/27 10:09
L13	204	L11 and (scroll$bar or input$box)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/12/27 10:09
L14	28551	(455/414.1-414.4,566 or 709/246 or 715/234-240,744-747,200).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/12/27 10:09
L15	855	L11 and L14	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/12/27 10:09
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L18	16	L17 and L11	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	ADJ	ON	2012/12/27 10:09

			IBM_TDB			
L19	15	(hands$on mobile or gotv).as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/12/27 10:09
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L31	4	17 and 29	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/12/27 10:11
S1	1	"11888803"	US-PGPUB; USPAT; USOCR;	ADJ	ON	2012/06/07 09:50

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S2	2	US-6345279-$.DID. OR US-20020109718-$.DID.	US-PGPUB; USPAT	ADJ	ON	2012/06/07 09:50
S3	1	US-6884172-$.DID.	US-PGPUB; USPAT	ADJ	ON	2012/06/07 09:51
S4	3	S2 or S3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/07 09:54
S5	4	US-7636792-$.DID. OR US-7506070-$.DID. OR US-20020103881-$.DID. OR US-20020131404-$.DID.	US-PGPUB; USPAT	ADJ	ON	2012/06/07 10:14
S6	2	"20030151621"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/07 10:40
S7	2	"20080134018"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/07 10:56
S8	0	((gui) with (render$3 or generat$3) with (configuration or setup or parameter)) same (scroll$bar and input$box)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/11 14:06
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S10	0	((gui) with (render$3 or generat$3)) and (scroll$bar and input$box)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/11 14:07
S11	22337	((gui) with (render$3 or generat$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/11 14:07

S12	0	S11 and (scroll$bar and input$box)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/11 14:08
S13	192	S11 and (scroll$bar or input$box)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/11 14:08
S14	26552	(455/414.1-414.4,566 or 709/246 or 715/234-240,744-747,200).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/11 14:32
S15	786	S11 and S14	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/11 14:32
S16	17	S15 and (scroll$bar or input$box)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/11 14:33
S17	6352	(carion-p$ or smith-k$).in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/11 14:33
S18	14	S17 and S11	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/11 14:33
S19	15	(hands$on mobile or gotv).as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/11 14:33

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp

L20	28668	(455/414.1-414.4,566 or 709/246 or 715/234-240,744-747,200).ccls.	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/12/27 10:09
L21	8	(hands$on mobile or gotv).as.	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/12/27 10:09
L22	3317	(carion-p$ or smith-k$).in.	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/12/27 10:09
L23	6	L20 and L22	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/12/27 10:09
L24	23030	((gui) with (render$3 or generat$3))	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/12/27 10:09
L25	16	L22 and L24	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/12/27 10:09
L26	28668	(455/414.1-414.4,566 or 709/246 or 715/234-240,744-747,200).ccls.	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/12/27 10:09
L27	3317	(carion-p$ or smith-k$).in.	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/12/27 10:09
L28	8	(hands$on mobile or gotv).as.	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/12/27 10:09
L30	2570493	"17" and "29"	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/12/27 10:10
S20	26684	(455/414.1-414.4,566 or 709/246 or 715/234-240,744-747,200).ccls.	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/06/11 14:32
S21	8	(hands$on mobile or gotv).as.	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/06/11 14:34
S22	3188	(carion-p$ or smith-k$).in.	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/06/11 14:34
S23	6	S20 and S22	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/06/11 14:35
S24	21051	((gui) with (render$3 or generat$3))	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/06/11 14:35
S25	14	S22 and S24	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/06/11 14:35

12/27/2012 10:13:37 AM
C:\Users\ksiddiqui\Documents\EAST\Workspaces\11888803.wsp

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Substitute for form 1449/PTO				*Complete if Known*	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				Application Number	11/888,803
				Filing Date	August 1, 2007
				First Named Inventor	Pierre Carion
				Art Unit	2646
				Examiner Name	Kashif Siddiqui
Sheet	1	of	5	Attorney Docket Number	38285-705.201

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
	1.	US 12/001,001	Appln filed 12/07/2007	Clavel	
	2.	US 12/018,141	Appln filed 01/22/2008	Clavel	
	3.	US 2002/0018487 A1	02/14/2002	Chen et al.	
	4.	US 2002/0103881 A1	08/01/2002	Granade et al.	
	5.	US 2002/0131404 A1	09/01/2002	Mehta et al.	
	6.	US 2003/0018521 A1	01/23/2003	Kraft et al.	
	7.	US 2003/0106022 A1	06/05/2003	Goodacre et al.	
	8.	US 2003/0120637 A1	06/26/2003	Chithambaram et al.	
	9.	US 2003/0182419 A1	09/25/2003	Barr et al.	
	10.	US 2004/0133848 A1	07/08/2004	Hunt et al.	
	11.	US 2004/0210907 A1	10/21/2004	Lau et al.	
	12.	US 2004/0236860 A1	11/25/2004	Logston et al.	
	13.	US 2004/0252197 A1	12/16/2004	Fraley et al.	
	14.	US 2005/0223352 A1	10/06/2005	Nishida	
	15.	US 2006/0031387 A1	02/09/2006	Hamzeh et al.	
	16.	US 2006/0123053 A1	06/08/2006	Scannell	
	17.	US 2006/0129632 A1	06/15/2006	Blume et al.	
	18.	US 2006/0236308 A1	10/19/2006	Lamb et al.	
	19.	US 2007/0067373 A1	03/22/2007	Higgins et al.	
	20.	US 2007/0078009 A1	04/05/2007	Lockton et al.	
	21.	US 2007/0123229 A1	05/31/2007	Pousti	
	22.	US 2007/0130156 A1	06/07/2007	Tenhunen et al.	
	23.	US 2007/0130333 A1	06/07/2007	Bhalla et al.	
	24.	US 2008/0016176 A1	01/17/2008	Leitner	
	25.	US 2008/0072139 A1	03/20/2008	Salinas et al.	
	26.	US 2009/0037329 A1	02/05/2009	Coppinger et al.	
	27.	US 2009/0037391 A1	02/05/2009	Agrawal et al.	
	28.	US 2009/0037724 A1	02/05/2009	Carion et al.	

Examiner Signature	/Kashif Siddiqui/	Date Considered	12/27/2012

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				Application Number	11/888,803
				Filing Date	August 1, 2007
				First Named Inventor	Pierre Carion
				Art Unit	2646
				Examiner Name	Kashif Siddiqui
Sheet	2	of	5	Attorney Docket Number	38285-705.201

U.S. PATENT DOCUMENTS

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	29.	US 2009/0177663 A1	07/09/2009	Hulaj et al.	
	30.	US 2009/0220068 A1	09/03/2009	Vialle et al.	
	31.	US 2009/0227274 A1	09/10/2009	Adler et al.	
	32.	US 2009/0259940 A1	10/15/2009	Moraes	
	33.	US 5,060,140	10/22/1991	Brown et al.	
	34.	US 6,336,124	01/01/2002	Alam et al.	
	35.	US 6,343,318	01/29/2002	Hawkins et al.	
	36.	US 6,457,030	09/24/2002	Adams et al.	
	37.	US 6,490,627	12/03/2002	Kalra et al.	
	38.	US 6,795,710	09/21/2004	Creemer	
	39.	US 6,996,537	02/07/2006	Minear et al.	
	40.	US 7,222,154	05/22/2007	Dowling	
	41.	US 7,286,562	10/23/2007	Vargo et al.	
	42.	US 7,506,070	03/01/2009	Tran et al.	
	43.	US 7,568,201	07/28/2009	Suryanarayana et al.	
	44.	US 7,580,703	08/25/2009	Veselov et al.	
	45.	US 7,599,665	10/06/2009	Sinivaara	
	46.	US 7,627,354	12/01/2009	Khazaka et al.	
	47.	US 7,636,792	12/01/2009	Ho	
	48.	US 7,671,869	03/02/2010	Arnold et al.	
	49.	US 7,979,350	07/12/2011	Carion et al.	
	50.	US 8,009,619	08/30/2011	Clavel et al.	

Examiner Signature	/Kashif Siddiqui/	Date Considered	12/27/2012

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				Filing Date	August 1, 2007
				First Named Inventor	Pierre Carion
				Art Unit	2646
				Examiner Name	Kashif Siddiqui
Sheet	3	of	5	Attorney Docket Number	38285-705.201

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[2] – Number[3] – 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]
	51.	EP 1571547 A1	09/07/2005	Bibr et al.		
	52.	KR 1020070003418 A (in Korean with English abstract)	01/05/2007	Bae et al.		
	53.	KR 1020080022697 A (in Korean with English abstract)	03/12/2008	Yun et al.		

Continued on the next page with more references.

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				Filing Date	August 1, 2007
				First Named Inventor	Pierre Carion
				Art Unit	2646
				Examiner Name	Kashif Siddiqui
Sheet	4	of	5	Attorney Docket Number	38285-705.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.[1]	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, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	54.	ABRAMS, et al. UIML: An XML Language for Building Device-Independent User Interfaces. XML Conference Proceedings. Proceedings of XML, XX, XX, 1 December 1999.	
	55.	ALI, et al. Building Multi-Platform User Interfaces with UIML. Retrieved from the Internet: 5-17-2004. URL: arxiv.org/ftp/cs/papers/0111/0111024.pdf.	
	56.	Final Office Action mailed June 29, 2010 for U.S. Application No. 12/098,670, filed April 7, 2008	
	57.	Final Office Action mailed May 12, 2009 for U.S. Application No. 11/977,186, filed October 23, 2007	
	58.	International search report and written opinion dated 02/17/2009 for PCT/US2008/009302.	
	59.	International Search Report and Written Opinion mailed October 6, 2009 for International PCT Application No. PCT/US2009/001514, 6 pgs.	
	60.	International Search Report and Written Opinion mailed October 6, 2009 for International PCT Application No. PCT/US2009/001516, 10 pgs.	
	61.	International search report dated 01/30/2009 for PCT Application No. US2008/009303.	
	62.	Office action dated 02/07/2011 for US Application No. 11/888,799.	
	63.	Office action dated 06/25/2010 for US Application No. 11/888,799.	
	64.	Office Action mailed 03/09/2012 for U.S. Application No. 12/018,141.	
	65.	Office Action mailed 04/08/2011 for U.S. Application No. 12/001,001	
	66.	Office Action mailed 07/07/2011 for U.S. Application No. 12/018,141.	
	67.	Office Action mailed 10/31/2011 for U.S. Application No. 12/001,001	

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				Examiner Name	Kashif Siddiqui
Sheet	5	of	5	Attorney Docket Number	38285-705.201

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	68.	Office Action mailed August 19, 2010 for U.S. Application No. 11/977,319, filed October 23, 2007	
	69.	Office Action mailed December 3, 2008 for U.S. Application No. 11/977,186, filed October 23, 2007	
	70.	Office Action mailed February 16, 2010 for U.S. Application No. 11/977,186, filed October 23, 2007	
	71.	Office Action mailed January 7, 2010 for U.S. Application No. 12/098,670, filed April 7, 2008	
	72.	Office Action mailed July 30, 2010 for U.S. Application No. 11/977,229, filed October 23, 2007	
	73.	Office Action mailed July 9, 2010 for U.S. Application No. 11/977,186, filed October 23, 2007	
	74.	Office Action mailed June 21, 2010 for U.S. Application No. 11/977,212, filed October 23, 2007	
	75.	Office Action mailed September 17, 2009 for U.S. Application No. 11/977,212, filed October 23, 2007	
	76.	Office Action mailed September 2, 2009 for U.S. Application No. 11/977,186, filed October 23, 2007	
	77.	Written Opinion mailed February 1, 2010 for International PCT Aplication No. PCT/US2008/009302, 8 pgs.	
	78.	Written Opinion mailed February 1, 2010 for International PCT Aplication No. PCT/US2008/009303, 8 pgs.	
	79.	ZIEGERT, et al. Device Independent Web Applications-The Author Once- Display Everywhere Approach. Web Engineering; [Lecture Notes in Computer Science; LNCS], Springer-Verlag, Berlin/Heidelberg. July 7, 2004; 3140:244-255.	

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Issue Classification

Application/Control No.	Applicant(s)/Patent Under Reexamination
11888803	CARION ET AL.
Examiner	**Art Unit**
KASHIF SIDDIQUI	2646

ORIGINAL		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
455	414.1	H	0	4	M	3 / 42 (2006.0)						
CROSS REFERENCE(S)		H	0	4	M	1 / 00 (2006.01.01)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											
715	234 744											

☐ 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
1	1	16	17		33										
2	2	17	18	31	34										
3	3	18	19	32	35										
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15	16	30	32												

NONE (Assistant Examiner)	(Date)	Total Claims Allowed: 33	
/KASHIF SIDDIQUI/ Examiner.Art Unit 2646 (Primary Examiner)	12/27/2012 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1A

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	3.	US 2002/0018487 A1	02/14/2002	Chen et al.	
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				Filing Date	August 1, 2007
				First Named Inventor	Pierre Carion
				Art Unit	2646
				Examiner Name	Kashif Siddiqui
Sheet	2	of	5	Attorney Docket Number	38285-705.201

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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
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(54) System and method for building wireless applications with intelligent mapping between user interface and data components

(57) A system and method is described for effective management of a User Interface (UI) of a wireless device by implementing direct mapping between the application data domain and UI screens and controls. The device has an intelligent wireless device runtime environment (Device Runtime) that provides a set of basic services to manage the wireless application, including a series of linked screen and data component definitions, and their interactions can simplify the development effort and reduce resource allocation. The data domain for this category of applications is defined using the atomic data component definitions. The communication between a device user interface and data components is defined using atomic screen component definitions. Both screen and data component definitions are described in metadata using a structured definition language such as XML. The relationships between the screen and data component definitions are embedded in the XML definitions in the form of screen/data mappings. Typically, rendered screens for display are derived from some underlying data component and screens controls affected by user events impact the current state (or data representation) of the application Changes to the application domain data are automatically synchronized with the user interface, and user-entered data is automatically reflected in the application domain data. The primary mechanism behind this synchronization is the mapping of screens and data. This mechanism enables creation of dynamic and interactive screens. All changes to the data component can be immediately reflected on the screen and vice versa. This model allows building effective wireless applications based on server-to-device notifications. The data updates asynchronously pushed from the server are instantaneously reflected at the UI screen.

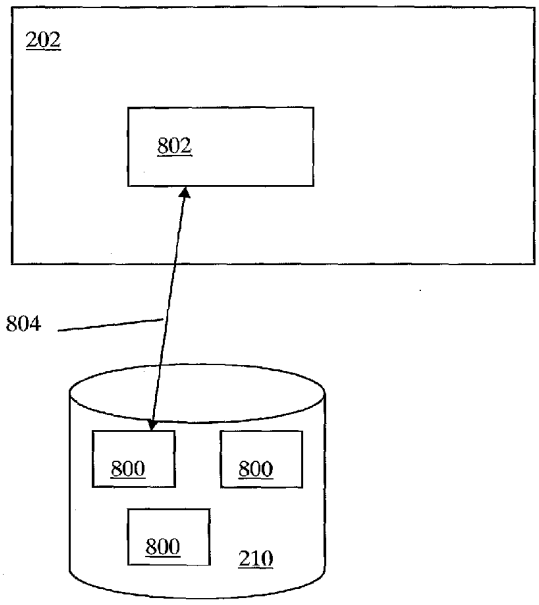

Figure 8

EP 1 571 547 A1

Description

BACKGROUND OF THE INVENTION

[0001] This application relates generally to the display of wireless applications on a user interface of a wireless device.

[0002] There is a continually increasing number of wireless devices in use today, such as mobile telephones, PDAs with wireless communication capabilities, and two-way pagers. Software applications which run on these devices increase their utility. For example, a mobile phone may include an application which retrieves the weather for a range of cities, or a PDA may include an application that allows a user to shop for groceries. These software applications take advantage of the connectivity to a network in order to provide timely and useful services to users. However, due to the restricted resources of some devices, and the complexity of delivering large amounts of data to the devices, developing software applications for a variety of devices remains a difficult and time-consuming task.

[0003] Currently, devices are configured to communicate with Web Services or any other schema based back-end. Internet based Browsers and/or native applications. Browsers have the advantage of being adaptable to operate on a cross-platform basis for a variety of different devices, but have a disadvantage of requesting pages (screen definitions in HTML) from the Web Service, which hinders the persistence of data contained in the screens. Native applications have the advantage of being developed specifically for the type of device platform, thereby providing a relatively optimized application program for each runtime environment. However, native applications have disadvantages of not being platform independent, thereby necessitating the development multiple versions of the same application, as well as being relatively large in size, thereby taxing the memory resources of the device. Further, application developers need experience with programming languages such as Java and C++ to construct these hard coded native applications, including hard coded static interactions of screen elements with data elements. There is a need for application programs that can be run on client devices having a wide variety of runtime environments using dynamic interactions between data and screen elements, as well as having a reduced consumption of device resources.

[0004] The systems and methods disclosed herein provide a linked screen and data component definitions environment to obviate or mitigate at least some of the above presented disadvantages.

SUMMARY OF THE INVENTION

[0005] It is desirable to drive down the complexity involved in developing the wireless application by reducing the need to do any explicit coding, as well as reducing device resources utilized by the application when provisioned. A system and method is described for effective management of a User Interface (UI) of a wireless device by implementing direct mapping between the application data domain and UI screens and controls. The device has an intelligent wireless device runtime environment (Device Runtime) that provides a set of basic services to manage the wireless application, including a series of linked screen and data component definitions, and their interactions can simplify the development effort and reduce resource allocation. The data domain for this category of applications is defined using the atomic data component definitions. The communication between a device user interface and data components is defined using atomic screen component definitions. Both screen and data component definitions are described in metadata using a structured definition language such as XML. The relationships between the screen and data component definitions are embedded in the XML definitions in the form of screen/data mappings. Typically, rendered screens for display are derived from some underlying data component and screens controls affected by user events impact the current state (or data representation) of the application Changes to the application domain data are automatically synchronized with the user interface, and user-entered data is automatically reflected in the application domain data. The primary mechanism behind this synchronization is the mapping of screens and data. This mechanism enables creation of dynamic and interactive screens. All changes to the data component can be immediately reflected on the screen and vice versa. This model allows building effective wireless applications based on server-to-device notifications. The data updates asynchronously pushed from the server are instantaneously reflected at the UI screen.

[0006] According to the present invention there is provided a method for generating a screen element of a wireless application based on a data object displayed on a user interface of a wireless device, the application including a data component having at least one data field definition and a screen component having at least one screen element definition, the component definitions expressed in a structured definition language, the method comprising the steps of: selecting the screen component corresponding to the screen element selected for display; identifying at least one mapping present in the screen component, the mapping for specifying a relationship between the screen component and the data component as defined by an identifier representing the mapping; selecting the data component mapped by the mapping according to the mapping identifier; obtaining a data object field value corresponding to the data field definition of the mapped data component; generating a screen element from the screen element definition to include the data object field value according to the format of the data field definition as defined in the mapped data component.

[0007] According to a further aspect of the present invention there is provided a system for generating a screen

element of a wireless application based on a data object displayed on a user interface of a wireless device, the application including a data component having at least one data field definition and a screen component having at least one screen element definition, the component definitions expressed in a structured definition language, the method comprising the steps of: a mapping manager for selecting the screen component corresponding to the screen element and identifying at least one mapping present in the screen component, the mapping for specifying a relationship between the screen component and the data component as defined by an identifier representing the mapping, the mapping manager for selecting the data component mapped by the mapping according to the mapping identifier; a data manager for obtaining a data object field value corresponding to the data field definition of the mapped data component; and a screen manager for generating a screen element from the screen element definition to include the data object field value according to the format of the data field definition as defined in the mapped data component.

[0008] According to a still further aspect of the present invention there is provided a method for generating a data object of a wireless application based on a change in a screen element displayed on a user interface of a wireless device, the application including a data component having at least one data field definition and a screen component having at least one screen element definition, the component definitions expressed in a structured definition language, the method comprising the steps of: selecting the screen component corresponding to the screen element; identifying at least one mapping present in the screen component, the mapping for specifying a relationship between the screen component and the data component; selecting the data component mapped by the mapping; obtaining a changed value from the screen element corresponding to the mapped data component; assigning the changed value to a data field value of the data object according to the format of the data field definition as defined in the mapped data component.

[0009] According to a still further aspect of the present invention there is provided a device for generating a screen element of a wireless application based on a data object displayed on a user interface of a wireless device, the application including a data component having at least one data field definition and a screen component having at least one screen element definition, the component definitions expressed in a structured definition language, the method comprising the steps of: means for selecting the screen component corresponding to the screen element selected for display; means for identifying at least one mapping present in the screen component, the mapping for specifying a relationship between the screen component and the data component; means for selecting the data component mapped by the mapping; means for obtaining a data object field value corresponding to the data field definition of the mapped data component; means for generating a screen element from the screen element definition to include the data object field value according to the format of the data field definition as defined in the mapped data component.

[0010] According to a still further aspect of the present invention there is provided a computer program product for generating a screen element of a wireless application based on a data object displayed on a user interface of a wireless device, the application including a data component having at least one data field definition and a screen component having at least one screen element definition, the component definitions expressed in a structured definition language, the computer program product comprising: a computer readable medium; a mapping module stored on the computer readable medium for selecting the screen component corresponding to the screen element and identifying at least one mapping present in the screen component, the mapping for specifying a relationship between the screen component and the data component as defined by an identifier representing the mapping, the mapping module for selecting the data component mapped by the mapping according to the mapping identifier; a data module stored on the computer readable medium for obtaining a data object field value corresponding to the data field definition of the mapped data component; and a screen module stored on the computer readable medium for generating a screen element from the screen element definition to include the data object field value according to the format of the data field definition as defined in the mapped data component.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] These and other features will become more apparent in the following detailed description in which reference is made to the appended drawings by way of example only, wherein:

Figure 1 is a block diagram of a network system;
Figure 2 is a block diagram of a wireless device of Figure 1;
Figure 3 is a block diagram of an intelligent framework of the device of Figure 2;
Figure 4 is a block diagram of a component application program of Figure 2;
Figure 5 shows a representative application packaging and hosting model for an example component application of Figure 4;
Figure 6 shows an example method of implementing the component application program of Figure 5;
Figure 7 shows a further example method of implementing the component application program of Figure 5;
Figures 8 shows a mapping between data and screen components for the application of Figure 2;
Figures 9 shows an operation of initial screen display for the mapping of Figure 8;

Figures 10 shows an update of a data object according to user events for the mapping of Figure 8; and
Figure 11 shows an update of a data object according to an asynchronous message for the mapping of Figure 8;

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Network System

[0012] Referring to Figure 1, a network system 10 comprises a plurality of wireless devices 100 for interacting with one or more generic services 106, via a coupled Wide Area Network (WAN) 104 such as but not limited to the Internet. These devices 100 can be such as but not limited to, PDAs, pagers, cellular phones and the like. The generic services provided by the service 106 can be Web Services and/or other services such as but not limited to SQL Databases, IDL-based CORBA and RMI/IIOP systems, Legacy Databases, J2EE, SAP RFCs, and COM/DCOM components. Further, the system 10 can also have a wireless network 102 for connecting the wireless devices 100 to the WAN 104. It is recognized that other devices (not shown) could be connected to the web service 106 via the WAN 104 and associated networks other than as shown in Figure 1. Web services 106 defined according to a schema are selected for the following description of the system 10, for the sake of simplicity. However, it is recognized that other services could be substituted for the web services 106, if desired. Further, the networks 102, 104 of the system 10 will hereafter be referred to as the network 104, for the sake of simplicity.

[0013] Referring again to Figure 1, the devices 100 transmit and receive requests/response messages 105, respectively, when in communication with the web services 106. The devices 100 can operate as web clients of the web services 106 by using the requests/response messages 105 in the form of message header information and associated data content, for example requesting and receiving product pricing and availability from an on-line merchant. The web service 106 is an example of a system with which client application programs 302 (see Figure 2) on the communication devices 100 interact via the network 104 in order to provide utility to users of the communication devices 100.

[0014] For satisfying the appropriate requests/response messages 105, the web service 106 can communicate with an application server 110 through various protocols (such as but not limited to HTTP and component API) for exposing relevant business logic (methods) to client application programs 302 (see Figure 2) once provisioned on the devices 100. The application server 110 can also contain the web service 106 software, such that the web service 106 can be considered a subset of the application server 110. The application programs 302 of the device 100 can use the business logic of the application server 110 similarly to calling a method on an object (or a function). It is recognized that the client application program 302 can be downloaded/uploaded in relation to the application server 110, through the messages 105 via the network 104, directly to the devices 100. It is further recognized that the devices 100 can communicate with one or more web services 106 and associated application servers 110 via the networks 104.

Server Environment

[0015] Referring to Figure 1, the web service 106 provides the information messages 105 which are used by the client application programs 302 (see Figure 2) on the devices 100 (either synchronously or asynchronously. Alternatively, or in addition, the web service 106 may receive and use the information messages 105 provided by the client application programs 302 executed on the devices 100, or perform tasks on behalf of client application programs 302 executed on the devices 100. The web service 106 can be defined as a software service, which can implement an interface such as expressed using Web Services Description Language (WSDL) registered in Universal Discovery Description and Integration (UDDI) in a web services registry, and can communicate through messages 105 with client devices 100 by being exposed over the network 104 through an appropriate protocol such as the Simple Object Access Protocol (SOAP). In some implementations, SOAP is a specification that defines the XML format for the messages 105, including a well-formed XML fragment enclosed in SOAP elements. SOAP also supports document style applications where the SOAP message 105 is a wrapper around an XML document. A further optional part of SOAP defines the HTTP binding (i.e. header), whereas some SOAP implementations support MSMQ, MQ Series, SMTP, or TCP/IP transport protocols. Alternatively, the web service 106 may use other known communication protocols, message 105 formats, and the interface may be expressed in other web services languages than described above.

Client Environment

[0016] Referring to Figure 2, the component applications 302 are transmitted via the network 104 and loaded into a memory module 210 of a device infrastructure 204 of the device 100. Alternatively, the component applications 302 may be loaded via a serial connection, a USB connections, or a short-range wireless communication system such as IR, 802.11(x) BluetoothTM (not shown). Once loaded onto the device 100, the component applications 302 can be executed by an intelligent runtime framework 206 on the device 100, which can convert the component applications

302 into native code, which is executed by a processor 208 in the device infrastructure 204. Alternatively, the applications 302 may be interpreted by another software module or operating system on the device 100. In any event, the component applications 302 are run in the terminal runtime environment provided by the device 100, such that the runtime environment is an intelligent software framework 206 that provides a set of basic services to manage and execute typical application 302 behaviour (e.g. persistence, messaging, screen navigation and display).

[0017] Referring again to Figure 1, the client runtime environment provided by the devices 100 can be configured to make the devices 100 operate as web clients of the web services 106. It is recognized that the client runtime environment can also make the devices 100 clients of any other generic schema-defined services over the network 104. The client runtime environment of the devices 100 is preferably capable of generating, hosting and executing the client application programs 302 (which include data 400 and screen 402 component definitions - see Figure 4 and description herein below) on the device 100. Further, specific functions of the client runtime environment can include such as but not limited to support for language, coordinating memory allocation, networking, management of data during I/O operations, coordinating graphics on an output device of the devices 100 and providing access to core object oriented classes and supporting files/libraries. Examples of the runtime environments implemented by the devices 100 can include such as but not limited to Common Language Runtime (CLR) by Microsoft and Java Runtime Environment (JRE) by Sun Microsystems.

[0018] The terminal runtime environment of the devices 100 preferably supports the following basic functions for the resident executable versions of the client application programs 302 (see Figure 2), such as but not limited to:

provide a communications capability to send messages 105 to the Web Services 106 or messages 105 to any other generic schema defined services connected via the network 104 to the devices 100;
provide data input capabilities by the user on an input device of the devices 100 to supply data parts for Web Services' 106 outgoing messages 105 (messages to the service);
provide data presentation or output capabilities for Web Services' 106 response messages 105 (incoming messages) or uncorrelated notifications on the output device;
provide data storage services to maintain local client data in the memory module 210 (see Figure 2) of the device 100; and
provide an execution environment for a scripting language for coordinating operation of the components 400, 402 (see Figure 4) of the client application programs 302.

[0019] Referring to Figures 2, 4 and 5, the client runtime (for example provided by the component framework 206) loads metadata contained in the component 400, 402 definitions and also builds the executable version of the application program 302 on the device 100, via for example an execution environment 300. There are, such as but not limited to, two operational models for client runtime: template-based native execution and metadata-based execution. In the case of a fully defined component based application 302 (having data 400, screen 402, message 404 , and workflow 406 components - see figure 4), the framework 206 can implement a template-based native execution model for hosting data, message, and screen templates 500 pre-built on the device 100 using the native code. When the application program 302 definition is loaded, the client environment provided by the framework 206 fills the templates 500 with metadata-defined parameters from the components 400, 402, 404 and builds the executable client application program 302 in the native format. The workflow script (for example ECMAScript) of the workflow component 406 could be either converted to native code or executed using an appropriate script interpreter 502 (e.g., ECMAScript Interpreter) to a native code redirector 504, where the redirector 504 interprets calls to the scripting language into operations on native components through a native runtime engine 506. With the metadata-based execution, the runtime environment of the framework 206 either keeps component 400, 402, 404, 406 definitions in XML (for example), which are parsed during execution time or uses native representation of XML (for example) nodes. During execution, the native runtime engine 506 operates on definitions of the components 400, 402, 404, 406 rather than on native component entities. It is recognized that another type of execution model would include the application having component definitions 400, 402 for the data and screens while having a more hard-coded 405 approach for the remaining message and workflow elements of the application 302.

[0020] Therefore, the native client runtime environment provides an interface for the client application programs 302 to the device 100 functionality of the processor 208 and associated operating system of the device infrastructure 204. The runtime environment preferably supplies a controlled, secure and stable environment on the device 100, in which the component application programs 302 execute. The runtime environment provisions the definitions of the components 400, 402, (and definitions 404, 406 if used) to create the actual web client specific for each respective device infrastructure 204 of the device 100. It is recognized for the sake of simplicity that the following description hereafter will refer to the client runtime environment being provided by the framework 206, as an example only.

Communication Device

[0021] Referring to again to Figure 2, the devices 100 are devices such as but not limited to mobile telephones, PDAs, two-way pagers or dual-mode communication devices. The devices 100 include a network connection interface 200, such as a wireless transceiver, coupled via connection 218 to a device infrastructure 204. The connection interface 200 is connectable during operation of the devices 100 to the network 104, such as to the wireless network 102 by wireless links (e.g., RF, IR, etc.), which enables the devices 100 to communicate with each other and with external systems (such as the web service 106) via the network 104 and to coordinate the requests/response messages 105 between the client application programs 302 and the service 106 (see Figure 1). The network 104 supports the transmission of data in the requests/response messages 105 between devices and external systems, which are connected to the network 104. The network 104 may also support voice communication for telephone calls between the devices 100 and devices which are external to the network 104. A wireless data transmission protocol can be used by the wireless network 102, such as but not limited to DataTAC, GPRS or CDMA.

[0022] Referring again to Figure 2, the devices 100 also have a user interface 202, coupled to the device infrastructure 204 by connection 222, to interact with a user (not shown). The user interface 202 includes one or more user input devices such as but not limited to a QWERTY keyboard, a keypad, a trackwheel, a stylus, a mouse, a microphone and the user output device such as an LCD screen display and/or a speaker. If the screen is touch sensitive, then the display can also be used as the user input device as controlled by the device infrastructure 204. The user interface 202 is employed by the user of the device 100 to coordinate the requests/response message messages 105 over the system 10 (see Figure 1) as employed by client application programs 302 of a framework 206, further described below.

[0023] Referring again to Figure 2, operation of the device 100 is enabled by the device infrastructure 204. The device infrastructure 204 includes the computer processor 208 and the associated memory module 210. The computer processor 208 manipulates the operation of the network interface 200, the user interface 202 and the framework 206 of the communication device 100 by executing related instructions, which are provided by an operating system and client application programs 302 located in the memory module 210. Further, it is recognized that the device infrastructure 204 can include a computer readable storage medium 212 coupled to the processor 208 for providing instructions to the processor and/or to load/update client application programs 302 in the memory module 210. The computer readable medium 212 can include hardware and/or software such as, by way of example only, magnetic disks, magnetic tape, optically readable medium such as CD/DVD ROMS, and memory cards. In each case, the computer readable medium 212 may take the form of a small disk, floppy diskette, cassette, hard disk drive, solid state memory card, or RAM provided in the memory module 210. It should be noted that the above listed example computer readable mediums 212 can be used either alone or in combination.

Mapping relationships between components

[0024] In practice, typically the expression of the components 400, 402 by the developer can have overlapping content, while the behaviour of each of the components 400, 402 of the application 302 is distinct. Therefore, by recognizing the fact that user interface 202 (see Figure 1) content is often generated from some underlying data element, and in light of the similarities between expression of these components 400, 402, it is convenient to introduce certain mappings 804 (see Figure 8) to the expression of screen components 402, as further described below. Referring to Figures 4 and 8, these mappings 804 are essentially shortcuts to the expression of the screen elements 802 (screen element definitions) associated with the screen component 402, and how the screen component 402 behaves at runtime during execution of the application 302. The mapping 804 is a stated relationship between the screen element definitions of the screen component 402 and the data component 400 definition. In relation to expression of the screen component 402, using the mapping 804 can reduce the amount of metadata required to describe the component 402. Thus use of the mapping 804 can have a direct effect on the amount of "code" required to describe the application 302. In relation to how the component 402 behaves at runtime, the mapping 804 specifies how linked data elements (described by the data component 400) are resolved and affected by screen element 802 state. In this regard, specifying the mapping 804 can reduce the need for the developer to provide additional specific screen handling code in the application 302.

[0025] Referring to Figure 8, screen representations of the screen components 402 (see Figure 4) consist of screen elements 802, such as but not limited to UI controls, that are displayed on the user interface 202 and are associated with data field instances of the corresponding data objects 800. Therefore, each of the screen elements 802 is bound or mapped 804 to the fields of a respective data object 800. The user of the application 302 can select screen elements 802 on the user interface 202 (see Figure 1) and edit the controls within them, i.e. by user events. Any modifications of the screen elements 802 are propagated to the data object 800 mapped to the screen element 802. Similarly, all modifications (driven by the application 302 logic or incoming server messages 105) to the data objects 800 are reflected in the screen elements 802 mapped to these data objects 800. Tracking of the user events and any direct modifications to the data objects 800 is monitored via a mapping manager 312, as described below. The mapping 804 provides for

identification and modification of the data object 800 affected by the mapping 804. The mapping 804 isolates the data object 800 of the data component 400 to which the screen element 802 of the corresponding screen component 404 is linked.

[0026] It is recognised that either the screen component 402 or data component 400 definitions contain the mapping 800, which defines the relationship between the data object 800 and screen element 802 or the relationship between an individual data field (or group of data fields) of the data object 800 with screen element 802. It is recognised that the data object 800 may be passed to the user interface 202 as a parameter. In this case the data field values of the data object 800 mapped to the screen element 804 would be extracted from the passed parameter. For example, an edit control (screen element 802) defined in a screen field definition of the screen component 402 could be mapped into a data field definition of the linked data component 400 (i.e. a one to one mapping 804) or a choice control (screen element 802) defined in a screen field definition of the screen component 402 could be mapped into a particular data field definition of a collection of data components 400 (i.e. a one to many mapping 804).

[0027] Referring to Figures 4 and 8, screen component metadata can describe mapping to the data field definition of the linked data component 400 in addition to its other attributes. For example, a single screen element 802 may map to:

- one of the data field definitions of the data component 400 or
- all data field definitions of the data component 400 by a primary key (or mapping identifier) - in this case, the mapping 804 resolves to the primary key field.

[0028] A choice/list screen element 802 may map to:

- a collection of all instances of the data components 400 or
- one of the data field definitions of the data component 400 that is a collection

[0029] Please refer to the example component application 302 below for an example of an edit screen element 802 'ebName' mapped to a 'name' field of a specific data object 800 of a 'User' data component 400, and an example of a choice screen element 804 'cbNames' mapped to a 'name' field of all data objects 800 of the 'User' data component 400.

Framework of Device

[0030] Referring again to Figure 2, the framework 206 of the device 100 is coupled to the device infrastructure 204 by the connection 220. The client runtime environment the device 100 is provided by the framework 206, and is preferably capable of generating, hosting and executing the client application programs 302 (which include component definitions - see below) from meta-data definitions. The device runtime can be thought of as the intelligent software framework 206 that provides a set of basic services 304 to manage and execute typical application 302 behaviour, such as but not limited to persistence, provisioning, messaging, screen navigation and user interface/screen services. Therefore, the framework 206 provides the native client runtime environment for the client application programs 302 and is an interface to the device 100 functionality of the processor 208 and associated operating system of the device infrastructure 204. The framework 206 provides the runtime environment by preferably supplying a controlled, secure and stable environment on the device 100, in which the component application programs 302 execute in the application container or execution environment 300, for example.

[0031] Referring to Figure 3, the framework 206 can be used to execute the client application programs 302 (such as Web Service client applications) within the terminal runtime environment and can support access to the Web Service 106 and associated application servers 110 (see Figure 1), via the request/response messages 105 over the network 104. The component application programs 302 comprise software applications which are executed by the framework 206. The framework 206 creates the execution environment 300 for each component 400, 402 (and definitions 404, 406 if used - see Figure 4) of the application program 302, each time that the application program 302 is executed. The execution environment 300 loads the components 400, 402 (definitions 404, 406 if used) of the application program 302 and can create native code which is executed by the processor 208 in the device infrastructure 204. The framework 206 therefore provides the host execution environments 300 for provisioning the definitions of the components 400, 402 (definitions 404, 406 if used) to create the actual web client specific for each respective device infrastructure 204 of the communication devices 100. The execution environment 300 can provision the application 302 as per the template-based native execution and metadata-based execution models as described above, by way of example only. The execution environment 300 can be referred to as a smart host container for the client application program 302, and can be responsible for analyzing screen values (of the screen elements 802 see Figure 8) and for updating the representation of the values(data objects 800) in the memory module 210.

[0032] Referring again to Figure 3, the framework 206 also provides framework services 304 (a standard set of

generic services) to the client application programs 302, in the event certain services are not included as part of the components 400, 402 (definitions 404, 406 if used - see Figure 4) or received as separate components (not shown) as part of the component application program 302. The application program 302 has communications 214 with the execution environment 300, which can coordinate communications 216 with the framework services 304, as needed. The framework services 304 of the framework 206 coordinate communications via the connection 220 with the device infrastructure 204. Accordingly, access to the device infrastructure 204, user interface 202 and network interface 200 is provided to the client application programs 302 by the framework 206 and associated services 304. It is recognized that a portion of the operating system of the device infrastructure 204 (see Figure 2) can represent the execution environment 300 and selected services/managers of the framework services 304.

[0033] Referring to Figures 3 and 8, the framework services 304 includes such as but not limited to a communication manager 306, a presentation manager 308, a data manager 310, and can include an access service, a provisioning service and a utility service. The access service (not shown) provides the application programs 302 access to other software applications which are present on the communication device 100. The provisioning service (not shown) manages the provisioning of software applications 302 on the communication device 100. Application provisioning can include requesting and receiving new and updated application programs 302, configuring application programs 302 for access to services which are accessible via the network 104, modifying the configuration of application programs 302 and services, and removing application programs 302 and services. The utility service (not shown) is used to accomplish a variety of common tasks, such as performing data manipulation in the conversion of strings to different formats.

[0034] Referring to Figures 3, 8 and 9, a communication manager 306 manages connectivity between the application programs 302 and the external system 10, such as the messages 105 and associated data sent/received in respect to the web service 106 (by the communication manager 306) on behalf of the applications 302. As further described below the communication manager 306 can be used to implement a series of mappings 804. The presentation manager 308 manages the representation of the application programs 302 as they are output on the output device of the user interface 202 (see Figure 2). The data manager 310 allows the component application programs 302 to store data in the memory module 210 of the device infrastructure 204 (see Figure 2). It is recognised the data manager 310 can be used to coordinate the modification/creation of data instances of the data components 400 linked to the screen components 402 via the mappings 804. The framework 206 also has a mapping manager 312 that keeps track of the individual relations (mappings) 804 between the respective data objects 800 and the screen elements 802. The mappings are stored in a mapping table 309 coupled to the mapping manager 312. Once the screen elements 802 are initialized on the user interface 202, the presentation manager 308 uses the mapping manager 312 to maintain dynamic integrity between the screen elements 802 and the corresponding data objects 800 displayed. When one of the screen elements 802 is modified by the user via the user interface 202, the mapping manager 312 is responsible for propagating the change to the right data object 800 in the memory 210, through the data manager 310. When one of the data objects 800 in the memory 210 is modified, the mapping manager 312 checks to see if that object 800 is currently displayed on the User interface 202, and if so is then responsible for updating the corresponding screen elements 802 through the presentation manager 308, to reflect the change in the data object 800, by referring to the corresponding mapping 804 entry in the table 409. It is recognized that the framework services 304 of the communication device 100 provide functionality to the component application programs 302, which includes the managers described above.

[0035] Accordingly, the framework 206 allows for display of the interactive applications 302 on the user interface 202, which typically presents information from the application 302 domain and allow the user to enter and modify the related data objects 800 and screen elements 802. The framework 206 provides a system for effective management of the User Interface 202 by implementing the direct mappings 800 between the application data domain (data objects 800) and the UI screen elements 802 (e.g. UI controls). Changes to the application domain data objects 800 are automatically synchronized with the user interface 202, and user-entered data is automatically reflected in the application domain data objects 800. The primary mechanism behind this synchronization is the mapping 804 between paired screen element 802 and data object 800. The mapping system relates to wireless applications 302 defined using metadata expressed in a structured language such as XML. The mapping 804 mechanism enables creation of dynamic and interactive screens on the user interface 202. All changes to the data object 800 can be synchronously reflected on the user interface and vice versa. The implementation of mappings 804 facilitates building the wireless applications 302 based on server-to-device notifications. The data object 800 updates asynchronously pushed from the server (web service 106) are synchronously reflected by the linked UI screen element 802 on the user interface 202. These mappings 800 can be applicable for a variety of wireless applications 302 such as stock trading, news updates, alerts, weather updates.

Application components

[0036] Referring to Figure 2, the client application programs 302 are executed within the terminal runtime environment

of the framework 206 and support access to Web Service operations provided by the service 106 (see Figure 1). WSDL and SOAP protocol definitions clearly imply a messages/data pattern. In a WSDL Web Service definition, the operations are defined using the notion of messages and data parts, which can be used to define the Web Service client application programs 302 as a set of the related data 400 and the message 404 components (see Figure 4).

[0037] Referring to Figure 4, a block diagram of the component application program 302 comprises the data components 400, the presentation components 402. The remaining message/workflow part 405 of the application 302 can be provided by the message components 404, which are coordinated by workflow components 406 through communications 214 with the execution environment 300, or can be provided as hard-coded elements 405 of the application 302 (as defined by the application developer). The structured definition language can be used to construct the components 400, 402 (and 404 if used) as a series of metadata records, which consist of a number of pre-defined elements representing specific attributes of a resource such that each element can have one or more values. Each metadata schema typically has defined characteristics such as but not limited to; a limited number of elements, a name of each element, and a meaning for each element. Example metadata schemas include such as but not limited to Dublin Core (DC), Anglo-American Cataloging Rules (AACR2), Government Information Locator Service (GILS), Encoded Archives Description (EAD), IMS Global Learning Consortium (IMS), and Australian Government Locator Service (AGLS). Encoding syntax allows the metadata of the components 400, 402, (and 404 if used) to be processed by the device infrastructure 204 (see Figure 2), and encoding schemes include such as but not limited to XML, HTML, XHTML, XSML, RDF, Machine Readable Cataloging (MARC), and Multipurpose Internet Mail Extensions (MIME).

[0038] Referring again to Figures 4 and 8, the data components 400 define data objects 800 which are used by the component application program 302, including application data represented in for example native code or XML. Examples of data objects 800 which data components 400 may describe are orders, users, and financial transactions. Data components 400 define what information is required to describe the data objects 800, and in what format the information is expressed. For example, the data component 400 may define such as but not limited to an order which is comprised of a unique identifier for the order which is formatted as a number, a list of items which are formatted as strings, the time the order was created which has a date-time format, the status of the order which is formatted as a string, and a user who placed the order which is formatted according to the definition of another one of the data components 400. Since data parts (elements) are usually transferred from message 105 to message 105 according to Web Services' 106 choreography rules, preferably there is persistence of data objects 800. Data objects 800 may be dynamically generated according to Web Services' 106 choreography definitions (if available) or defined by the application designer based on complex type definitions and/or message correlation information. It is recognised that the screen components 402 can be linked via the mappings 804 to the data components 400 (see Figure 9), as further described below.

[0039] Further, the data components 400 can consist of a series of data field definitions written in such as but not limited to HTML, XHTML, XML and other structured definition languages, wherein the data objects 800 (see Figure 9) are data instances according to the data field definitions. It is noted that data object definitions provide definitions of the structure of data fields and their corresponding data types, such that data objects 800 are instances of a particular data object definition. Data Fields comprise the data object definitions and every data field has an associated data type. Further, Complex Data Fields contain a structure of sub-data fields. The definitions of the data objects 800 are included in the data component 400 schema of the application 302. These data definitions provide a data model for defining the data objects 800 as used by the application 302. Accordingly, the Data Component 400 is a set of one or more data field definitions grouped together to define the format of corresponding data field values when instantiated as the data object 800. The data component 400 definitions can have a primary or a composite key or optionally be defined without a key. The keys can be used with the mappings 804 to provide a unique link between a pair of the mapped data 400 and screen 402 components.

[0040] Referring again to Figure 4, the presentation/screen components 402 define the appearance and behavior of the application program 302 as it displayed by the user interface 202. The presentation components 402 can specify GUI screens and controls, and actions to be executed when the user interacts with the component application 302 using the user interface 202. For example, the presentation components 402 may define screens, labels, edit boxes, buttons and menus, and actions to be taken when the user types in an edit box or pushes a button. The majority of Web Service consumers use a visual presentation of Web Service operation results, and therefore provide the runtime environment on their devices 100 capable of displaying user interface screens.

[0041] An example application 302 of a passing a parameter to the screen component 402 as well as for the screen component 402 that accepts the passed parameter is illustrated below.

Consider an application with:

- data component 400 'User'
- screen component 402 'scrAllUsers' listing a choice box of all user names, with button/menu item to display a details of selected user

- screen component 402 'scrUserInfo' displaying details for a user passed as a parameter

example XML data components 400

[0042] Data Component 400 'User' with primary key field 'name' can be defined using the following metadata:

```
<cData name="User" pkey="name" >        <dfield name="name" type="String"
/>
        <dfield name="street" type="String" />
        <dfield name="city" type="String" />
        <dfield name="postal" type="String" />
        <dfield name="phone" type="String" />
  </cData>
```

example XML presentation components 402

[0043] The '**scrAllUsers**' screen can define a choice control 'cbNames' mapped to a 'name' field of all instances of the 'User' data component 400. The screen metadata definition contains a button or menu item with an action to display screen 'scrUserInfo' with parameter 'User' selected, passed as a parameter to the user interface 202.

```
<cScr name="scrAllUsers" >
    ...
    <choice name="cbNames" mapping="User[].name" />
    ...
    <action screen="scrUserInfo" param="cbNames.selected"/>
    ...
</cScr>
```

[0044] A screen '**scrUserInfo**' defines an edit control 'ebName' mapped to a 'name' field of a specific instance of 'User' data component 400 passed as a parameter:

```
<cScr name="scrUserInfo" param="User">
    ...
    <edit name="ebName" mapping="User.name" />
    ...
</cScr>
```

[0045] Referring again to Figure 4, the remaining message and other workflow parts 105 of the application 302 can be provided by hard-coded application 302 elements and/or can be provided as further components 404, 406 described in the structured definition language and code/script respectively. In the case of using atomic message components 404, these define the format of messages 105 used by the component application program 302 to communicate with external systems such as the web service 106, and include message data represented in for example native code or XML. For example, one of the message components 404 may describe such as but not limited to a message for placing an order which includes the unique identifier for the order, the status of the order, and notes associated with the order. Message component 404 definitions written in the structured definition language can uniquely represent (and map to) WSDL messages, and can be generated dynamically at runtime. Web Service messages 105 are defined within the context of operation and there is defined correlations between the message components 404 in the component application program 302 definition. This correlation could be done using predefined message parameters and/or through separate workflow components 406, as further defined below.

[0046] Referring again to Figure 4, in the case of using the atomic workflow components 406 of the component

application program 302, these define processing that occurs when an action is to be performed, such as an action specified by a presentation component 402 as described above, or an action to be performed when messages 105 (see Figure 1) arrive from the system 10. Presentation workflow and message 105 processing can be defined by the workflow components 406. The workflow components 406 are written as a series of instructions in a programming language or a scripting language, such as but not limited to ECMAScript, and can be compiled into native code and executed by the execution environment 300, as described above. An example of the workflow components 406 may be to assign values to data, manipulate screens, or send the message 105. The workflow component 406 supports a correlation between the messages 105 and defines application flow as a set of rules for operations on the other components 400, 402, 404. Multiple workflow components can be defined with respect to a given application program 302.

[0047] Example components 404, 406 for component based applications 302 could be:

example XML message components 404

[0048]

```
<msg name="ordConfirmation" type="response" action="mhConfirmation">
        <part name="orderId" type="String" />
        <part name="status" type="String" />
</msg>
...
```

example ECMAScript workflow components 406

[0049]

```
<actions>
    <function name="mhConfirmation">
        key = ordConfirmation.orderId;
        order = Order.get(key);
        order.orderStatus = ordConfirmation.status;
        scrConfirmation.display(order);
    </function>
    ...
</actions>
```

[0050] Expressing the data 400, message 404, and presentation 402 components using XML or its derivatives, and the workflow component 406 using the ECMAScript language or its subset, can allow an application developer to abstract the Web Service client from any specific platform or environment and implement in principle "develop once run everywhere" applications. The following example shows how a Web Services client application program 302 could be expressed using a structured definition language, such as but not limited to XML, and a platform neutral scripting/programming language, such as but not limited to ECMAScript, defined components.

[0051] Further, referring to Figure 4, as given above, it can be seen that the message components 404 can relay the required data for the input and output of the messages 105. The corresponding data components 400 coordinate the storage of the data in the memory module 210 (see Figure 2) of the device 100 for subsequent presentation on the user interface 202 (see Figure 2) by the presentation components 402. The workflow components 406 can coordinate the transfer of data between the data 400, presentation 402, and message 404 components. The client runtime is capable of storing and updating atomic data objects 800 directly.

Example Basic Operation of a Component Based Application Model

[0052] It should be noted that the operation detailing processing mappings 804 is described with reference to Figures 9, 10, and 11 below.

[0053] Referring to Figures 1, 3 and 6, for example, operation 600 shows when the device 100 receives 602 the response message 105 containing message data, the appropriate workflow component 406 interprets 604 the data content of the message 105 according to the appropriate message component 404. The workflow component 406 then processes 606 the data content and inserts 910 the data into the corresponding data component 400 for subsequent storage 612 in the memory module 210 (see Figure 2). Further, if needed, the workflow component 406 also inserts 608 the data into the appropriate presentation component 402 for subsequent display 614 on the user interface 202 (see Figure 2).

[0054] Referring to Figures 1, 3 and 7 operation 700 shows data input 702 for an action, such as pushing a button or selecting a menu item, which the user performed 703 on a user-interface element through the user interface 202 (see Figure 2). The relevant workflow component 406 interprets 704 the input data according to the appropriate presentation component 404 and creates 706 data entities which are defined by the appropriate data components 400. The workflow component 406 then populates 710 the data components 400 with the input data provided by the user for subsequent storage 712 in the memory module 210 (see Figure 2). Further, the workflow component 406 also inserts 708 the input data into the appropriate message component 404 for subsequent sending 714 of the input data as data entities to the web service in the message 105, as defined by the message component 404.

[0055] In the above described operation, it is recognized that operation of the workflow 406 and message 404 components would be correspondingly otherwise if included as a hard-coded part 405 of the application 302.

Predefined and dynamic screen generation

[0056] The wireless applications 302 can have predefined sets of screen elements 802 and data objects 800, with the relationship (mapping 800) between these sets being identified at application design phase in the field definitions of the data components 400 and the screen components 404. This model can be referred to as a predefined screen and data relationship model, such that the mapping 804 between the screen elements 802 presented to the user and data objects 800 can be expressed in metadata in the component field definitions using structured language such as XML.

[0057] The screen of the user interface 202 can also be dynamically generated based on the structure of the data object 800 associated to the screen elements 802. In some situations the format of a data stream received as input from the server (web service 106), via the message 105 (see Figure 1), cannot be anticipated in advance (e.g. Web Service 106 operation returning arbitrary XML). In the case where received data stream is presented in a structured format (e.g. XML), the device 100 can make an intelligent prediction, by the framework 206 using defined translation rules, on the screen format (e.g. UI controls, layout, etc.) in order to present the data objects 800 represented by the data stream. This can be done by operating on the XML (for example) nodes in the data stream to build the corresponding data components 400 which are then interpreted by the mapping manager 312 (see Figure 8) to assign the corresponding screen elements 802 via mapped screen components 402 best determined by the framework 206 to handle the data content of the transformed data stream. The schema for the XML content would be predefined during development of the wireless application 302 and rules to translate the data stream based on the schema into the component definition format that is well understood by the mapping manager 312 and the developer of the translation rules. The translation rules would be part of the mapping manager 312 and designed to translate most commonly encountered XML (for example) structured data stream content. Moreover the user can have the opportunity to update the UI fields and modify the data before it has been stored to the device 100 or sent back to the server.

The following example shows an arbitrary XML data stream fragment of the XML schema:

```
<dataNode1 attr1='val1' attr2='val2'>
```

```
        <subDataNode1>abcdefg</subDataNode1>
        <subDataNode2>222</subDataNode2>
        <subDataNode3>333</subDataNode3>
    </dataNode1>
    <dataNode1 attr1='val1' attr2='val2'>
        <subDataNode1>hijklmnop</subDataNode1>
        <subDataNode2>555</subDataNode2>
        <subDataNode3>666</subDataNode3>
    </dataNode1>
```

The mapping manager 312 uses the schema definition provided by the application developer containing the data field definitions

```
<dataEntity name='dataNode1'>
    <dfield name='subDataNode1' type='String' />
    <dfield name='subDataNode2' type='int' />
    <dfield name='subDataNode3' type='int' />
</dataEntity>
```

and dynamically applies translation rules to convert the XML data stream into application acceptable format (as per provided schema) and generate well formed XML data objects 400:

```
<dataEntity  name='dataNode1' key='0' >
    <dfield name='subDataNode1' >abcdefg</>
    <dfield name='subDataNode2' >222</>
</dataEntity>
<dataEntity  name='dataNode1' key='1' >
    <dfield name='subDataNode1' > hijklmnop </>
    <dfield name='subDataNode2' type='int' >555</>
</dataEntity>
```

Presentation of Data Object on the User Interface

[0058] When the screen of the user interface 202 is drawn, the data object 800 displayed for the mapped screen element 802 needs to be resolved. The different options for resolving the specific data object 800 to be used for initial values are as follows:

Screen parameter based initialization

[0059] Typically, the data object 800 of the data component 400 with values for the mapped screen elements 802 is passed to the screen of the user interface 202 as a parameter. In the Example screen component 404 given above, the screen **'scrUserInfo'** received the data object 800 of a user as the parameter. The screen elements 802 on this screen mapped to the data field definition of the User data component 400 would display a data value from this parameter.

Unresolved initial value

[0060] If the mapping 804 is defined for the screen, but no initial data object 800 of the related data component 400 has been resolved, then no initial data value would be displayed for the mapped screen elements 802. An example of this would be a screen defined to enter data values for a new user. The initial User data component 400 would not be

relevant. After the user enters new values into the data fields of the screen element 802, mapping definitions are used to create a new data object 800 of this data component 400, as described below regarding User Data Updates.

List of all data objects

[0061] For a choice control / list type of the screen element 802, mapping 804 can specify that all created data objects 800 are to be used, as shown in Example screen component 404 given above.

Screen Presentation

[0062] Referring to Figures 3, 8, and 9, this scenario 850 describes steps executed for a screen element 802 when a new screen is drawn on the user interface 202. Step 852 the Mapping Manager 312 detects the screen element 802 mapped to the data component 400 field. Step 854, the Mapping Manager 312 checks if this type of data object 800 is attached to the screen - i.e. passed as a parameter. If yes, the Mapping Manager retrieves at step 858 the data field value of the data object 800 and passes it to the presentation manager 308 to display it on the screen. If no, a default value for the field type is displayed at step 856 (e.g. blank for screen, 0 for number, etc.) on the screen 202.

Control to Data Updates

[0063] Referring to Figures 3 and 8, based on mapping 804 metadata the values the user enters are reflected in the field values of the relevant data object 800 in the memory 210. The process can involve the following functionality:

- input validation
- data creation
- data update

Input validation

[0064] Validation of user entered data could be automatically based on the data component (ex. phone number).

Data Creation

[0065] Based on entered values, if a new data key value is encountered, a new data object 800 can be created. In the example data component 400 given above, if a previously undefined name is entered a new User data object 800 is created.

Data Update

[0066] Field values of the data object 800 for an existing data component 400 can be updated as a result of user entry on the user interface 202.

Update operation

[0067] A two way update model could work in two modes:

- Automatic commit
  Data is committed when the user leaves the screen.
- Managed transaction mode
  A specific menu action (screen element 802) is mapped to process data. For example for a multiple order screen, 'submit' menu item on the last screen would update/create the resultant data object 800. Another menu item (e.g. 'cancel') would result in discarding the entered data.

[0068] Referring to Figures 3, 8 and 10, the following scenario 870 describes the flow of mapping user entered data (user events) on the user interface 202 into data object(s) 800. At step 872, as user enters / updates data on the screen element 802, the UI manager 308 passes the value to the Mapping Manager 312. At step 874, if this is a mapped screen element 802, the Mapping Manager 312 resolves the appropriate data component 400 and requests the data object(s) 800 from the Data Manager 310. At step 876, the Data Manager 312 validates that the value entered for the screen element 802 matched to the data component 400 field type this screen element 802 is mapped to. At step 878,

the Data Manager 310 keeps the modified data values in a temporary store, as not committed - 'dirty' data. The Data Manager 310 also resolves if this was an update of existing data object(s) 800 or a create of new data object(s) 800. At step 880, the user event is determined as committed (option A) or aborted (option B). For a committed determination: OPTION A: commit,

1) User selects a button or a menu item (screen element 802) mapped to the commit action;
2) The UI Manager 308 notifies the Mapping Manager 312 about the action;
3) The Mapping Manager 312 requests the Data Manager310 to commit changes;
4) The Data Manager 310 commits the changes and stores the data object(s) 800 in the memory 210.

For an aborted determination: OPTION B rollback,

1) User chooses to leave the screen by selecting a button or a menu item (screen element 802) that is not mapped to a commit action;
2) The UI Manager 308 notifies the Mapping Manager 312 about the action;
3) The Mapping Manager 312 requests the Data Manager 310 to rollback the changes;
4) The Data Manager 312discards the changes - this could mean discarding just the changes to individual fields or removing the whole data object(s) 800 if new ones were created as a result of the screen component 402 to data component 400 mapping 804.

Data to Control Updates

[0069] If the device 100 can asynchronously receive data updates from external sources (e.g. web service 106), changes to data values associated with the screen elements 802 would result in a screen refresh with the new information. Referring to Figures 3, 8, and 11, on receiving 952 the message 105 from the server 106, the Message Manager 312 determines 954 if this message 105 is mapped to the data component 400 of the currently executing application (s) 302 in the framework 206. If this is the case, then the following further steps are conducted: step 956, the Device framework 206 receives notification from the server 106 about a data change; step 958 the Message Manager 306 notifies the Data Manager 310 to perform any relevant data updates to the data object(s) 800; step 960, the Message Manager 306 also notifies the Mapping Manager 312 of the data changes; step 962, using the mapping 804 metadata the Mapping Manager 312 verifies whether the data changes are relevant to the current screen; step 964, if changes are related to the currently displayed information the Mapping Manager 312 requests UI Manager 308 to refresh the screen; and step 966 the screen is refreshed to display the updated data objects 800. Otherwise, step 968 the message 105 does not affect current values of the screen elements 802 displayed on the user interface 202. Accordingly, in view of the above, the message manager 306 receives the message 105, which causes the corresponding data object 800 (s) to be updated/created. Changes to the data objects 800 are then reflected in the screen elements 802 using the linked data component and corresponding data object(s) 800. This linked update/creation procedure between messages 105 and screen elements 802 (through the linked data components 400 and associated data object(s) 800) results in automatic refresh of the screen by the UI manager 308. (i.e. the user would see updated data in the screen elements 802).

[0070] Although the disclosure herein has been drawn to one or more exemplary systems and methods, many variations will be apparent to those knowledgeable in the field, and such variations are within the scope of the application. For example, although XML and a subset of ECMAScript are used in the examples provided, other languages and language variants may be used to define the component applications 302. Further, it is recognised as an alternative to the above described mapping 804, the definition of the data fields could be contained in the screen component 402 (see Figure 4). Therefore, the generation of the screen elements 802 would be based on data field definitions included in the screen component 402 definitions, and the data component 400 would be mapped 804 to the corresponding screen component 402 having included data field definitions. Accordingly, generation of the data objects 800 would rely upon data field definitions contained in the mapped screen component 402.

Claims

1. A method for generating a screen element of a wireless application based on a data object displayed on a user interface of a wireless device, the application including a data component having at least one data field definition and a screen component having at least one screen element definition, the component definitions expressed in a structured definition language, the method comprising the steps of:

selecting the screen component corresponding to the screen element selected for display;
identifying at least one mapping present in the screen component, the mapping for specifying a relationship between the screen component and the data component as defined by an identifier representing the mapping;
selecting the data component mapped by the mapping according to the mapping identifier;
obtaining a data object field value corresponding to the data field definition of the mapped data component;
generating a screen element from the screen element definition to include the data object field value according to the format of the data field definition as defined in the mapped data component.

2. The method as claimed in claim 1, wherein a plurality of the data field definitions of the data component is shared between the screen component and the data component as represented by the mapping.

3. The method as claimed in claim 2 further comprising the step of linking the plurality of data field definitions to corresponding ones of the screen element definitions of the screen component as represented by the identifier.

4. The method as claimed in any one of claims 1 to 3 further comprising the step of detecting a user event of the user interface related to the screen element.

5. The method as claimed in claim 4 further comprising the step of identifying the mapping in the screen component corresponding to the linked data component of the affected screen element.

6. The method as claimed in any one of claims 1 to 5 further comprising the step of updating the data object in a memory using the data field definition of the linked data component.

7. The method as claimed in any one of claims 1 to 6 further comprising the step of creating a new one of the data object in a memory using the data field definition of the linked data component.

8. The method as claimed in any one of claims 1 to 7, wherein the data object is passed to the user interface as a screen parameter.

9. The method as claimed in any one of claims 1 to 8, wherein a first screen element definition is mapped by a first one of the identifiers to a first one of the data components and a second screen element definition is mapped by a second one of the identifiers to a second one of the data components different from the first data component.

10. The method as claimed in claim 9, wherein the first screen element definition and the second screen element definition are mapped to the same data component using the first identifier.

11. The method as claimed in any one of claims 1 to 10, wherein the structured definition language is Extensible Markup Language (XML) based.

12. The method as claimed in any one of claims 1 to 11, wherein the identifier is a simple primary key.

13. The method as claimed in any one of claims 1 to 11, wherein the identifier is a composite key.

14. The method as claimed in any one of claims 1 to 13 further comprising the step of receiving an asynchronous communication message by the device via a network coupled to the device, the message including a message data object.

15. The method as claimed in any one of claims 1 to 14 further comprising the step of checking the message for the mapping corresponding to the data component of the application provisioned on the device.

16. The method as claimed in claim 15 further comprising the step of updating the message data object corresponding to the message in a memory using the data field definition of the linked data component and then reflecting that data change in the screen element linked to the data object.

17. The method as claimed in claim 15 or claim 16 further comprising the step of creating the data object corresponding to the message in a memory using the data field definition of the linked data component.

18. A method for generating a data object of a wireless application based on a change in a screen element displayed

on a user interface of a wireless device, the application including a data component having at least one data field definition and a screen component having at least one screen element definition, the component definitions expressed in a structured definition language, the method comprising the steps of:

selecting the screen component corresponding to the screen element;
identifying at least one mapping present in the screen component, the mapping for specifying a relationship between the screen component and the data component;
selecting the data component mapped by the mapping;
obtaining a changed value from the screen element corresponding to the mapped data component;
assigning the changed value to a data field value of the data object according to the format of the data field definition as defined in the mapped data component.

19. A system for generating a screen element of a wireless application based on a data object displayed on a user interface of a wireless device, the application including a data component having at least one data field definition and a screen component having at least one screen element definition, the component definitions expressed in a structured definition language, the method comprising the steps of:

a mapping manager for selecting the screen component corresponding to the screen element and identifying at least one mapping present in the screen component, the mapping for specifying a relationship between the screen component and the data component as defined by an identifier representing the mapping, the mapping manager for selecting the data component mapped by the mapping according to the mapping identifier;
a data manager for obtaining a data object field value corresponding to the data field definition of the mapped data component; and
a screen manager for generating a screen element from the screen element definition to include the data object field value according to the format of the data field definition as defined in the mapped data component.

20. The system as claimed in claim 19, wherein a plurality of the data field definitions of the data component is shared between the screen component and the data component as represented by the mapping.

21. The system as claimed in claim 20, wherein the plurality of data field definitions are linked to corresponding ones of the screen element definitions of the screen component as represented by the identifier.

22. The system as claimed in claim 20 or claim 21 further comprising the presentation manager configured for detecting a user event of the user interface related to the screen element.

23. The system as claimed in claim 22 further comprising the mapping manager configured for identifying the mapping in the screen component corresponding to the linked data component of the affected screen element.

24. The system as claimed in claim 23 further comprising the data manager configured for updating the data object in a memory using the data field definition of the linked data component.

25. The system as claimed in claim 24 further comprising the data manager configured for creating a new one of the data object in a memory using the data field definition of the linked data component.

26. The system as claimed in any one of claims 19 to 25, wherein the data object is passed to the user interface as a screen parameter.

27. The system as claimed in any one of claims 19 to 26, wherein a first screen element definition is mapped by a first one of the identifiers to a first one of the data components and a second screen element definition is mapped by a second one of the identifiers to a second one of the data components different from the first data component.

28. The system as claimed in claim 27, wherein the first screen element definition and the second screen element definition are mapped to the same data component using the first identifier.

29. The system as claimed in any one of claims 19 to 28, wherein the structured definition language is Extensible Markup Language (XML) based.

30. The system as claimed in any one of claims 19 to 29, wherein the identifier is a simple primary key.

31. The system as claimed in any one of claims 19 to 30, wherein the identifier is a composite key.

32. The system as claimed in any one of claims 19 to 31 further comprising a communication manager for receiving an asynchronous communication message by the device via a network coupled to the device, the message including a message data object.

33. The system as claimed in any one of claims 19 to 32 further comprising the mapping manager configured for checking the message for the mapping corresponding to the data component of the application provisioned on the device.

34. The system as claimed in claim 33 further comprising the data manager configured for updating the message data object in a memory using the data field definition of the linked data component.

35. The system as claimed in claim 33 further comprising the data manager configured for creating the message data object in a memory using the data field definition of the linked data component.

36. A device for generating a screen element of a wireless application based on a data object displayed on a user interface of a wireless device, the application including a data component having at least one data field definition and a screen component having at least one screen element definition, the component definitions expressed in a structured definition language, the method comprising the steps of:

means for selecting the screen component corresponding to the screen element selected for display;
means for identifying at least one mapping present in the screen component, the mapping for specifying a relationship between the screen component and the data component;
means for selecting the data component mapped by the mapping;
means for obtaining a data object field value corresponding to the data field definition of the mapped data component;
means for generating a screen element from the screen element definition to include the data object field value according to the format of the data field definition as defined in the mapped data component.

37. A computer program product for generating a screen element of a wireless application based on a data object displayed on a user interface of a wireless device, the application including a data component having at least one data field definition and a screen component having at least one screen element definition, the component definitions expressed in a structured definition language, the computer program product comprising:

a computer readable medium;
a mapping module stored on the computer readable medium for selecting the screen component corresponding to the screen element and identifying at least one mapping present in the screen component, the mapping for specifying a relationship between the screen component and the data component as defined by an identifier representing the mapping, the mapping module for selecting the data component mapped by the mapping according to the mapping identifier;
a data module stored on the computer readable medium for obtaining a data object field value corresponding to the data field definition of the mapped data component; and
a screen module stored on the computer readable medium for generating a screen element from the screen element definition to include the data object field value according to the format of the data field definition as defined in the mapped data component.

38. A machine readable medium comprising program code executable on a device as claimed in claim 36 for implementing the method as claimed in any of claims 1 to 18.

39. A machine readable medium as claimed in claim 38, wherein said machine readable medium comprises a part of the device.

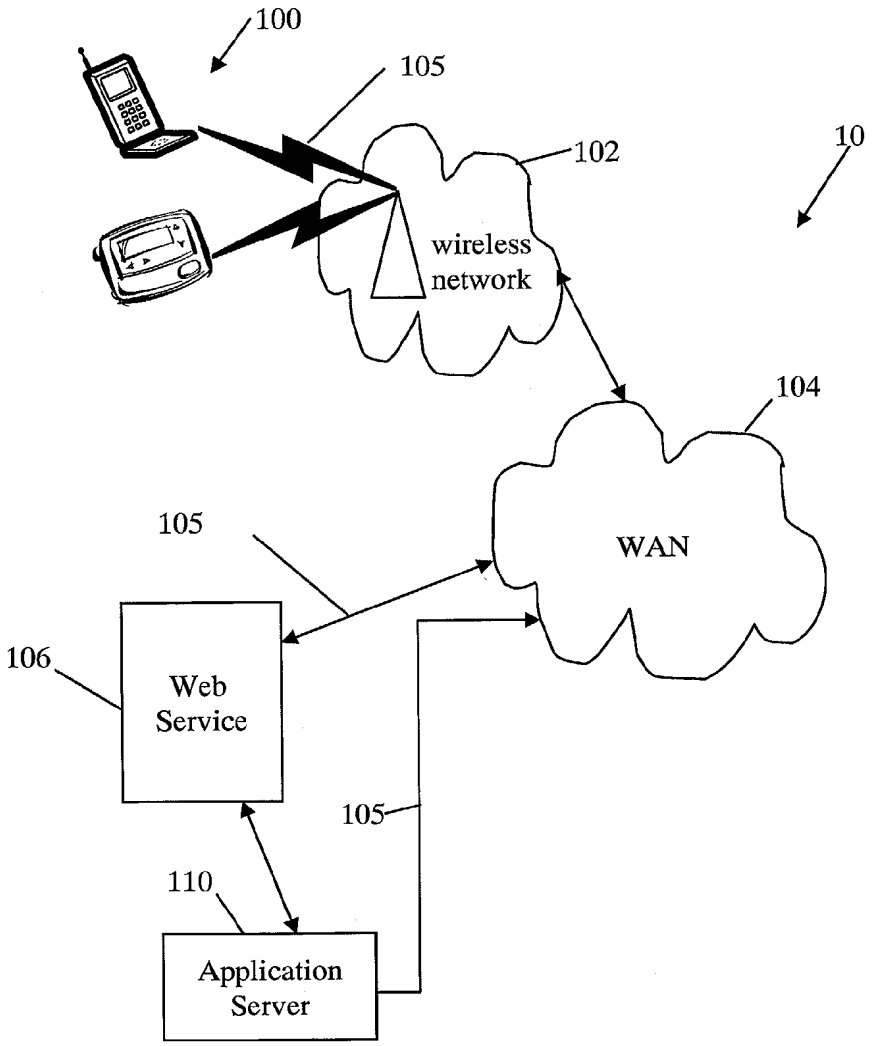
100
105
102
10
wireless
network
104
WAN
105
106
Web
Service
105
110
Application
Server

Figure 1

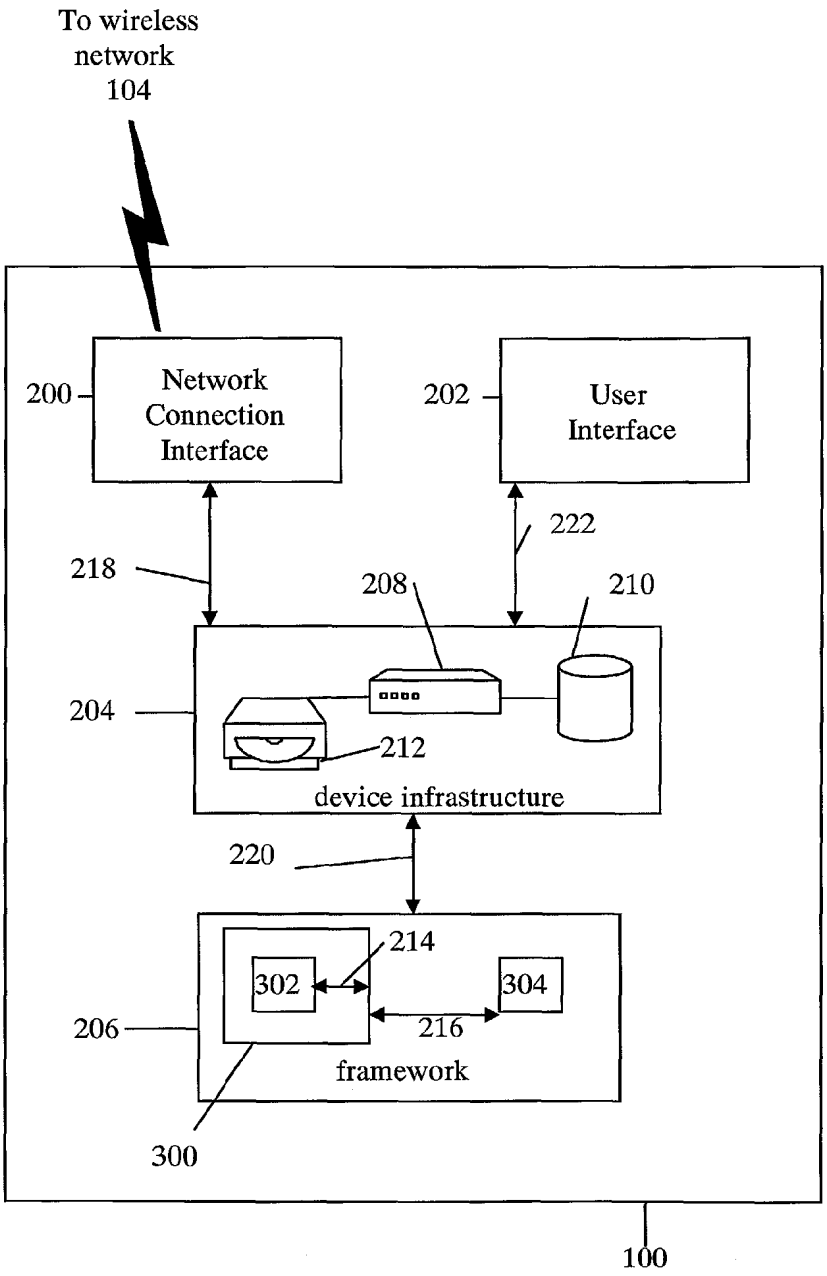
To wireless network 104
200
Network Connection Interface
202
User Interface
222
218
208
210
204
212
device infrastructure
220
214
302
304
206
216
framework
300
100

Figure 2

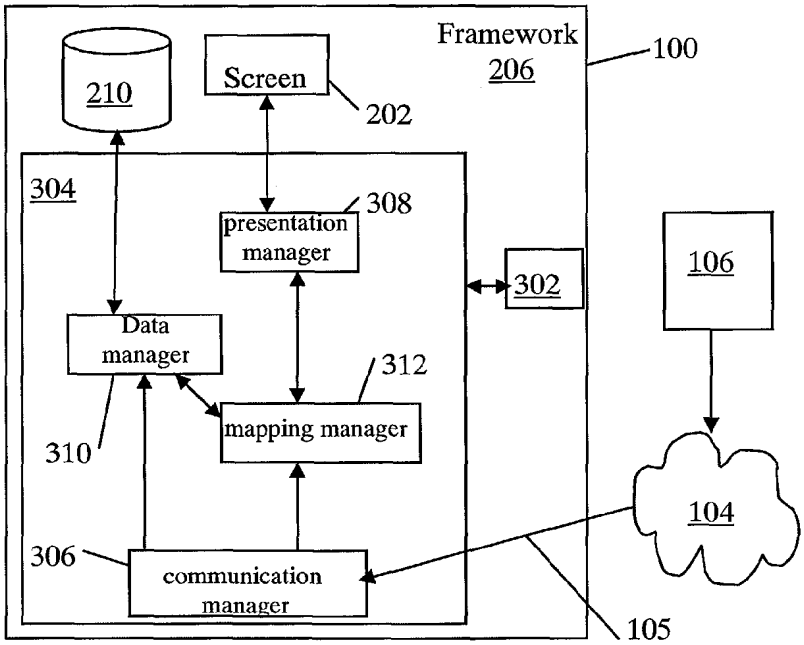
Framework
206
100
210
Screen
202
304
308
presentation manager
302
106
Data manager
312
mapping manager
310
104
306
communication manager
105

Figure 3

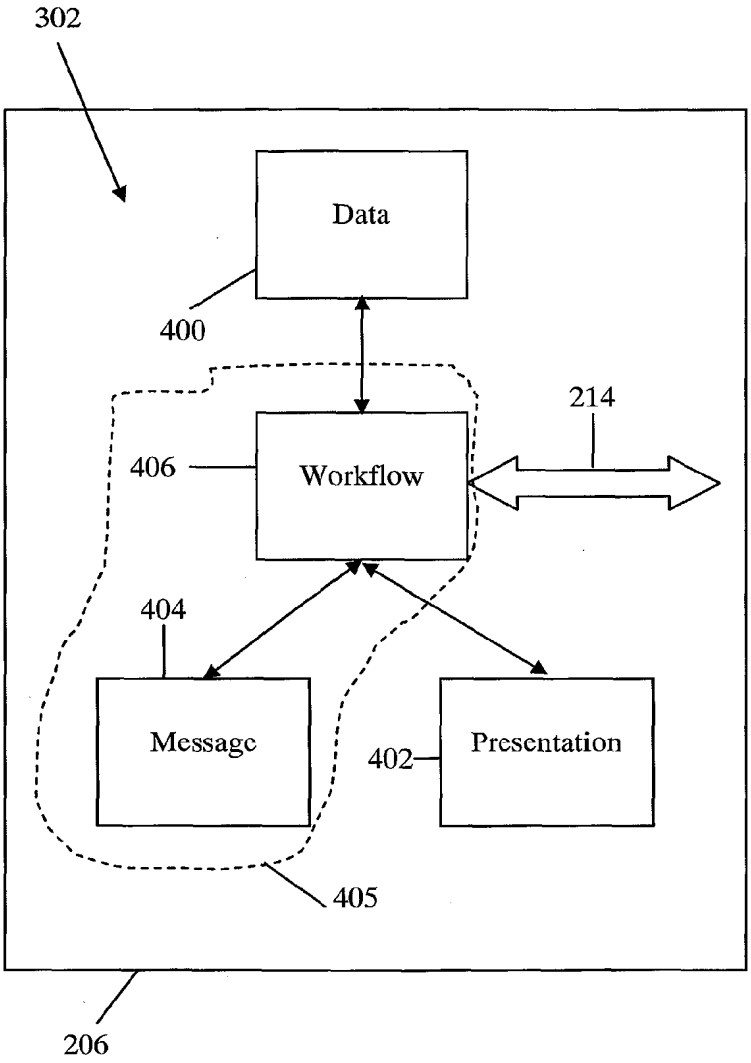
302
Data
400
214
406
Workflow
404
Message
402
Presentation
405
206

Figure 4

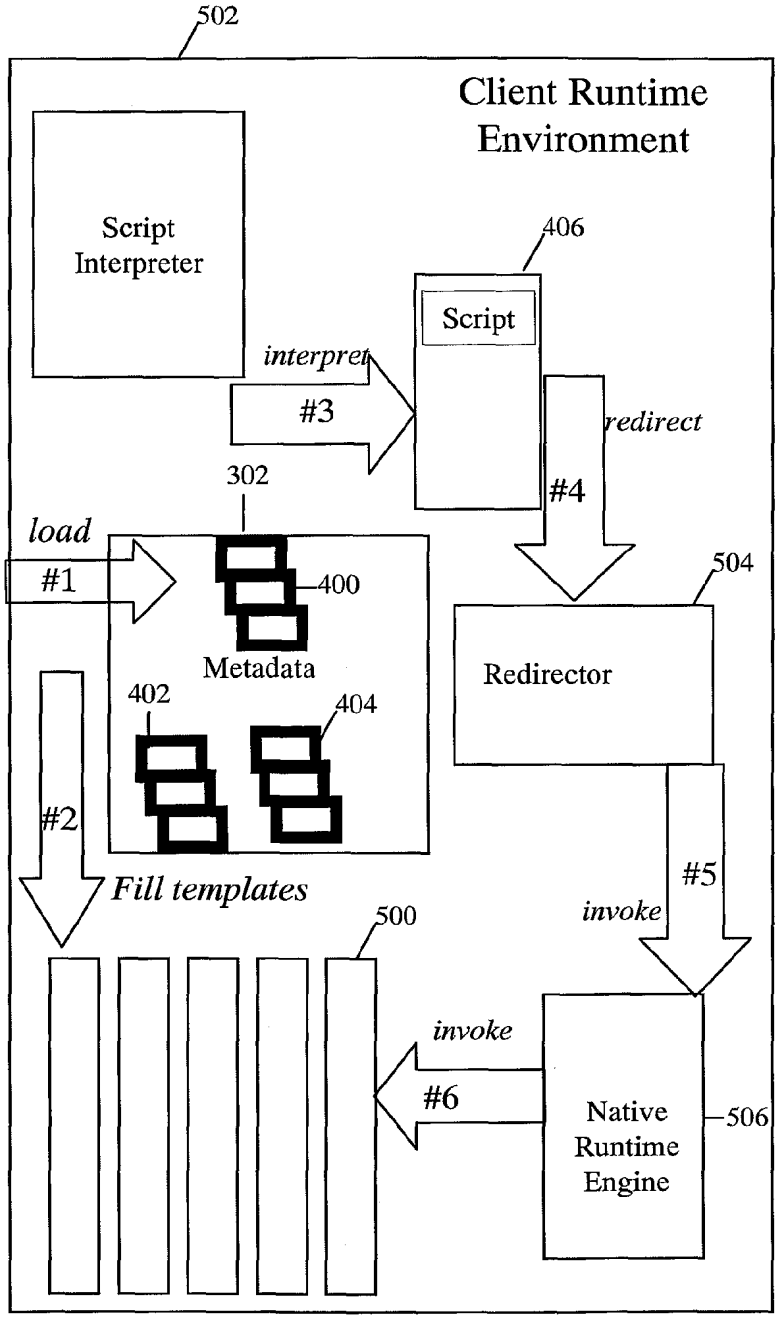
502
Client Runtime Environment
Script Interpreter
406
Script
interpret
#3
redirect
#4
302
load
#1
400
Metadata
504
Redirector
402
404
#2
Fill templates
500
#5
invoke
invoke
#6
Native Runtime Engine
506

Figure 5

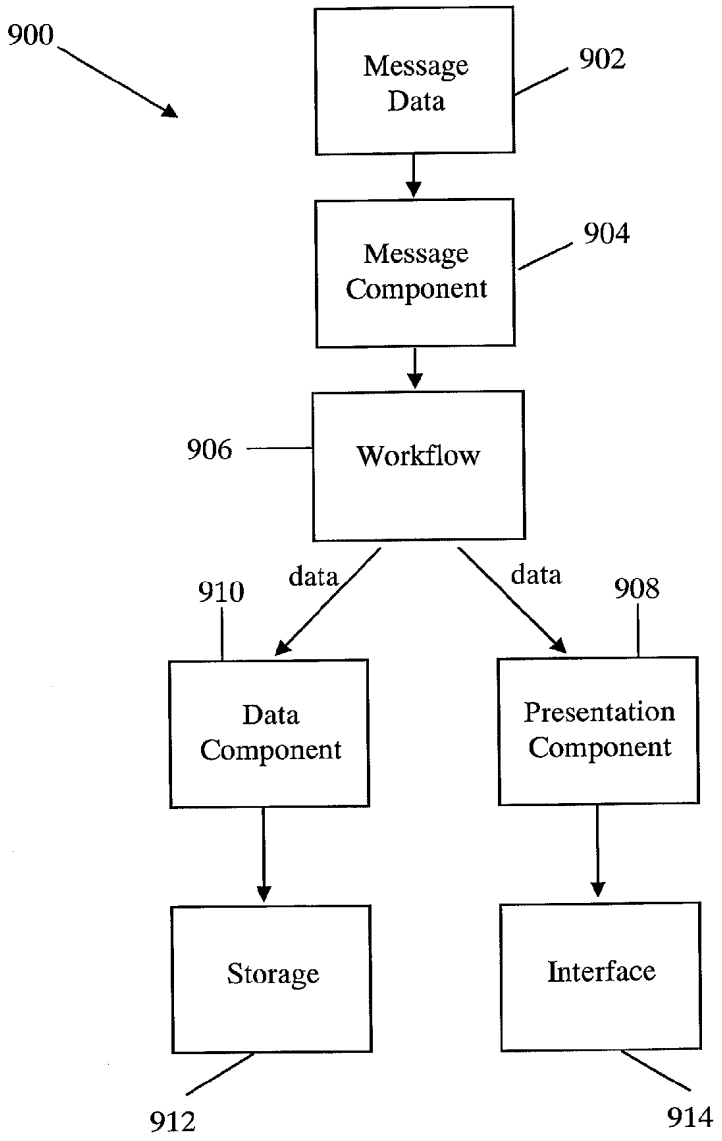
900
Message Data
902
Message Component
904
906
Workflow
data
data
910
908
Data Component
Presentation Component
Storage
Interface
912
914

Figure 6

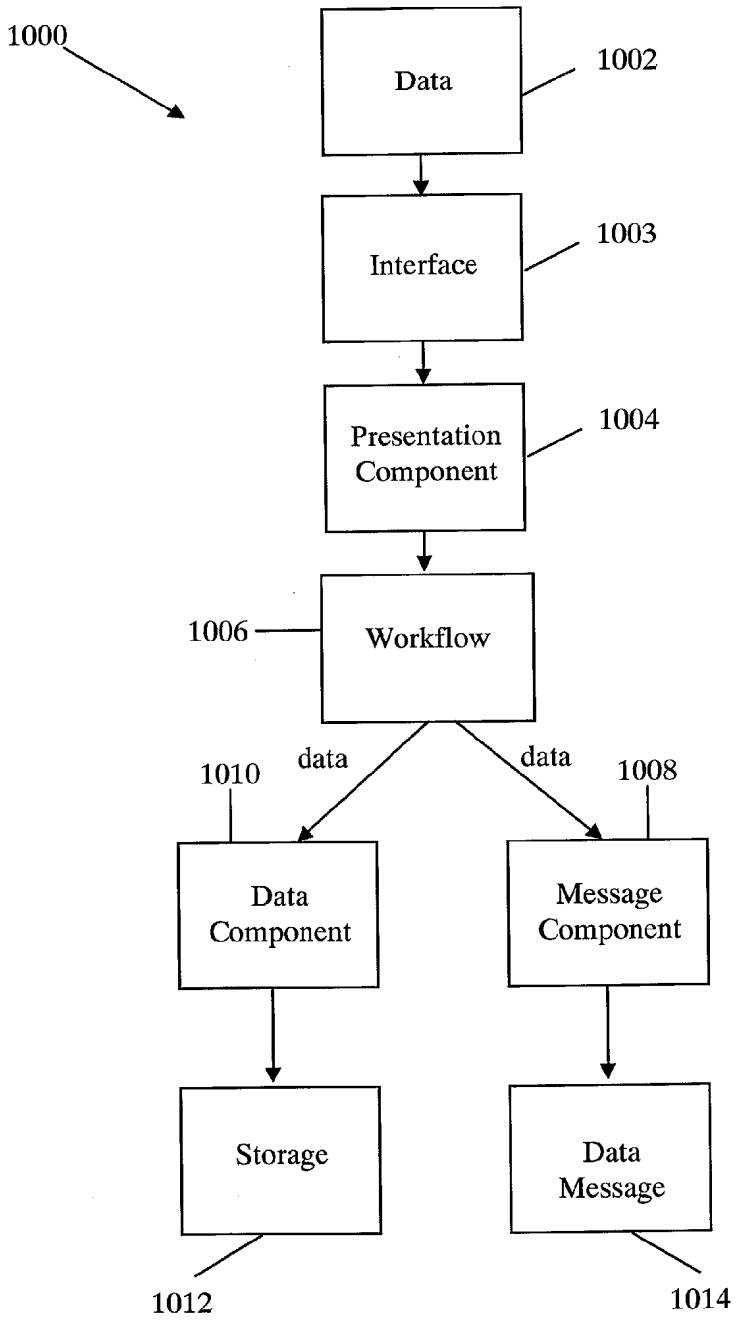
1000
Data
1002
Interface
1003
Presentation Component
1004
1006
Workflow
data
data
1010
1008
Data Component
Message Component
Storage
Data Message
1012
1014

Figure 7

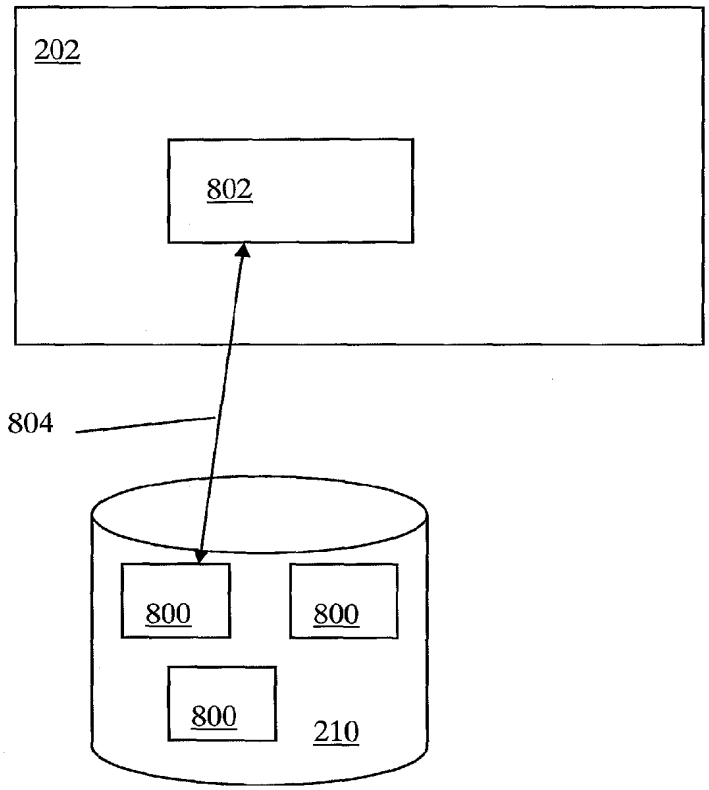

Figure 8

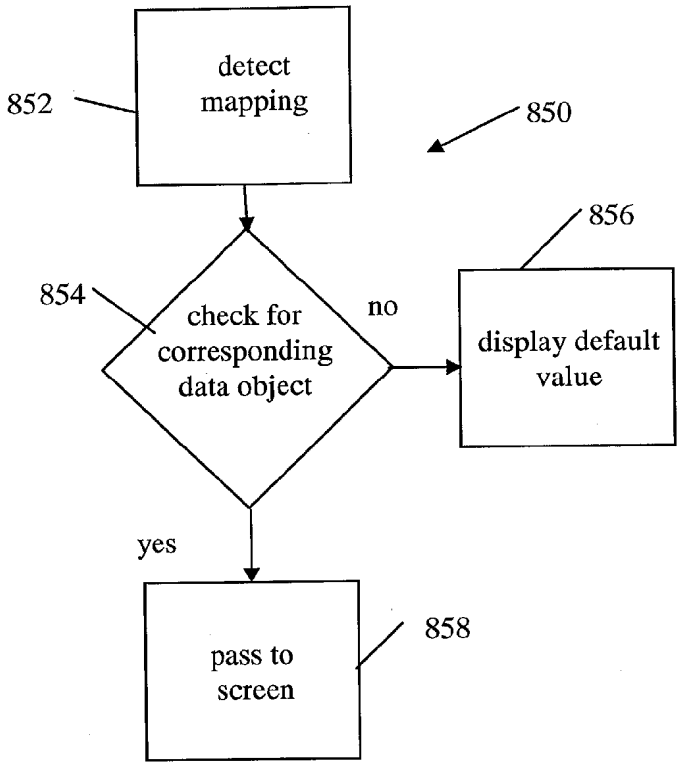
detect mapping
852
850
856
854
check for corresponding data object
no
display default value
yes
pass to screen
858

Figure 9

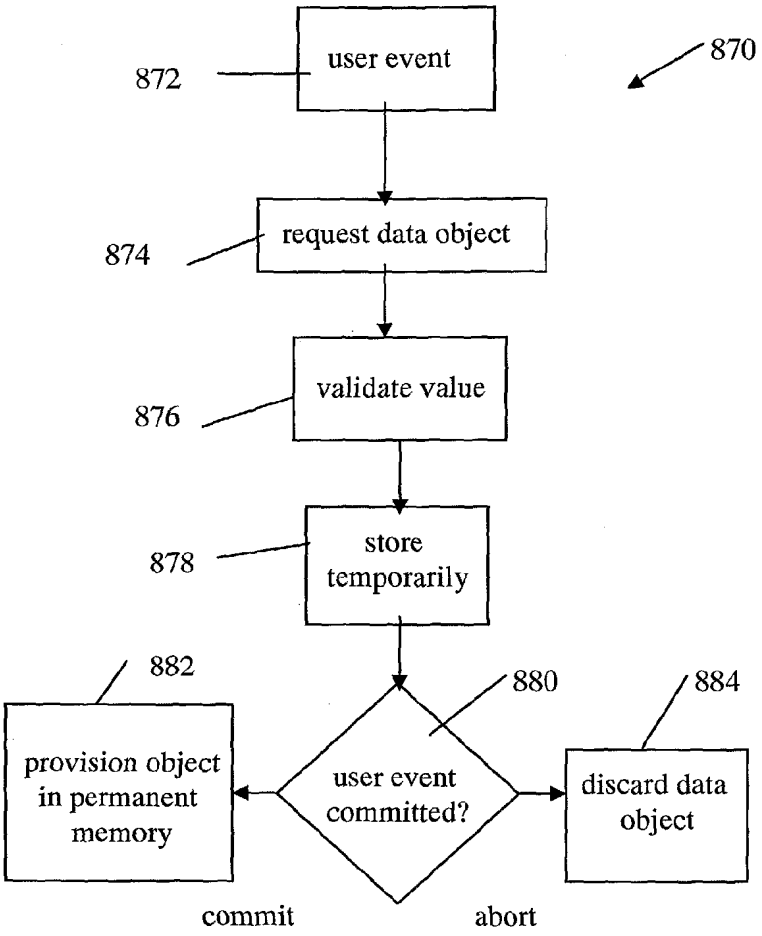
870
872
user event
874
request data object
876
validate value
878
store temporarily
880
882
884
provision object in permanent memory
user event committed?
discard data object
commit
abort

Figure 10

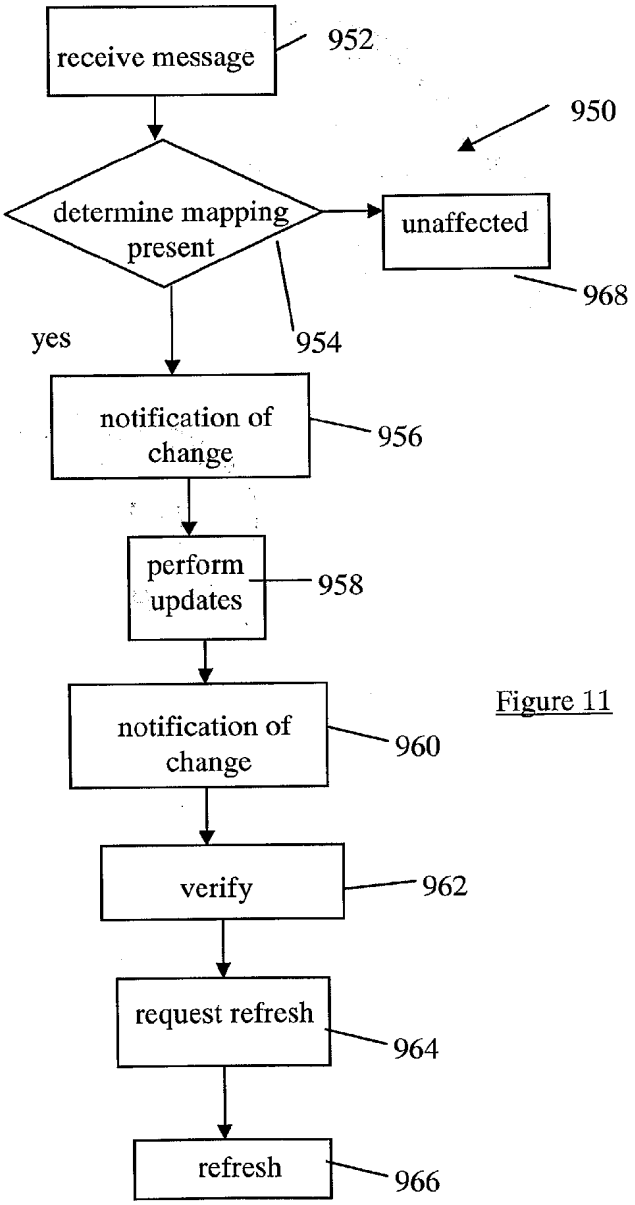
receive message
952
950
determine mapping present
unaffected
968
yes
954
notification of change
956
perform updates
958
notification of change
960
verify
962
request refresh
964
refresh
966

Figure 11

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 25 1160

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	WO 03/044654 A (SOFTPLUMBERS S.A) 30 May 2003 (2003-05-30) * page 1, lines 17-24 * * page 3, lines 16-20 * * page 10, lines 11-14 * * page 13, lines 14-18 * * page 14, line 6 - page 16, line 6 * * page 23, lines 19-24 * * page 25, lines 8-16 * -----	1-39	G06F9/44
X	US 2001/045963 A1 (MARCOS PAUL ET AL) 29 November 2001 (2001-11-29) * paragraphs [0020], [0021] * * paragraph [0024] * * paragraphs [0073] - [0075] * * paragraphs [0083] - [0094] * * paragraphs [0099] - [0101] * -----	1-39	
A	ABRAMS M ET AL: "UIML: an appliance-independent XML user interface language" COMPUTER NETWORKS, ELSEVIER SCIENCE PUBLISHERS B.V., AMSTERDAM, NL, vol. 31, no. 11-16, 17 May 1999 (1999-05-17), pages 1695-1708, XP004304584 ISSN: 1389-1286 * abstract * -----	1-39	TECHNICAL FIELDS SEARCHED (Int.Cl.7) G06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	5 April 2005	de Man, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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METHOD FOR PROVIDING MOBILE WEBPAGE BY EMPLOYING TO DYNAMIC TEMPLATE

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Abstract of KR20070003418 (A)

A method and a device for offering a mobile webpage using a dynamic template are provided to offer diverse UI(User Interface) through one template by dynamically managing attribute of the template and offer the webpage fit for each browser environment by using the template having the dynamic attribute. A template register(201) registers the template including the defined attribute. A content register(203) registers contents. A storing part(209) stores the templates and the contents. A template attribute processor(205) sets the attribute of the registered template by receiving attribute information corresponding to the defined attribute of the template. A webpage generator(207) generates the webpage by using the attribute-set template and the contents. An output part(208) outputs the generated webpage.; The storing part stores more than one previously registered terminal model information. An attribute converter converts attribute data for corresponding to model information of each terminal.

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전체 청구항 수 : 총 8 항

(54) 동적 템플릿을 이용한 무선 웹 페이지 제공 방법 및 장치

(57) 요약

본 발명은 무선 웹 페이지 제공 방법 및 장치에 관한 것으로서, 좀 더 상세하게는 속성을 동적으로 정의할 수 있는 템플릿(template)을 이용한 무선 웹 페이지 제공 방법 및 장치에 관한 것이다. 본 발명의 바람직한 일 실시예에 따른 웹 페이지 제공장치에서 템플릿을 이용하여 무선 웹 페이지를 제공하는 방법은 속성이 정의된 템플릿을 등록받는 단계; 템플릿의 정의된 속성에 상응하는 속성 데이터를 입력받는 단계; 및 등록된 컨텐츠와 템플릿을 이용하여 웹 페이지를 생성하는 단계를 포함하여 구성된다. 따라서, 템플릿의 속성을 동적으로 관리함으로써, 다양한 UI의 제공을 가능하게 하는 웹 페이지 제공 방법 및 장치를 제공할 수 있는 효과가 있다.

대표도

도 2

특허청구의 범위

청구항 1.

웹 페이지 제공장치에서 템플릿을 이용하여 무선 웹 페이지를 제공하는 방법에 있어서,

속성이 정의된 템플릿을 등록받는 단계;

상기 템플릿의 정의된 속성에 상응하는 속성 데이터를 입력받는 단계; 및

등록된 컨텐츠와 상기 템플릿을 이용하여 웹 페이지를 생성하는 단계

를 포함하는 것을 특징으로 하는 동적 템플릿을 이용한 무선 웹 페이지 제공 방법.

청구항 2.

제 1항에 있어서,

상기 템플릿의 속성은 상기 웹 페이지의 UI 구성을 위한 페이지 속성과, 상기 컨텐츠를 표현하기 위한 컨텐츠 속성을 포함하는 것을 특징으로 하는 동적 템플릿을 이용한 무선 웹 페이지 제공 방법.

청구항 3.

제 1항에 있어서,

상기 속성이 정의된 템플릿은 특정 브라우저 규격에 상응하는 것이며, 상기 속성 데이터는 상기 브라우저 규격에 상응하는 데이터인 것을 특징으로 하는 동적 템플릿을 이용한 무선 웹 페이지 제공 방법.

청구항 4.

제 1항에 있어서,

상기 템플릿의 정의된 속성에 상응하는 속성 데이터를 입력받는 단계는,

미리 등록된 적어도 하나의 단말기 기종 정보에 상응하도록 상기 속성 데이터를 변환하는 단계를 포함하며,

등록된 컨텐츠와 상기 템플릿을 이용하여 웹 페이지를 생성하는 단계는 상기 각 변환된 속성 데이터에 따른 각각의 웹 페이지를 생성하는 것을 특징으로 하는 동적 템플릿을 이용한 무선 웹 페이지 제공 방법.

청구항 5.

제 1항에 있어서,

등록된 컨텐츠와 상기 템플릿을 이용하여 웹 페이지를 생성하는 단계는,

상기 컨텐츠를 상기 템플릿과 결합하는 단계;

상기 속성 데이터에 상응하도록 상기 웹 페이지를 생성하는 단계; 및

상기 웹 페이지를 출력하는 단계를 포함하는 것을 특징으로 하는 동적 템플릿을 이용한 무선 웹 페이지 제공 방법.

청구항 6.

동적인 속성을 갖는 템플릿을 이용하여 무선 웹 페이지를 제공하는 장치에 있어서,

속성이 정의된 템플릿을 등록받는 템플릿 등록부;

컨텐츠를 등록받는 컨텐츠 등록부;

상기 템플릿 및 컨텐츠를 저장하는 저장부;

상기 템플릿의 정의된 속성에 상응하는 속성 데이터를 입력받아 상기 등록된 템플릿의 속성을 설정하는 템플릿 속성 처리부;

상기 속성이 설정된 템플릿과 상기 컨텐츠를 이용하여 웹 페이지를 생성하는 웹 페이지 생성부; 및

상기 생성된 웹 페이지를 출력하는 출력부

를 포함하는 것을 특징으로 하는 웹 페이지 제공장치.

청구항 7.

제 6항에 있어서,

상기 저장부에는 미리 등록된 하나 이상의 단말기 기종 정보가 저장되고,

상기 각 단말기 기종 정보에 상응하도록 상기 속성 데이터를 변환하는 속성 변환부를 더 포함하는 것을 특징으로 하는 웹 페이지 제공장치.

청구항 8.

템플릿을 이용하여 무선 웹 페이지를 제공하기 위해 웹 페이지 제공 장치에서 실행될 수 있도록 유형적으로 구현되어 있으며, 상기 웹 페이지 제공 장치에 의해 판독될 수 있는 프로그램을 기록한 기록매체에 있어서,

속성이 정의된 템플릿을 등록받는 단계;

상기 템플릿의 정의된 속성에 상응하는 속성 데이터를 입력받는 단계; 및

등록된 컨텐츠와 상기 템플릿을 이용하여 웹 페이지를 생성하는 단계

를 포함하는 것을 특징으로 하는 프로그램을 기록한 기록매체.

명세서

발명의 상세한 설명

발명의 목적

발명이 속하는 기술 및 그 분야의 종래기술

본 발명은 무선 웹 페이지 제공 방법 및 장치에 관한 것으로서, 좀 더 상세하게는 속성을 동적으로 정의할 수 있는 템플릿(template)을 이용한 무선 웹 페이지 제공 방법 및 장치에 관한 것이다.

최근에는 PC를 통한 인터넷의 사용뿐만 아니라, 무선 인터넷 단말기를 이용한 무선 웹 서비스의 사용이 증가하고 있다. 특히, 초기의 무선 웹 서비스를 제공하기 위한 웹 페이지의 UI(User Interface) 는 단순한 형태였으나, 근래에는 이미지, 아이콘 등이 포함된 다양한 UI의 웹 페이지가 제공되고 있다.

최근 대부분의 웹 페이지는, 컨텐츠 뿐만 아니라 템플릿을 사용하여 다양한 UI를 제공하고 있다. 템플릿은 웹 페이지의 형식(꼴), 틀 또는 모형 등을 의미하며, 현재에는 이미지 등이 첨부된 다양한 형태의 템플릿이 사용되고 있다.

종래 기술에 따른, 템플릿을 이용한 웹 페이지의 제공 방법을 도 1을 참조하여 설명하기로 한다.

도 1은 종래 기술에 따른 템플릿을 이용한 웹 페이지의 제공방법을 설명하기 위한 도면이다.

종래 기술에 따른 템플릿은 단순히 컨텐츠가 추가되기 위한 틀에 지나지 않는다. 즉, 형식이 정해진 템플릿과 컨텐츠가 등록되고, 이를 통해 합쳐진 하나의 웹 페이지가 생성된다.

도 1을 참조하면, 컨텐츠(10)와, 컨텐츠(10)가 들어갈 영역과 나머지 미리 설정된 모양의 틀이 정해진 템플릿(30)이 도시되어 있다. 여기서, 컨텐츠(10)는 컨테츠 명, 컨텐츠 파일(통상적으로 컨텐츠 명에는 특정 주소가 매핑(mapping)되어 있으며, 매핑된 주소에는 특정 파일이 존재한다) 등을 모두 포함하는 개념으로, 웹 페이지를 통해 제공되는 모든 정보를 지칭한다.

이 둘을 통해 무선 모바일 서비스를 위한 웹 페이지(50)가 제공된다. 즉, 미리 설정된 템플릿을 통해 UI가 제공되는 다양한 컨텐츠가 포함된 웹 페이지의 제공이 가능하다.

하지만, 미리 설정되어 고정된 템플릿의 UI적인 속성인 폰트나 셀 색상, 추가 이미지에 대한 정보 등은 동적으로 정의하여 사용할 수 없다. 따라서, 템플릿(30)의 UI의 동적인 변화가 어렵고, 그에 따라 웹 페이지를 제공받는 각 단말기의 브라우저 환경에 각각 상응하는 템플릿을 적용하기가 어렵다. 즉, 단말기 별로 브라우저 환경의 차이가 많은 무선 인터넷 환경에서는 UI에 대한 요구사항을 충족시키기가 힘들다.

또한, 무선 웹 서비스를 위한 웹 페이지는 유선 인터넷을 통한 웹 페이지와는 달리, 크기가 작아 제공되는 정보가 적기 때문에 상위 도는 하위 페이지로의 이동이 잦은 편이며, 이에 따라 각각의 웹 페이지를 제공해야 한다. 따라서, 종래 기술에 따른 템플릿을 사용할 경우에는, 하나의 브라우저 규격에 대해서도 제공될 각각의 UI를 제공하기 위한 템플릿이 각각 필요하기 때문에, 다양한 UI 제공에 따른 템플릿 제작 및 관리의 효율성이 떨어진다.

발명이 이루고자 하는 기술적 과제

따라서, 본 발명은 상술한 문제점을 해결하기 위해 안출된 것으로서, 템플릿의 속성을 동적으로 관리함으로써, 하나의 템플릿을 이용하여 다양한 UI의 제공을 가능하게 하는 웹 페이지 제공방법 및 장치를 제공하는데 그 목적이 있다.

본 발명의 다른 목적은 동적인 속성을 갖는 템플릿을 이용하여 단말기의 각 브라우저 환경에 맞는 웹 페이지를 제공하는 방법 및 장치를 제공하는데 있다.

본 발명의 다른 목적들은 이하에 서술되는 바람직한 실시예를 통하여 보다 명확해질 것이다.

발명의 구성

상술한 목적을 달성하기 위한 본 발명의 제 1측면에 따르면, 웹 페이지 제공장치에서 템플릿을 이용하여 무선 웹 페이지를 제공하는 방법에 있어서, 속성이 정의된 템플릿을 등록받는 단계; 상기 템플릿의 정의된 속성에 상응하는 속성 데이터를 입력받는 단계; 및 등록된 컨텐츠와 상기 템플릿을 이용하여 웹 페이지를 생성하는 단계를 포함하는 것을 특징으로 하는 동적 템플릿을 이용한 무선 웹 페이지 제공 방법 및 그 방법을 기록한 기록매체가 제공된다.

여기서, 상기 템플릿의 속성은 상기 웹 페이지의 UI 구성을 위한 페이지 속성과, 상기 컨텐츠를 표현하기 위한 컨텐츠 속성을 포함할 수 있다.

또한, 상기 속성이 정의된 템플릿은 특정 브라우저 규격에 상응하는 것이며, 상기 속성 데이터는 상기 브라우저 규격에 상응하는 데이터일 수 있다.

또한, 상기 템플릿의 정의된 속성에 상응하는 속성 데이터를 입력받는 단계는, 미리 등록된 적어도 하나의 단말기 기종 정보에 상응하도록 상기 속성 데이터를 변환하는 단계를 포함하며, 등록된 컨텐츠와 상기 템플릿을 이용하여 웹 페이지를 생성하는 단계는 상기 각 변환된 속성 데이터에 따른 각각의 웹 페이지를 생성할 수 있다.

또한, 등록된 컨텐츠와 상기 템플릿을 이용하여 웹 페이지를 생성하는 단계는, 상기 컨텐츠를 상기 템플릿과 결합하는 단계; 상기 속성 데이터에 상응하도록 상기 웹 페이지를 생성하는 단계; 및 상기 웹 페이지를 출력하는 단계를 포함할 수 있다.

상술한 목적을 달성하기 위한 본 발명의 제 1측면에 따르면, 동적인 속성을 갖는 템플릿을 이용하여 무선 웹 페이지를 제공하는 장치에 있어서, 속성이 정의된 템플릿을 등록받는 템플릿 등록부; 컨텐츠를 등록받는 컨텐츠 등록부; 상기 템플릿 및 컨텐츠를 저장하는 저장부; 상기 템플릿의 정의된 속성에 상응하는 속성 데이터를 입력받아 상기 등록된 템플릿의 속성을 설정하는 템플릿 속성 처리부; 상기 속성이 설정된 템플릿과 상기 컨텐츠를 이용하여 웹 페이지를 생성하는 웹 페이지 생성부; 및 상기 생성된 웹 페이지를 출력하는 출력부를 포함하는 것을 특징으로 하는 웹 페이지 제공장치가 제공된다.

여기서, 상기 저장부에는 미리 등록된 하나 이상의 단말기 기종 정보가 저장되고,

상기 각 단말기 기종 정보에 상응하도록 상기 속성 데이터를 변환하는 속성 변환부를 더 포함할 수 있다.

이하, 본 발명의 바람직한 실시예에 따른 동적 템플릿을 이용한 웹 페이지 제공 방법 및 장치를 첨부 도면을 참조하여 상세히 설명하기로 한다.

도 2는 본 발명의 바람직한 일 실시예에 따른 웹 페이지 제공장치에서 동적 템플릿을 이용한 웹 페이지를 제공하기 위한 전체 시스템을 개략적으로 나타낸 구성도이다.

도 2를 참조하면, 웹 페이지 제공장치(200)는 PCS, PDA, PSP, 스마트 폰 등의 휴대용 무선 단말기 뿐만 아니라, PC 등의 인터넷이 가능한 모든 단말기에게 제공되는 웹 페이지를 생성 및 제공하는 기능을 수행한다. 여기서, 웹 페이지 제공장치(200)가 단말기에게 생성된 웹 페이지를 직접 제공할 수 있으나, 별도의 웹 서버에서 단말기로 웹 페이지를 제공할 수도 있음은 자명하다. 즉, 웹 페이지 제공장치(200)는 웹 페이지를 생성하는 기능만을 수행하며, 단말기에게 웹 서비스에 따른 웹 페이지를 제공하는 별도의 웹 서버가 존재하여, 상기 웹 서버로 생성된 웹 페이지를 제공하는 것이다.

웹 페이지 제공장치(200)에서 웹 페이지(250)를 생성 및 제공하기 위해서는, 제공될 컨텐츠(210)와 템플릿(230)을 먼저 등록받는다.

컨텐츠(210)는 유무선 전기 통신망에서 사용하기 위하여 문자ㅇ부호ㅇ음성ㅇ음향ㅇ이미지ㅇ영상 등을 디지털 방식으로 제작해 처리ㅇ유통하는 각종 정보 또는 그 내용물을 통틀어 이르는 개념이다. 이하에서는 컨텐츠 명, 컨텐츠 원본 파일(즉 그 내용물) 등을 모두 포함하여 컨텐츠라 칭하기로 한다. 따라서, 웹 페이지로 제공될 특정 정보 또는 그 내용인 컨텐츠(210)가 웹 페이지 제공장치(200)에 등록된다.

본 발명에 따른 템플릿(230)은 폰트, 셀 색상, 이미지 등이 고정된 값을 가지는 것이 아니라, 동적으로 설정될 수 있도록 각 속성이 정의된다. 즉, 템플릿(230)은 틀 형식, 구조 등에 대한 정보만이 정의되고, 그에 따른 각 속성값이 설정되지 않은 상태로 웹 페이지 제공장치(200)에 등록된다.

예를 들어, 상단의 특정 위치에 회사로고가 삽입된다는 정보만이 정의되어 등록되고, 이후 별도로 회사로고에 대응하는 이미지가 속성 데이터로서 등록된다.

또 다른 방법으로, 웹 페이지 제공장치(200)는 속성이 미리 설정된 템플릿(230)을 등록받을 수 있는데, 이 때에는 템플릿(230)의 속성에 대한 속성 데이터를 함께 등록받는다. 즉, 고정된 템플릿이 아닌, 속성의 변환이 가능한 템플릿이 등록되는 것이다. 따라서, 웹 페이지 제공장치(200)는 각 브라우저 규격에 대응되며 다양한 UI를 제공할 수 있는 템플릿(230)을 제공할 수 있다.

여기서, 각 템플릿(230)은 각 브라우저마다 크기가 다른 웹 페이지(270)가 사용될 수 있으므로, 각 브라우저 규격에 대응되는 각각의 템플릿(230)이 웹 페이지 제공장치(200)에 등록되는 것이 바람직하다.

템플릿 속성 데이터(250)는 속성을 갖지 않고 속성에 대한 정의만 된 템플릿(230)의 속성을 설정하기 위한 데이터이다. 따라서, 웹 페이지 제공장치(200)는 템플릿 속성 데이터를 등록받아 템플릿의 속성을 설정하여, 컨텐츠(210)가 결합된 웹 페이지(270)를 생성한다. 물론, 템플릿 속성 데이터(250)도 템플릿(230)이 각 브라우저 규격에 상응하도록 등록되기 때문에, 브라우저 규격에 따른 데이터가 입력되는 것이 바람직하다.

이하, 본 발명에 따른 웹 페이지 제공장치(200)가 웹 페이지(270)를 제공하는 기능을 수행하기 위한 전체 구성을 도면을 참조하여 설명하기로 한다.

도 3은 본 발명에 일 실시예에 따른 웹 페이지 제공장치의 기능에 따른 구성을 나타낸 기능 블록도이다.

웹 페이지 제공장치(200)는 템플릿 등록부(201), 컨텐츠 등록부(203), 템플릿 속성 처리부(205), 웹 페이지 생성부(207), 웹 페이지 출력부(208) 및 저장부(209)를 포함한다.

템플릿 등록부(201)는 속성이 정의된 템플릿을 등록받는 기능을 수행하며, 컨텐츠 등록부(203)는 컨텐츠를 등록받는 기능을 수행하고, 저장부(209)는 등록된 템플릿 및 컨텐츠를 저장한다.

템플릿 속성 처리부(205)는 등록된 템플릿의 정의된 속성에 상응하는 속성 데이터를 입력받아 템플릿의 속성을 설정하는 기능을 수행한다. 템플릿의 속성은 제공될 웹 페이지의 UI 구성을 위한 페이지 속성과, 해당 페이지에 표현될 컨텐츠를 위한 컨텐츠 속성으로 나뉠 수 있다. 즉, 페이지 속성은 페이지 중 컨텐츠가 표현되지 않는 공간에 이미지를 삽입하는 등의 페이지의 UI를 위한 속성이며, 컨텐츠 속성은 컨텐츠가 표현되는 페이지의 공간에 아이콘, 셀의 색상 등의 컨텐츠의 UI를 위한 속성이다. 템플릿 속성 처리부(205)는 입력된 속성 데이터에 상응하도록 페이지 속성 및 컨텐츠 속성을 설정한다.

웹 페이지 생성부(207)는 속성이 설정된 템플릿과 등록된 컨텐츠를 이용하여 웹 페이지를 생성하는 기능을 수행하고, 웹 페이지 출력부(208)는 생성된 웹 페이지를 출력하는 기능을 수행한다.

여기서, 템플릿 등록부(201), 컨텐츠 등록부(203) 및 템플릿 속성 처리부(205)는 템플릿, 컨텐츠, 속성 데이터를 입력받기 위한 각각의 입력부 및 통합된 하나의 입력부를 포함할 수 있음은 자명하며, 이에 대한 설명은 당업자에게는 자명하므로 상세한 설명은 생략하기로 한다.

여기서, 웹 페이지 제공장치(200)는 단말기 기종에 상응하는 템플릿 속성을 설정하도록 템플릿 속성 데이터를 변환하는 기능을 수행하는 속성 변환부(미도시)를 더 포함할 수 있다. 즉, 적어도 하나의 단말기 기종에 대한 정보를 미리 등록받아 저장부에 저장하여, 속성 데이터를 입력받을 시 각 단말기 기종에 상응하도록 속성 데이터를 변환한다. 따라서, 각 단말기 기종에 따라 최적화된 UI를 제공할 수 있다.

단말기 기종에 대한 정보는 사용되는 웹 브라우저 규격, 디스플레이 장치의 화소수 및 픽셀별 비트수 등에 대한 정보가 포함될 수 있으며, 이에 따라 웹 페이지 제공장치(200)는 속성 데이터를 각 단말기 기종에 상응하도록 변환하기 위한 변환 정보를 저장하고 있다.

예를 들어, 1024개의 색을 표현할 수 있는 디스플레이 장치가 장착된 단말기와 256개의 색을 표현할 수 있는 디스플레이 장치가 장착된 단말기의 기종에 대한 정보가 등록되어 있을 경우, 입력된 속성 데이터 중 컨텐츠 속성의 셀 색상에 대한 정보가 파랑에 상응하는 정보이면, 각 단말기 기종에 상응하는 색 표현 방법으로 파랑을 표현할 수 있는 값을 추출하여 속성 데이터를 변환한다. 또 다른 예로, 템플릿에 이미지 데이터를 속성 데이터로 입력하면, 각 단말기 기종에 따른 디스플레이 화소수에 상응하도록, 이미지의 크기를 변환할 수 있다.

이러한 속성 데이터 변환을 위해 웹 페이지 제공장치(200)는 각 단말기 기종에 대응된 단말기 기종 테이블 및 변환 테이블을 구비할 수 있다. 즉, 단말기 기종번호, 디스플레이 화소수, 픽셀별 비트수(색 표현 가지수가 정해짐), 브라우저 규격을 포함하는 단말기 기종 테이블을 구비하고, 디스플레이 화소수, 픽셀별 비트수, 브라우저 규격에 상응하는 변환방법을 포함하는 변환 테이블을 구비하여, 두 테이블을 매칭함에 따라 각 단말기 기종에 따른 변환방법을 인식하여 속성 데이터를 변환한다.

이하, 도 4및 도 5를 참조하여, 웹 페이지의 제공과정을 설명하기로 한다.

도 4는 본 발명의 바람직한 일 실시예에 따른 웹 페이지 제공장치에서 웹 페이지를 제공하는 과정을 나타낸 흐름도이고, 도 5는 본 발명의 바람직한 다른 실시예에 따른 웹 페이지 제공장치에서 웹 페이지를 제공하는 과정을 나타낸 흐름도이다.

도 4를 참조하면, 단계 410에서, 웹 페이지를 통해 제공될 컨텐츠를 등록받는다. 단계 420에서 속성이 정의된 템플릿을 등록받는다. 여기서, 템플릿과 컨텐츠의 등록순서는 바뀔 수 있음은 자명하다 할 것이다.

단계 430에서 템플릿의 정의된 속성에 상응하는 속성 데이터를 입력받는다. 따라서, 속성 데이터에 따른 템플릿의 속성이 설정되고, 단계 440에서 속성이 설정된 템플릿과 컨텐츠를 이용하여 웹 페이지를 생성하여 출력한다.

따라서, 본 발명에 따른 웹 페이지의 제공 방법은 속성이 정의만 된 템플릿을 먼저 등록하고, 웹 페이지 제공장치(200)에서 웹 페이지 생성 전에 템플릿의 속성을 설정할 수 있으므로, 하나의 템플릿을 이용하여 동일한 브라우저 규격에 적합한 다양한 UI의 웹 페이지를 제공할 수 있다.

여기서, 속성 데이터의 입력에 있어서, 각 브라우저 규격에 상응하는 각각의 속성 데이터를 관리자(즉, 웹 페이지 제공장치(200) 사용자)가 직접 입력할 수도 있으나, 상술한 바와 같이, 미리 설정된 단말기 기종에 상응하는 하나의 속성 데이터만을 입력하면 웹 페이지 제공장치(200)에서 각 단말기 기종에 상응하는 속성 데이터로 변환하여 각 템플릿의 속성을 설정할 수도 있다. 따라서, 각 단말기 기종에 최적화된 UI의 웹 페이지를 제공할 수 있다.

도 5를 참조하면, 단계 510 내지 단계 530은 도 4의 단계 410 내지 단계 430과 동일하며, 단계 540에서 미리 등록된 적어도 하나의 단말기 기종을 인식한다. 웹 페이지를 제공받는 단말기의 기종에 따라 동일한 브라우저를 사용할 경우에도 웹 페이지의 디스플레이가 각기 상이할 수 있으므로, 각 단말기 기종에 적합한 웹 페이지의 제공을 위해서 템플릿의 속성 데이터를 인식된 각 단말기 기종에 상응하도록 단계 550에서 변환한다.

단계 560에서 변환된 적어도 하나의 각 속성 데이터에 상응하도록 템플릿의 속성을 설정하고, 각 속성이 설정된 템플릿과 컨텐츠를 통해 각각의 웹 페이지를 생성한다. 따라서, 각 단말기 기종에 상응하는 웹 페이지를 제공할 수 있으며, 이를 통해 각 단말기의 브라우저 뿐만 아니라 디스플레이 장치의 기능에 따른 최적화된 UI를 제공받을 수 있다.

도 6은 본 발명의 바람직한 일 실시예에 따른 웹 페이지의 제공 과정을 나타낸 도면이다.

도 6을 참조하면, 웹 페이지 제공장치(200)는 컨텐츠(610)를 등록받고, 속성이 정의된 템플릿(620)을 등록받는다. 여기서 템플릿(620)의 정의된 속성 중, 621, 622에 해당하는 속성은 해당 페이지 UI 구성의 전반에 필요한 페이지 속성이며, 625, 626, 627은 해당 페이지 내의 컨텐츠(610)를 표현하기 위해 필요한 컨텐츠 속성이다.

즉, 페이지 속성은 컨텐츠와는 무관한 단지 페이지를 꾸미는데 필요한 속성이며 이미지 정보 등이 설정될 수 있다. 또한, 컨텐츠 속성은 페이지에 들어갈 컨텐츠를 다양하게 꾸미기 위해 필요한 속성이다.

웹 페이지 제공장치(200)는 컨텐츠(610)와 템플릿(620)이 등록되면, 속성 데이터(630, 635)를 입력받는다. 이후, 웹 페이지 제공장치(200)는 페이지 속성에 따른 속성 데이터와, 컨텐츠 속성에 따른 속성 데이터를 이용하여 템플릿(620)의 속성을 설정하고, 컨텐츠(610)와 속성이 설정된 템플릿(620)을 이용하여 웹 페이지(640,645)를 생성하여 제공한다.

여기서, 도 6에는 속성 데이터 입력에 따른 각기 다른 웹 페이지의 제공을 설명하기 위해 두개의 속성 데이터(630,635)가 입력되는 것이 도시되어 있다. 속성 데이터 630에 따른 웹 페이지(640)와 속성 데이터 635에 따른 웹 페이지(645)의 UI는 입력된 템플릿의 속성 데이터에 대응하여 서로 상이하게 생성되어 제공된다. 도 6에 도시된 바와 같이, 속성 데이터 중 페이지 속성의 이미지를 달리함에 따라, 각기 UI가 상이한 웹 페이지(640,645)가 제공된다.

따라서, 입력되는 속성 데이터에 따른 다양한 웹 페이지의 제공이 가능하게 된다.

상술한 바와 같은 본 발명의 방법은 프로그램으로 구현되어 컴퓨터로 읽을 수 있는 기록매체(씨디롬, 램, 롬, 플로피 디스크, 하드디스크, 광자기디스크 등)에 저장될 수 있다.

본 발명은 상기 실시예에 한정되지 않으며, 많은 변형이 본 발명의 사상 내에서 당 분야에서 통상의 지식을 가진 자에 의하여 가능함은 물론이다.

발명의 효과

이상에서 상술한 바와 같이 본 발명에 따르면, 템플릿의 속성을 동적으로 관리함으로써, 다양한 UI의 제공을 가능하게 하는 웹 페이지 제공방법 및 장치를 제공할 수 있는 효과가 있다.

또한, 동적인 템플릿을 이용하여 단말기의 각 브라우저 환경에 최적화된 웹 페이지를 제공하는 방법 및 장치를 제공할 수 있는 효과도 있다.

또한, 새로운 규격의 브라우저, 및 단말기 출시에 대해 추가 개발 없이 대응할 수 있는 웹 페이지 제공 방법 및 장치를 제공할 수 있는 효과도 있다.

또한, 컨텐츠가 가지는 속성과 템플릿이 가지는 속성을 각각 분리하여 관리함으로써, 다양한 UI의 웹 페이지 제공에 따른 관리의 편의성을 제공할 수 있다.

상기에서는 본 발명의 바람직한 실시예를 참조하여 설명하였지만, 해당 기술 분야에서 통산의 지식을 가진 자라면 하기의 특허 청구범위에 기재된 본 발명의 사상 및 영역으로부터 벗어나지 않는 범위 내에서 본 발명을 다양하게 수정 및 변경시킬 수 있음을 이해할 수 있을 것이다.

도면의 간단한 설명

도 1은 종래 기술에 따른 템플릿을 이용한 웹 페이지의 제공방법을 설명하기 위한 도면.

도 2는 본 발명의 바람직한 일 실시예에 따른 웹 페이지 제공장치에서 동적 템플릿을 이용한 웹 페이지를 제공하기 위한 전체 시스템을 개략적으로 나타낸 구성도.

도 3은 본 발명에 일 실시예에 따른 웹 페이지 제공장치의 기능에 따른 구성을 나타낸 기능 블록도.

도 4는 본 발명의 바람직한 일 실시예에 따른 웹 페이지 제공장치에서 웹 페이지를 제공하는 과정을 나타낸 흐름도

도 5는 본 발명의 바람직한 다른 실시예에 따른 웹 페이지 제공장치에서 웹 페이지를 제공하는 과정을 나타낸 흐름도.

도 6은 본 발명의 바람직한 일 실시예에 따른 웹 페이지의 제공 과정을 나타낸 도면.

<도면의 주요 부분에 대한 부호 설명>

200 : 웹 페이지 제공장치

210 : 컨텐츠

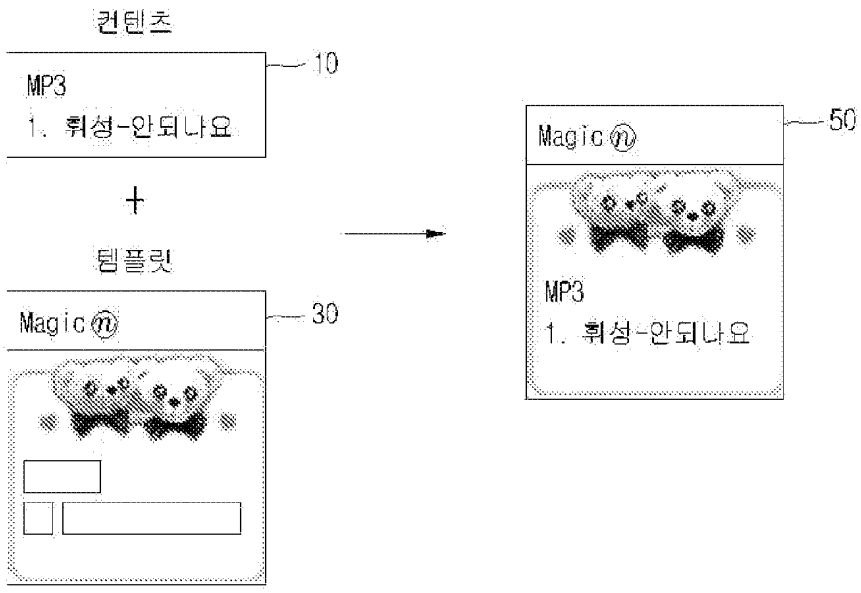
230 : 템플릿

250 : 템플릿 속성 데이터

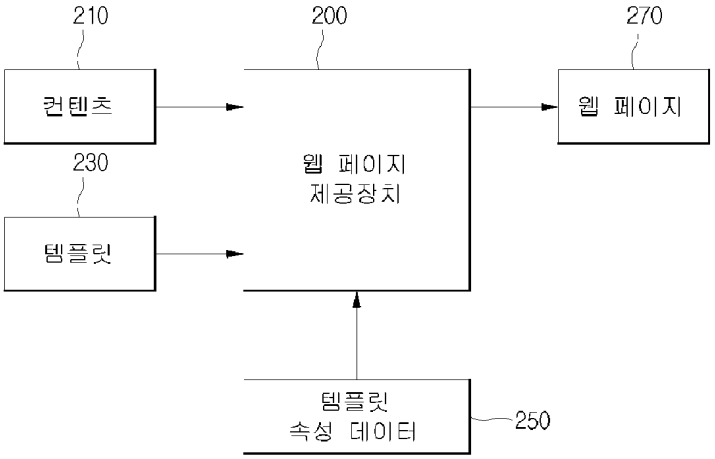
270 : 웹 페이지

도면

도면1


컨텐츠
MP3
1. 휘성-안되나요
10
+
템플릿
Magic ⓝ
30
Magic ⓝ
50
MP3
1. 휘성-안되나요

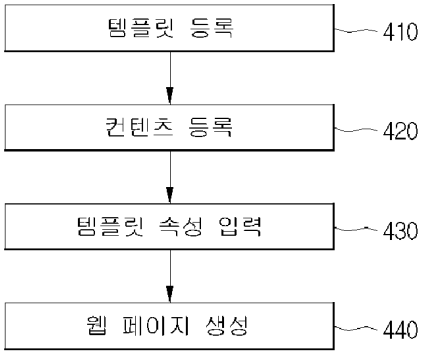
도면2


210
컨텐츠
230
템플릿
200
웹 페이지
제공장치
270
웹 페이지
템플릿
속성 데이터
250

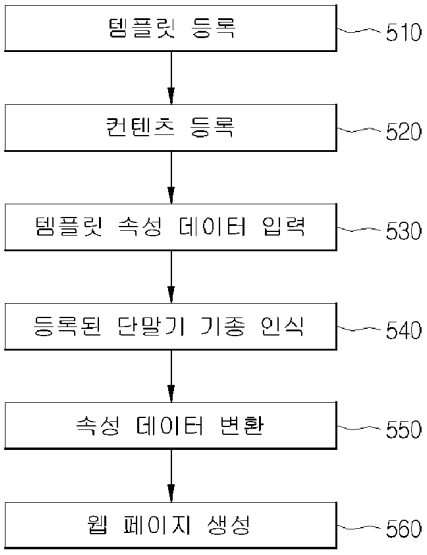
도면3

200
템플릿 등록부
201
컨텐츠 등록부
203
템플릿 속성 처리부
205
웹 페이지 생성부
207
웹 페이지 출력부
208
저장부
209

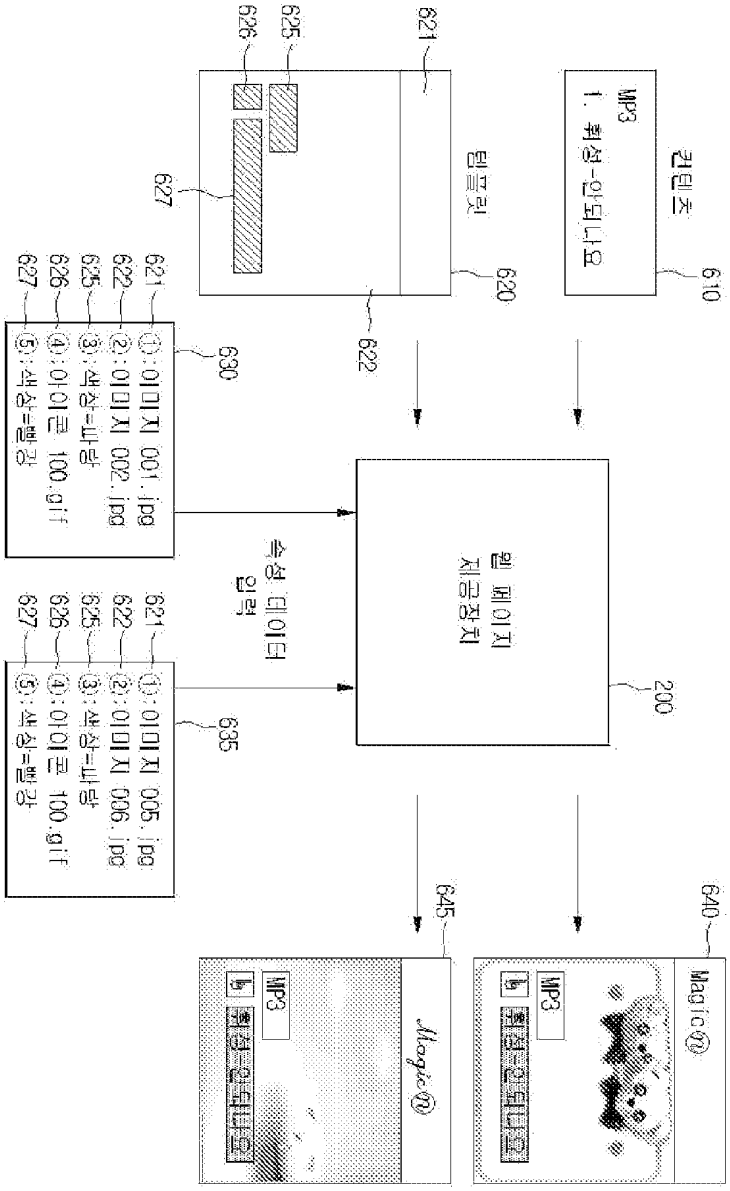
도면4


템플릿 등록
410
컨텐츠 등록
420
템플릿 속성 입력
430
웹 페이지 생성
440

도면5


템플릿 등록
510
컨텐츠 등록
520
템플릿 속성 데이터 입력
530
등록된 단말기 기종 인식
540
속성 데이터 변환
550
웹 페이지 생성
560

도면6


컨텐츠
MP3
1. 휘성-안되나요
610
템플릿
620
621
622
625
626
627
웹 페이지
제공장치
200
속성 데이터
입력
630
621 ①:이미지 001.jpg
622 ②:이미지 002.jpg
625 ③:색상=파랑
626 ④:아이콘 100.gif
627 ⑤:색상=빨강
635
621 ①:이미지 005.jpg
622 ②:이미지 006.jpg
625 ③:색상=파랑
626 ④:아이콘 100.gif
627 ⑤:색상=빨강
640
Magic
MP3
휘성-안되나요
645
Magic
MP3
휘성-안되나요

Espacenet

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DYNAMICAL UI FRAMEWORK AND METHOD FOR APPLING USER INTERFACE BASED ON THE SAME

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Classification:	**- international:** ***G06F15/00; G06F15/16; G06F3/00; G06F3/048*** **- European:**
Application number:	KR20060086211 20060907
Priority number (s):	KR20060086211 20060907

Abstract of KR20080022697 (A)

A dynamical UI(User Interface) framework and a UI implementing method based on the same are provided to enable a user to download/select a UI of a mobile terminal dynamically by using the dynamic UI framework supporting network connection. A UI manager(131) downloads UI objects(101) including UI information through the mobile network, and determines a UI engine(132) for processing the UI object by analyzing feature of the UI object when a user selects the UI object. The UI engines enable an output device of a mobile terminal to output the UI object by analyzing the selected UI object. The UI object defines a screen display mode, a sound output mode, or a vibration output mode according to user input, is formed by using one of XML(eXtensible Markup Language), text, a binary code and a library, and includes metadata. The UI manager makes the user select one of the installed UI objects and transfers the selected UI object to the UI engine corresponding to the selected UI object.

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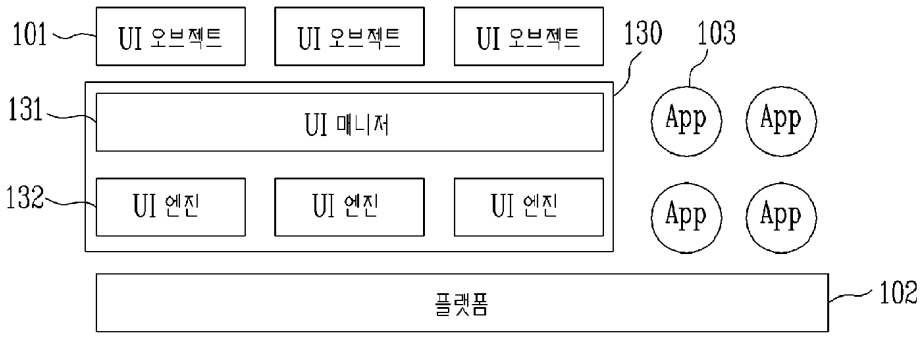
(54) 동적 U I 프레임워크 및 이를 기반으로 하는 사용자인터페이스 구현 방법

(57) 요 약

본 발명은 단말기에서 동적으로 사용자 인터페이스를 다운로드해 선택할 수 있는 기능을 제공하는 UI 프레임워크(UI framework)를 기반으로 하는 사용자 인터페이스 구현 방법에 관한 것으로, 네트워크를 통해 사용자 입력에 따른 화면 디스플레이 방식, 사운드 출력 방식, 또는 진동 출력 방식이 정의되어 있는 UI 오브젝트를 다운로드하여 설치하고, 사용자로부터 UI 오브젝트가 선택되면, 선택된 UI 오브젝트를 처리할 수 있는 UI 엔진을 통해 UI 오브젝트를 해석하여 해당 UI 오브젝트에 따른 출력이 이루어지도록 함으로써, 사용자가 원하는 방식의 UI 구현이 가능한 것을 특징으로 한다.

본 발명에 따르면, 네트워크 연결을 지원하는 UI 프레임워크를 활용하여 UI를 동적으로 다운로드하여 적용할 수 있으므로, 사용자에게 보다 유연하고 동적인 사용자 인터페이스를 제공할 수 있으며, 이로 인해 사용자는 자신의 취향 및 편의에 따라 휴대폰, PDA, PMP 등의 개인 정보기기의 UI를 동적으로 변경할 수 있는 효과가 있다.

대표도 - 도1



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특허청구의 범위

청구항 1

네트워크를 통해 UI(User Interface) 정보를 담고 있는 UI 오브젝트(UI Object)를 다운로드하며, 사용자로부터 UI 오브젝트가 선택되면 상기 선택된 UI 오브젝트의 특징을 분석하여 해당 UI 오브젝트를 처리할 수 있는 UI 엔진(UI Engine)을 결정하는 UI 매니저; 및

상기 선택된 UI 오브젝트를 해석하여 사용자 단말의 출력장치를 통해 해당 UI 오브젝트에 따른 출력이 이루어지도록 하는 적어도 하나 이상의 UI 엔진을 포함하는 것을 특징으로 하는 동적 UI 프레임워크.

청구항 2

제 1항에 있어서, 상기 UI 오브젝트에는,

사용자 입력에 따른 화면 디스플레이 방식, 사운드 출력 방식, 또는 진동 출력 방식이 정의되어 있는 것을 특징으로 하는 동적 UI 프레임워크.

청구항 3

제 1항에 있어서, 상기 UI 오브젝트는,

XML, 텍스트, 이진 코드, 라이브러리 중 어느 하나의 형식으로 구성되며, 메타 데이터(meta data) 정보를 포함하는 것을 특징으로 하는 동적 UI 프레임워크.

청구항 4

제 1항에 있어서, 상기 UI 매니저는,

사용자로부터 UI 변경이 요청되면 설치된 UI 오브젝트 중 어느 하나를 선택하도록 하며, 사용자로부터 UI 오브젝트가 선택되어 선택된 UI 오브젝트를 처리할 수 있는 UI 엔진이 결정되면 상기 선택된 UI 오브젝트를 해당 UI 엔진으로 전달하는 것을 특징으로 하는 동적 UI 프레임워크.

청구항 5

제 1항에 있어서, 상기 UI 매니저는,

네트워크를 통해 업데이트 정보를 다운로드하여 사용자 단말에 디스플레이하는 것을 특징으로 하는 동적 UI 프레임워크.

청구항 6

(a) UI(User Interface) 정보를 담고 있는 UI 오브젝트(UI Object)의 다운로드가 필요한 경우 네트워크를 통해 UI 오브젝트를 다운로드하여 설치하는 단계;

(b) 사용자로부터 UI 오브젝트가 선택되면 상기 선택된 UI 오브젝트의 특징을 분석하여 해당 UI 오브젝트를 처리할 수 있는 UI 엔진(UI Engine)을 결정하는 단계; 및

(c) 상기 결정된 UI 엔진에서 상기 선택된 UI 오브젝트를 해석하여 사용자 단말의 출력장치를 통해 해당 UI 오브젝트에 따른 출력이 이루어지도록 하는 단계를 포함하는 것을 특징으로 하는 동적 UI 프레임워크를 기반으로 하는 사용자 인터페이스 구현 방법.

청구항 7

제 6항에 있어서, 상기 (a) 단계는,

사용자 입력에 따라 UI 변경이 요청되면, UI 변경에 필요한 UI 오브젝트가 사용자 단말에 존재하는지를 확인하는 단계를 더 포함하는 것을 특징으로 하는 동적 UI 프레임워크를 기반으로 하는 사용자 인터페이스 구현 방법.

청구항 8

제 6항에 있어서, 상기 (b) 단계는,

상기 선택된 UI 오브젝트의 메타 데이터 정보를 기반으로 상기 선택된 UI 오브젝트의 특징을 분석하는 단계를 더 포함하는 것을 특징으로 하는 동적 UI 프레임워크를 기반으로 하는 사용자 인터페이스 구현 방법.

청구항 9

제 6항에 있어서, 상기 (c) 단계는,

상기 선택된 UI 오브젝트에 따른 화면 디스플레이, 사운드 출력, 진동 출력 중 적어도 어느 하나를 수행하는 단계를 포함하는 것을 특징으로 하는 동적 UI 프레임워크를 기반으로 하는 사용자 인터페이스 구현 방법.

청구항 10

제 6항에 있어서,

(d) 네트워크를 통해 업데이트 정보를 다운로드하여 사용자 단말에 디스플레이하는 단계를 더 포함하는 것을 특징으로 하는 동적 UI 프레임워크를 기반으로 하는 사용자 인터페이스 구현 방법.

명 세 서

발명의 상세한 설명

발명의 목적

발명이 속하는 기술 및 그 분야의 종래기술

<15> 본 발명은 동적 UI 프레임워크 및 이를 기반으로 하는 사용자 인터페이스 구현 방법에 관한 것으로, 더 자세하게는 단말기에서 동적으로 사용자 인터페이스를 다운로드해 선택할 수 있는 기능을 제공하는 UI 프레임워크(UI framework)를 기반으로 하는 사용자 인터페이스 구현 방법에 관한 것이다.

<16> 현재 흔히 사용되고 있는 정보기기의 사용자 인터페이스(User Interface, 이하 'UI'라 함)는 네이티브 소프트웨어(native software)의 일부분으로서, 한번 컴파일(compile)되어 단말기에 내장되면 사용자의 의지에 따른 변경이 불가능하다.

<17> 하지만, 최근 들어 여러 다양한 애플리케이션이 확산됨에 따라 보다 차별화된 자신만의 UI를 갖고자 하는 사용자의 욕구가 증가되고 있는 추세이며, 이러한 추세에 따라 단말기 자체에 기본적으로 내장되어 있는 폰트, 색상, 이미지 내에서 UI 변경이 가능하도록 하거나, 또는 인터넷과 같은 네트워크를 통해 다운로드 받은 폰트, 색상, 이미지 등을 UI에 적용할 수 있도록 하는 방법이 개시되어 있다.

<18> 그러나, 이와 같은 UI 변경 방법은 UI 자체가 고정된 구조를 갖고 있기 때문에 폰트, 색상, 이미지 등과 같이 제한된 기능 영역에서만 변경이 가능하다는 문제점을 갖고 있다.

<19> 이러한 문제점을 해결하기 위하여, 최근에는 휴대폰, PDA 등의 정보기기에 있어서 매크로미디어(Macromedia)사의 플래쉬(flash)나 W3C(WWW Consortium, World Wide Web Consortium)의 SVG(Scalable Vector Graphics) 등을 통해 화면 전체를 재구성하거나, 메뉴의 순서를 바꾸거나, 사용자 입력에 대한 반응 방식을 바꾸는 등 다소 유연하게 UI를 구현하는 방법이 개시되어 있다.

<20> 그러나, 상기와 같은 UI 구현 방법 역시 이미 고정된 구조내에서의 한정된 기능 변경에 불과한 것으로, 예를 들어 현재 개발이 가속화되고 있는 삼차원 그래픽(3D graphics)으로 화면을 구성하는 경우 등 사용자 요구에 따라 UI를 자유롭게 변경할 수는 없다는 한계점을 갖고 있다.

발명이 이루고자 하는 기술적 과제

<21> 따라서, 본 발명의 목적은 한정된 변화만 가능했던 사용자 인터페이스를 벗어나 사용자의 요구에 따라 자유롭게 사용자 인터페이스를 동적으로 다운로드하고 변경할 수 있는 UI 프레임워크 및 이를 기반으로 하는 사용자 인터페이스 구현 방법을 제공하는데 목적이 있다.

발명의 구성 및 작용

<22> 상기 목적을 달성하기 위하여 본 발명의 동적 UI 프레임워크는, 네트워크를 통해 UI(User Interface) 정보를 담

고 있는 UI 오브젝트(UI Object)를 다운로드하며, 사용자로부터 UI 오브젝트가 선택되면 상기 선택된 UI 오브젝트의 특징을 분석하여 해당 UI 오브젝트를 처리할 수 있는 UI 엔진(UI Engine)을 결정하는 UI 매니저; 및 상기 선택된 UI 오브젝트를 해석하여 사용자 단말의 출력장치를 통해 해당 UI 오브젝트에 따른 출력이 이루어지도록 하는 적어도 하나 이상의 UI 엔진을 포함하는 것을 특징으로 한다.

<23> 한편, 상기 목적을 달성하기 위하여 본 발명의 동적 UI 프레임워크를 기반으로 하는 사용자 인터페이스 구현 방법은, (a) UI(User Interface) 정보를 담고 있는 UI 오브젝트(UI Object)의 다운로드가 필요한 경우 네트워크를 통해 UI 오브젝트를 다운로드하여 설치하는 단계; (b) 사용자로부터 UI 오브젝트가 선택되면 상기 선택된 UI 오브젝트의 특징을 분석하여 해당 UI 오브젝트를 처리할 수 있는 UI 엔진(UI Engine)을 결정하는 단계; 및 (c) 상기 결정된 UI 엔진에서 상기 선택된 UI 오브젝트를 해석하여 사용자 단말의 출력장치를 통해 해당 UI 오브젝트에 따른 출력이 이루어지도록 하는 단계를 포함하는 것을 특징으로 한다.

<24> 이하, 첨부된 도면을 참조하여 본 발명의 바람직한 실시예에 대하여 상세히 설명한다.

<25> 도 1은 본 발명에 따른 동적 UI 프레임워크를 설명하기 위한 도면이다.

<26> 도 1을 참조하면, 플랫폼(102)상에 UI 매니저(131)와 UI 엔진(132)을 포함하는 UI 프레임워크(130)가 탑재되어 있으며, 상기 UI 프레임워크(130)상에 UI 정보를 담고 있는 객체인 UI 오브젝트(101)가 존재한다.

<27> 여기에서, 상기 플랫폼(102)은 단말기의 소프트웨어 플랫폼으로, 각종 미들웨어를 포함하여 다양한 응용프로그램이 동작할 수 있도록 하는 역할을 하며, 상기 플랫폼(102)상에서 단말기에 따라 다양한 애플리케이션(103)이 동작 가능하다.

<28> 상기 UI 오브젝트(101)는 다양한 포맷으로 구성될 수 있는데, 예를 들어 XML, 일반 텍스트(plain text), 이진 코드로 처리된 형식을 취할 수도 있고, 단말기에서 실행 가능한 형식이나 링크(link)를 통해 실행할 수 있는 라이브러리(library) 형식을 취할 수도 있다.

<29> 또한, 상기 UI 오브젝트(101)는 자신의 간략한 정보를 담는 메타 데이터(meta data)를 포함하는 것이 가능하며, 그 메타 데이터 정보에 따라 UI 매니저(131)가 UI 오브젝트(101)의 특징을 분석할 수 있다.

<30> 본 발명의 이해를 돕기 위해 사용자가 UI 오브젝트(101)를 다운로드하여 다운로드한 UI 오브젝트(101)를 단말기에 적용하는 시나리오를 예로 들어 탑다운(top-down) 방식으로 각 부의 기능을 구체적으로 설명하면 다음과 같다.

<31> 도 2는 본 발명에 따른 UI 오브젝트의 다운로드 및 적용을 설명하기 위한 도면이다.

<32> 우선, UI 개발자에 의해 제작된 UI 오브젝트(101)가 UI 개발자의 컴퓨터(201)로부터 UI 서버(203)에 업로드되어 있는 상태에서, 사용자(205)의 버튼 입력에 따라 UI 오브젝트(101)의 다운로드가 요청되면, 사용자 단말에 탑재된 UI 프레임워크(130)의 UI 매니저(131)는 단말기의 플랫폼(102)이 제공하는 네트워크 기능을 기반으로 유무선 네트워크를 통해 UI 서버(203)로부터 해당 UI 오브젝트(101)를 다운로드하며, 다운로드된 UI 오브젝트(101)는 사용자 단말의 소정 영역에 설치된다.

<33> 이 때, UI 서버(203)를 통하지 않고 직접 UI 개발자의 컴퓨터(201)로부터 UI 오브젝트(101)를 제공받는 것도 가능하다.

<34> 다음으로, 사용자로부터 UI 변경이 요청되면 UI 프레임워크(130)의 UI 매니저(131)는 사용자로 하여금 설치된 UI 오브젝트(101) 중 하나를 선택할 수 있게 하고, 사용자로부터 UI 오브젝트(101) 선택이 이루어지면 선택된 UI 오브젝트(101)의 특징을 분석하여 어떤 UI 엔진(132)을 사용할 것인지를 결정하는 전처리(preprocessing)를 수행한다.

<35> 다음으로, 상기 전처리 과정을 통해 선택된 UI 오브젝트(101)를 처리할 수 있는 UI 엔진(132)이 결정되면, UI 매니저(131)는 선택된 UI 오브젝트(101)를 해당 UI 엔진(132)으로 전달한다.

<36> 다음으로, UI 엔진(132)은 UI 매니저(131)로부터 전달받은 UI 오브젝트(101)를 해석하여 이를 단말기의 출력장치를 통해 출력한다.

<37> 여기에서, 상기 출력장치는 디스플레이 수단, 사운드 출력 수단 및 진동 수단을 포함하는 것이 바람직하며, 이에 따라 해당 UI 오브젝트(101)에 따른 화면 디스플레이(LED 표시 포함), 사운드 출력, 진동 출력 등 다양한 출력이 가능하다.

<38> 즉, UI 오브젝트(101)에는 사용자의 버튼 입력에 따른 화면 디스플레이, 사운드 출력, 진동 출력 등의 사용자 입력을 처리하는 방식이 정의되어 있으며, 이에 따라 UI 엔진(132)은 해당 UI 오브젝트(101)를 해석하여 사용자 입력에 따른 처리를 수행함으로써, 사용자가 원하는 방식의 UI 구현이 가능하게 되는 것이다.

<39> 이와 같이, 사용자 단말에 탑재된 UI 프레임워크(130)를 통해 UI를 동적으로 다운로드하여 적용할 수 있게 됨에 따라 사용자는 자신의 취향에 맞는 UI를 동적으로 선택할 수 있게 된다.

<40> 한편, 상기와 같은 UI 적용 외에 UI 프레임워크(130)의 네트워크 기능을 기반으로 유무선 네트워크를 통해 위젯(widget)과 같이 대기화면의 일부분에 날씨나 뉴스 등을 디스플레이하거나, RSS(RDF Site Summary or Really Simple Syndication) Reader와 같이 업데이트된 정보를 사용자에게 제공하거나, 또는 긴급 공지사항을 첫 화면에 디스플레이하는 것도 가능하며, 이에 대하여 간략하게 설명하면 다음과 같다.

<41> 우선, 날씨, 뉴스, 공지사항 등과 같은 업데이트 정보가 정보 제공자의 컴퓨터(207)로부터 UI 서버(203)로 업로드되면, UI 서버(203)에 접속된 사용자 단말의 UI 프레임워크(130)는 업데이트 정보가 존재하는지를 확인하여 업데이트 정보가 존재하는 경우 이를 UI 서버(203)로부터 다운로드하여 화면에 디스플레이하는데, 이 때, 정보 제공자의 컴퓨터(207)로부터 업데이트 정보를 직접 제공받는 것도 가능하다.

<42> 이하, 본 발명에 따른 동적 UI 프레임워크를 기반으로 하는 사용자 인터페이스 구현 방법에 대하여 첨부된 도면을 참조하여 상세히 설명한다.

<43> 도 3은 본 발명에 따른 동적 UI 프레임워크를 기반으로 하는 사용자 인터페이스 구현 방법을 나타낸 흐름도이다.

<44> 우선, 사용자의 버튼 입력에 따라 UI 변경이 요청되면(S310), UI 변경에 필요한 UI 오브젝트(101)가 사용자 단말에 존재하는지를 확인하여(S320), UI 오브젝트(101)의 다운로드가 필요하면, 사용자 단말에 탑재된 UI 프레임워크(130)의 UI 매니저(131)가 유무선 네트워크를 통해 UI 서버(203)로부터 해당 UI 오브젝트(101)를 다운로드하며, 다운로드된 UI 오브젝트(101)는 사용자 단말의 소정 영역에 설치된다(S330).

<45> 다음으로, 사용자로부터 UI 오브젝트(101) 중 어느 하나가 선택되면(S340), UI 매니저(131)가 선택된 UI 오브젝트(101)의 특징을 분석하여 어떤 UI 엔진(132)을 사용할 것인지를 결정하는 전처리(preprocessing)를 수행한다(S350).

<46> 다음으로, 상기 전처리 과정을 통해 선택된 UI 오브젝트(101)를 처리할 수 있는 UI 엔진(132)이 결정되면, UI 엔진(132)은 해당 UI 오브젝트(101)를 해석하여 사용자 단말의 출력장치를 통해 해당 UI 오브젝트(101)에 따른 화면 디스플레이(LED 표시 포함), 사운드 출력, 진동 출력 등이 이루어지도록 한다(S360~S370).

<47> 한편, 상기와 같은 UI 적용 외에 날씨, 뉴스, 공지사항 등과 같은 업데이트 정보가 있는 경우 이를 UI 서버(203)로부터 수신(다운로드)하여 사용자 단말에 디스플레이하는 것도 가능한데(S380~S390), 이를 위해 정보 제공자의 컴퓨터(207)로부터 상기 UI 서버(203)로 날씨, 뉴스, 공지사항 등의 업데이트 정보가 업로드되는 것이 바람직하다.

<48> 이와 같이, 본 발명에 따른 동적 UI 프레임워크를 기반으로 하는 사용자 인터페이스 구현 방법에 따르면, 네트워크 연결을 지원하는 UI 프레임워크를 활용하여 UI를 동적으로 다운로드하여 적용할 수 있게 됨에 따라 사용자는 자신의 취향에 맞는 UI를 동적으로 선택할 수 있게 된다.

<49> 이제까지 본 발명에 대하여 그 바람직한 실시예들을 중심으로 살펴보았으며, 본 발명이 속하는 기술 분야에서 통상의 지식을 가진 자는 본 발명이 본 발명의 본질적인 특성에서 벗어나지 않는 범위에서 변형된 형태로 구현될 수 있음을 이해할 수 있을 것이다. 그러므로 개시된 실시예들은 한정적인 관점이 아니라 설명적인 관점에서 고려되어야 한다. 본 발명의 범위는 전술한 설명이 아니라 특허청구범위에 나타나 있으며, 그와 동등한 범위 내에 있는 모든 차이점은 본 발명에 포함된 것으로 해석되어야 할 것이다.

발명의 효과

<50> 상기한 바와 같이, 본 발명에 따르면, 네트워크 연결을 지원하는 UI 프레임워크를 활용하여 UI를 동적으로 다운로드하여 적용할 수 있으므로, 사용자에게 보다 유연하고 동적인 사용자 인터페이스를 제공할 수 있으며, 이로 인해 사용자는 자신의 취향 및 편의에 따라 휴대폰, PDA, PMP 등의 개인 정보기기의 UI를 동적으로 변경할 수 있는 효과가 있다.

<51> 또한, 본 발명에 따르면, UI 오브젝트를 생성하는 UI 저작도구(UI authoring tool)의 개발 및 이에 따른 UI 디자인 산업의 활성화를 도모할 수 있을 뿐만 아니라, 이를 통해 사용자가 직접 UI 저작도구를 사용하여 자신이 원하는 형태의 UI를 구현하는 것이 가능하게 되는 효과도 기대할 수 있다.

<52> 또한, 본 발명에 따르면, 네트워크 연결을 지원하는 UI 프레임워크를 활용하여 실시간으로 업데이트되는 정보를 다운로드하여 이를 사용자에게 제공함으로써, 날씨, 뉴스, 공지사항 등을 전달할 때 매우 유용하며, 이를 통해 정보 제공 산업을 활성화시킬 수 있는 효과도 기대할 수 있다.

도면의 간단한 설명

<1> 도 1은 본 발명에 따른 동적 UI 프레임워크를 설명하기 위한 도면이다.

<2> 도 2는 본 발명에 따른 UI 오브젝트의 다운로드 및 적용을 설명하기 위한 도면이다.

<3> 도 3은 본 발명에 따른 동적 UI 프레임워크를 기반으로 하는 사용자 인터페이스 구현 방법을 나타낸 흐름도이다.

<4> * 도면의 주요부분에 대한 부호의 설명 *

<5> 101: UI 오브젝트(UI Object)

<6> 102: 플랫폼(Platform)

<7> 103: 애플리케이션

<8> 130: UI 프레임워크(UI framework)

<9> 131: UI 매니저(UI Manager)

<10> 132: UI 엔진(UI Engine)

<11> 201: UI 개발자의 컴퓨터

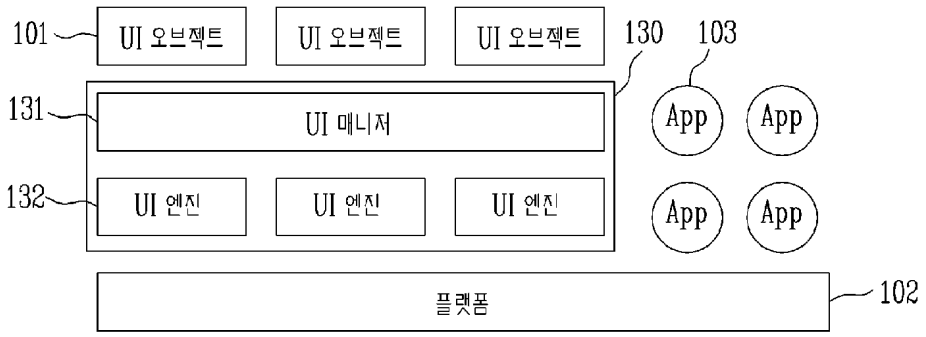
<12> 203: UI 서버

<13> 205: 사용자

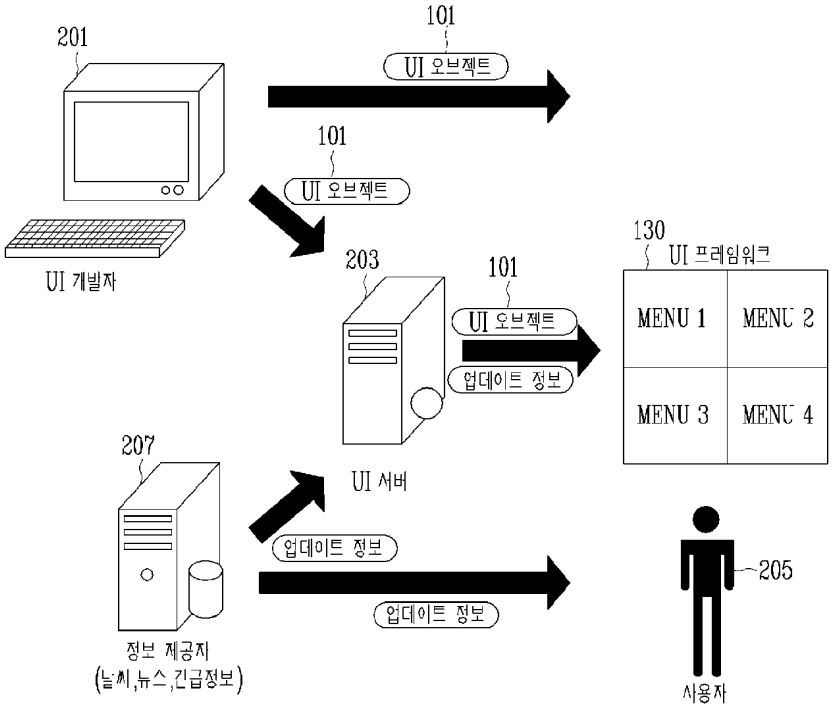
<14> 207: 정보 제공자의 컴퓨터

도면

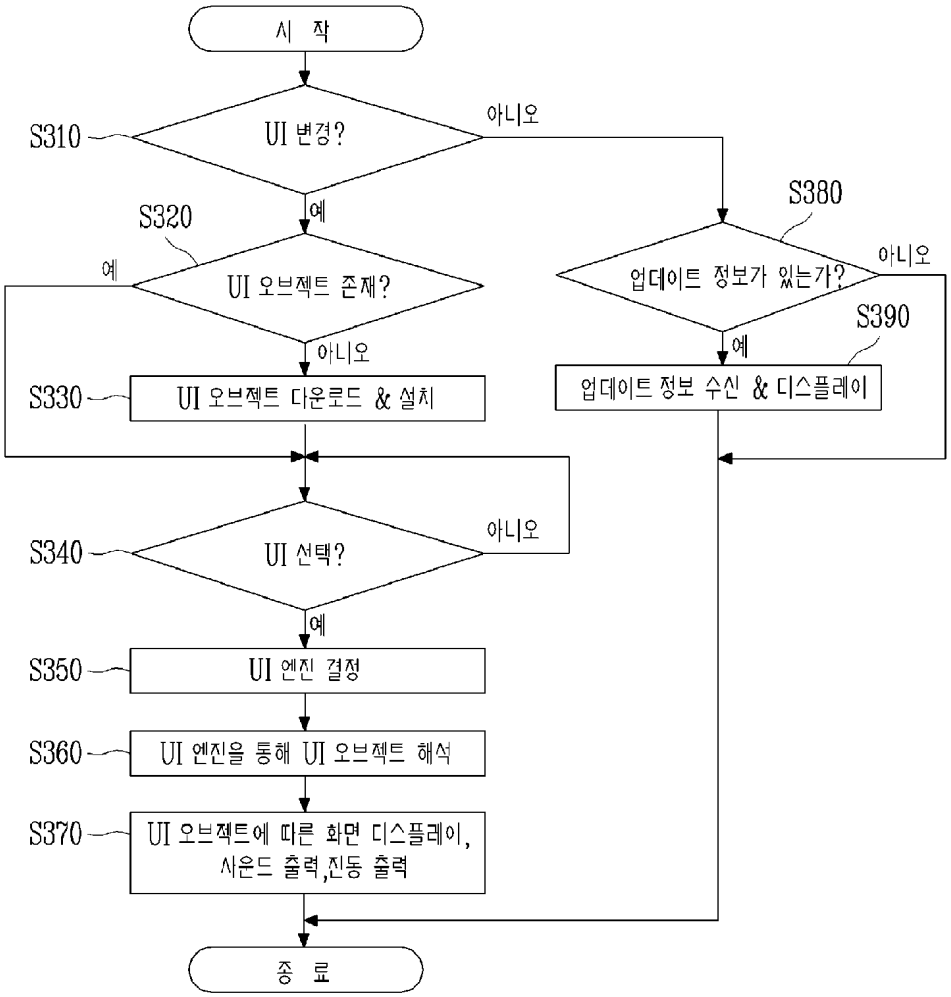
도면1



도면2


201
101
UI 오브젝트
101
UI 오브젝트
UI 개발자
203
101
UI 오브젝트
업데이트 정보
130
UI 프레임워크
MENU 1
MENU 2
MENU 3
MENU 4
207
UI 서버
업데이트 정보
업데이트 정보
205
정보 제공자
(날씨,뉴스,긴급정보)
사용자

도면3


시 작
S310
UI 변경?
아니오
예
S320
UI 오브젝트 존재?
예
아니오
S330
UI 오브젝트 다운로드 & 설치
S340
UI 선택?
아니오
예
S350
UI 엔진 결정
S360
UI 엔진을 통해 UI 오브젝트 해석
S370
UI 오브젝트에 따른 화면 디스플레이,
사운드 출력,진동 출력
종 료
S380
업데이트 정보가 있는가?
아니오
예
S390
업데이트 정보 수신 & 디스플레이

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/009302

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F9/44

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)
G06F H04M 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, WPI Data, INSPEC, IBM-TDB, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2002/109718 A1 (MANSOUR PETER M [US] ET AL) 15 August 2002 (2002-08-15) abstract paragraph [0002] - paragraph [0003] paragraph [0008] paragraph [0021] - paragraph [0024] paragraph [0053] - paragraph [0055] paragraph [0060] paragraph [0064] - paragraph [0075] paragraph [0093] - paragraph [0114] paragraph [0121] - paragraph [0131] paragraph [0150] paragraph [0160] - paragraph [0162] paragraph [0217] - paragraph [0222] claim 1 figure 12 ----- -/--	1-36

[X] Further documents are listed in the continuation of Box C.

[X] 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 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

"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
9 February 2009	17/02/2009

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, Fax: (+31-70) 340-3016	Jonsson, Svante

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/009302

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	SIMON, RAINER ET AL: "Tool-supported Single Authoring for Device Independence and Multimodality" PROCEEDINGS OF THE 7TH INTERNATIONAL CONFERENCE ON HUMAN COMPUTER INTERACTION WITH MOBILE DEVICES & SERVICES, [Online] 19 September 2005 (2005-09-19), - 22 September 2005 (2005-09-22) pages 91-98, XP002511216 Retrieved from the Internet: URL:http://portal.acm.org/citation.cfm?id=1085777.1085793> [retrieved on 2009-01-19] abstract page 91, left-hand column, line 32 page 91, right-hand column, line 20 - line 21 page 92, left-hand column, line 5 - page 93, left-hand column, line 7	1-36
A	MIR FAROOQ ALI ET AL: "Building Multi-Platform User Interfaces with UIML" INTERNET CITATION, [Online] XP002280476 Retrieved from the Internet: URL:http://arxiv.org/ftp/cs/papers/0111/0111024.pdf> [retrieved on 2004-05-17] page 1, line 1 - page 2, line 36 page 3, line 3 - line 29 page 4, line 1 - page 5, last line page 10, line 20 - line 27 figure 8	1-36
Y	GRUNDY, JOHN ET AL: "An Architecture for Building Multi-device Thin-Client Web User Interfaces" ADVANCED INFORMATION SYSTEMS ENGINEERING, vol. 2348/2002, 1 January 2002 (2002-01-01), pages 728-732, XP002511217 page 729, line 3 - last line	1-36
Y	THOMAS ZIEGERT ET AL: "Device Independent Web Applications - The Author Once - Display Everywhere Approach" WEB ENGINEERING; [LECTURE NOTES IN COMPUTER SCIENCE;;LNCS], SPRINGER-VERLAG, BERLIN/HEIDELBERG, vol. 3140, 7 July 2004 (2004-07-07), pages 244-255, XP019009054 ISBN: 978-3-540-22511-9 abstract page 245, line 1 - page 247, last line	1-36

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/009302

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	VANDERDONCKT, JEAN ET AL: "Synchronised Model-Based Design of Multiple User Interfaces" INTERNET ARTICLE, [Online] 10 September 2004 (2004-09-10), pages 1-8, XP002511218 Retrieved from the Internet: URL:http://web.archive.org/web/20040910043454/http://www.isys.ucl.ac.be/bchi/members/qli/pub/Vanderdonckt-IHM2001.pdf> [retrieved on 2009-01-20] page 1, line 1 - page 5, line 17 -----	1-36
A	WO 02/103963 A (NOKIA CORP [FI]; NOKIA INC [US]) 27 December 2002 (2002-12-27) abstract page 1, line 23 - page 2, line 23 page 4, line 14 - line 21 page 6, line 1 - line 4 page 7, line 15 - page 8, line 5 page 10, line 1 - page 15, line 17 -----	1-36

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2008/009302

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2002109718 A1	15-08-2002	AU 2002237773 A1	28-08-2002
		WO 02065273 A2	22-08-2002
		US 2007150822 A1	28-06-2007
WO 02103963 A	27-12-2002	US 2003009567 A1	09-01-2003

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2008/009302	31.07.2008	01.08.2007

International Patent Classification (IPC) or both national classification and IPC
INV. G06F9/44

Applicant
HANDS-ON MOBILE, INC.

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 usually 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 notifed 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:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Jonsson, Svante Telephone No. +49 89 2399-5980

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2008/009302

Box No. I Basis of the 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. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. 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.

4. ☐ 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.

5. Additional comments:

Box No. II Priority

1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

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)	Yes:	Claims	1-36
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-36
Industrial applicability (IA)	Yes:	Claims	1-36
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

1 Documents

The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: US 2002/109718 A1 (MANSOUR PETER M [US] ET AL) 15 August 2002 (2002-08-15)

D2: SIMON, RAINER ET AL: "Tool-supported Single Authoring for Device Independence and Multimodality" PROCEEDINGS OF THE 7TH INTERNATIONAL CONFERENCE ON HUMAN COMPUTER INTERACTION WITH MOBILE DEVICES & SERVICES, [Online] 19 September 2005 (2005-09-19), - 22 September 2005 (2005-09-22) pages 91-98, XP002511216 Retrieved from the Internet: URL:http://portal.acm.org/citation.cfm?id=1085777.1085793> [retrieved on 2009-01-19]

D3: MIR FAROOQ ALI ET AL: "Building Multi-Platform User Interfaces with UIML" INTERNET CITATION, [Online] XP002280476 Retrieved from the Internet: URL:http://arxiv.org/ftp/cs/papers/0111/01 11024.pdf> [retrieved on 2004-05-17]

Re Item V.

2 Lack of inventive step of independent claims 1, 13, 25 (Article 33(3) PCT)

2.1 Document D1, which is considered to represent the **most relevant state of the art, discloses** (the references in parentheses applying to this document; the original wording of the claim is set in *italic font*; features not disclosed in the prior art are set ~~strikeout~~):

A method of rendering content on a wireless device ([0219]: "the client device 2402

performs the UI rendering tasks"; [0021]: "A distributed user interface (UI) architecture according to the present invention can specifically address the wireless HCD [handheld computing device] scenario"), *said method comprising:*
receiving an identification of a custom configuration of a plurality of rendering blocks of said wireless device ([0160]: "the UI server may send a UI form definition or a corresponding identifier to the client device ... although the client device actually renders the UI, the UI server dictates which UI forms to display"), *wherein said custom configuration is associated with an application and configures said plurality of rendering blocks to render content in a manner customized to said application* ([0093]: "UI forms database element 717 preferably stores information related to the forms, controls, layouts, parameters, and/or characteristics associated with the application UIs. In a practical embodiment, the UI forms database element 717 stores form definitions that are utilized by the client devices during UI processing and rendering");
receiving compiled content generated in part from execution of said application ~~*wherein said compiled content comprises render commands expressed in a syntax that is generic to said wireless device*~~ (Claim 1: "transmitting, from said UI server, a number of source data items ... said number of source data items being related to said server-based application");
using a graphical user interface comprising said plurality of rendering blocks to generate renderable content based on said compiled content and said custom configuration (Claim 1: "instructing a client device to render a UI form corresponding to said UI form definition and ... a number of source data items for population in said UI form"); *and*
rendering said renderable content on said wireless device ([0219]: "the client device 2402 performs the UI rendering tasks").

2.2 The **subject-matter** of claim 1 therefore **differs** from the disclosure of D1 in the use of device generic syntax for render commands.

2.3 The **objective problem** to be solved by the present invention may therefore be regarded as how to support multiple device types in the distributed user interface system of D1.

2.4 The **solution** proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) since D2 discloses the use of a "user interface description language" (page 92 , left column, line 5) in which interfaces are specified "using a set of generic widgets" (page 92, right column, line 16) which at the client are translated and presented to the user (page 92, right column, lines 8 - 10).

2.5 Since both D1 and D2 come from the field of distributed user interfaces for mobile devices, which is the field of the application, it is considered obvious to the skilled person to use the teaching from D2 when trying to improve the system of D1.

2.6 Computer readable media claim 13 and device claim 25 only comprise features corresponding to those of claim 1. Therefore, the objections concerning lack of inventive step of claim 1 **apply accordingly** to claims 13 and 25.

3 **Lack of inventive step of dependent claims 2 - 12, 14 - 24 and 26 - 36 (Article 33(3) PCT)**

These dependent claims do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(3) PCT), the reasons being as follows:

a. **claims 2, 14** and **26**: the use of a reader is disclosed in D2 (page 92, left column, line 6: "presentation server") and issuing commands to rendering blocks based on received commands is disclosed in D1 ([0131]) and can therefore not be considered to involve an inventive step;

b. **claims 3, 15** and **27**: that the content comprises audio and display content is disclosed in D2 (page 92, left column, line 16) and can therefore not be considered to involve an inventive step;

c. **claims 4, 16** and **28**: that the application is operating on a remote server is disclosed in D1 (Abstract) and can therefore not be considered to involve an inventive step;

d. **claims 5, 17** and **29**: that the content is dependent on the capabilities of the device is also disclosed in D1 (e.g. [0217]) and can therefore not be considered to involve an inventive step;

e. **claims 6, 7, 18, 19, 30** and **31**: that devices belong to types sharing a common platform is well known (e.g. see D3, page 5 , lines 26 - 27) and that the rendering blocks and configuration information are device specific and instructed using device generic syntax is disclosed in D1 ([0162]) and can therefore not be considered to involve an inventive step;

f. **claims 8, 20** and **32**: that configuration and content is specific to the application is disclosed in D1 ([0160] and Claim 1) and can therefore not be considered to involve an inventive step;

g. **claims 9, 21** and **33**: that multiple pages sharing the same configuration are received at the client device is implicitly disclosed by the email example in D1 ([0072] - [0075]) and can therefore not be considered to involve an inventive step;

h. **claims 10, 11, 22, 23** and **34**: receiving and storing configurations and receiving an id for identifying a configuration is disclosed in D1 ([0160], [0218]) and can therefore not be considered to involve an inventive step;

i. **claims 12, 24, 35** and **36**: these are well known user interface elements and to use them can therefore not be considered to involve an inventive step.

Re Item VIII.

4 **Lack of clarity of independent claim 25 (Article 6 PCT)**
In claim 25 (third line of the claim) a reference is made to "said bus" although no bus has been defined earlier in the claim.

5 **Lack of clarity (Article 6 PCT)**

The **vague and imprecise statement** "spirit of the invention" in the description on page 9 implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT, PCT

Guidelines 5.30) when used to interpret them.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference HOMIP010WO	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. **PCT/US2009/001514**	International filing date *(day/month/year)* **09 MARCH 2009 (09.03.2009)**	(Earliest) Priority Date *(day/month/year)* 07 APRIL 2008 (07.04.2008)
Applicant **HANDS-ON MOBILE, INC. et al**		

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
      ☐ 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. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).
   c. ☐ 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, 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. 6
      ☒ 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 figure is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/001514

A. CLASSIFICATION OF SUBJECT MATTER

H04W 4/00(2009.01)i, H04W 8/20(2009.01)i, H04W 88/18(2009.01)i

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 8 : G06F 17/30, G06F 15/00, G06F 3/048, G06F 15/16, G06F 3/00, G06F 15/00, G06Q 50/00C3

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility Models since 1975
Japanese Utility models and applications for Utility Models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) : wireless, dynamic, and interface

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007-0130156 A1 (JOUKO U. TENHUNEN et al.) 07 June 2007 See abstract, paragraphs [0037], [0039]-[0040], and figure 1	1-20
A	US 2003-0106022 A1 (ANTHONY JOHN GOODACRE et al.) 05 June 2003 See abstract, paragraphs [0047]-[0069], and figures 2-3	1-20
A	KR 10-2008-0022697 A (ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE) 12 March 2008 See abstract, figures 1-3, and claims 1, 3	1-20
A	KR 10-2007-0003418 A (KTFREETEL CO., LTD.) 05 January 2007 See abstract, figures 1-2, and claim 1	1-20

☐ 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 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 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
06 OCTOBER 2009 (06.10.2009)	**06 OCTOBER 2009 (06.10.2009)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer LIM, Chang Soo Telephone No. 82-42-481-8201

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2009/001514

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007-0130156 A1	07.06.2007	AU 2007-263521 A1	25.06.2007
		CA 2631696 A1	07.06.2007
		EP 1979836 A2	15.10.2008
		EP 2036270 A2	18.03.2009
		US 2007-0167182 A1	19.07.2007
		WO 2007-063414 A8	21.08.2008
		WO 2007-063414 A2	07.06.2007
		WO 2008-001214 A2	03.01.2008
		WO 2007-063414 A3	07.06.2007
		WO 2008-001214 A3	03.01.2008
US 2003-0106022 A1	05.06.2003	None	
KR 10-2008-0022697 A	12.03.2008	None	
KR 10-2007-0003418 A	05.01.2007	None	

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
SOCHOR MICHAEL D.

MURABITO, HAO AND BARNES LLP TWO NORTH MARKET STREET THIRD FLOOR SAN JOSE CA 95113
USA

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing *(day/month/year)* **06 OCTOBER 2009 (06.10.2009)**

Applicant's or agent's file reference
HOMIP010WO

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2009/001514	**09 MARCH 2009 (09.03.2009)**	07 APRIL 2008 (07.04.2008)

International Patent Classification (IPC) or both national classification and IPC

H04W 4/00(2009.01)i, H04W 8/20(2009.01)i, H04W 88/18(2009.01)i

Applicant

HANDS-ON MOBILE, INC. et al

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 43bis.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 66.1bis(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/KR	Date of completion of this opinion	Authorized officer
Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	06 OCTOBER 2009 (06.10.2009)	LIM, Chang Soo Telephone No.82-42-481-8201

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2009/001514

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. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, 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.

4. ☐ 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 additioanl copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2009/001514

Box No. V Reasoned statement under Rule 43bis.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	1-20	YES
	Claims	None	NO
Industrial applicability (IA)	Claims	1-20	YES
	Claims	None	NO

2. Citations and explanations :

Reference is made to the following documents:

D1: US 2007-0130156 A1 (JOUKO U. TENHUNEN et al.) 07 June 2007
D2: US 2003-0106022 A1 (ANTHONY JOHN GOODACRE et al.) 05 June 2003
D3: KR 10-2008-0022697 A (ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE) 12 March 2008
D4: KR 10-2007-0003418 A (KTFREETEL CO., LTD.) 05 January 2007

1. Novelty and Inventive Step

Embodiments of the present invention relate to the field of wireless communication systems. More particularly, embodiments of the present invention relate to a method and system for executing applications on a wireless device.

Independent claims 1, 9 and 15 of the present invention differ from the prior art documents D1-D4 in that the present invention comprises the step of selecting scene components and assets and the step of determining the functionality of an application. And the invention defined in claims 1, 9 and 15 is not obvious to a person skilled in the art from the documents when taken alone or in combination.

Therefore, independent claims 1, 9, 15 and their dependent claims 2-8, 10-14, 16-20 meet the requirements of PCT Article 33(2) and (3) with respect to novelty and inventive step.

2. Industrial Applicability

Claims 1-20 are industrially applicable under PCT Article 33(4).

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference HOMIP009WO	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. **PCT/US2009/001516**	International filing date *(day/month/year)* **09 MARCH 2009 (09.03.2009)**	(Earliest) Priority Date *(day/month/year)* 07 APRIL 2008 (07.04.2008)
Applicant **HANDS-ON MOBILE, INC. et al**		

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 **4** 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. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).
   c. ☐ 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, 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. **5**
      ☒ 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 figure is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/001516

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 9-13, 15-20
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

1. Dependent claims 9-12 and 15-20 do not comply with PCT Rule 6.4(c) because all dependent claims shall refer back to one or more previous claims.
2. Claim 13 refers to claim 12 which does not comply with PCT Rule 6.4(c).

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required addtional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/001516

A. CLASSIFICATION OF SUBJECT MATTER

H04W 4/00(2009.01)i, H04B 1/40(2006.01)i

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 8 : G06F 17/30, G06F 3/048, G06F 15/16, G06F 3/00, G06F 15/00,

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility Models since 1975
Japanese Utility models and applications for Utility Models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) : wireless, dynamic, interface

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 20070130156 A1 (JOUKO U. TENHUNEN et al.) 07 June 2007 See abstract, paragraphs [0037], [0039]-[0040], and figure 1.	1-8, 14
A	KR 10-2008-0022697 A (ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE) 12 March 2008 See abstract, figures 1-3, and claims 1, 3.	1-8, 14
A	US 2003-0106022 A1 (ANTHONY JOHN GOODACRE et al.) 05 June 2003 See abstract, paragraphs [0047]-[0069], and figures 2-3.	1-8, 14
A	EP 1571547 A (RESEARCH IN MOTION LIMITED) 07 September 2005 See abstract, claim 1, figures 1-3.	1-8, 14

☐ 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 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 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
06 OCTOBER 2009 (06.10.2009)	**06 OCTOBER 2009 (06.10.2009)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer LIM, Chang Soo Telephone No. 82-42-481-8201

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2009/001516

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007-0130156 A1	07.06.2007	AU 2007-263521 A1	25.06.2007
		CA 2631696 A1	07.06.2007
		EP 1979836 A2	15.10.2008
		EP 2036270 A2	18.03.2009
		US 2007-0167182 A1	19.07.2007
		WO 2007-063414 A8	21.08.2008
		WO 2007-063414 A2	07.06.2007
		WO 2008-001214 A2	03.01.2008
		WO 2007-063414 A3	07.06.2007
		WO 2008-001214 A3	03.01.2008
KR 10-2008-0022697 A	12.03.2008	None	
US 2003-106022 A1	05.06.2003	None	
EP 1571547 A1	07.09.2005	AU 2005-200852 A1	25.02.2005
		CA 2498540 A1	27.08.2005
		CN 100424637 C	08.10.2008
		CN 1661554 A	31.08.2005
		CN 100424637 C	08.10.2008
		JP 2005-259131 A	22.09.2005
		JP 2009-087340 A	23.04.2009
		KR 2006-0042393 A	12.05.2006
		KR 10-0795765 B1	21.01.2008
		SG 114770 A1	28.09.2005
		SG 135202 A1	28.09.2007

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
SOCHOR MICHAEL D.

MURABITO, HAO AND BARNES LLP TWO NORTH MARKET STREET THIRD FLOOR SAN JOSE CA 95113 USA

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing *(day/month/year)* **06 OCTOBER 2009 (06.10.2009)**

Applicant's or agent's file reference
HOMIP009WO

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2009/001516	**09 MARCH 2009 (09.03.2009)**	07 APRIL 2008 (07.04.2008)

International Patent Classification (IPC) or both national classification and IPC

H04W 4/00(2009.01)i, H04B 1/40(2006.01)i

Applicant

HANDS-ON MOBILE, INC. et al

1. This opinion contains indications relating to the following items:

- [x] Box No. I Basis of the opinion
- [ ] Box No. II Priority
- [x] 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 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI Certain documents cited
- [x] Box No. VII Certain defects in the international application
- [x] 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 66.1bis(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/KR	Date of completion of this opinion	Authorized officer
Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	06 OCTOBER 2009 (06.10.2009)	LIM, Chang Soo Telephone No.82-42-481-8201

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US2009/001516

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. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, 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.

4. ☐ 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 additioanl copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2009/001516

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 9-12, 15-20

because:

☐ the said international application, or the said claims Nos. _____ relate to the following subject matter which does not require an international search *(specify)*:

☒ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. 13 are so unclear that no meaningful opinion could be formed *(specify)*:

Claim 13 is unclear in that the said claim refers to claim 12 which does not comply with PCT Rule 6.4(c).

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed *(specify)*:

☒ no international search report has been established for said claims Nos. 9-13, 15-20

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Istructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Istructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13ter.1(a) or (b).

☐ a meaningful opinion could not be formed without the tables related to the sequence listings; the applicant did not, within the prescribed time limit, furnish such tables in electronic form complying with the technical requirements provided for in Annex C-bis of the Administrative Instructions, and such tables were not available to the International Searching Authority in a form and manner acceptable to it.

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in electronic form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See Supplemental Box for further details.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US2009/001516

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-8, 14	YES
	Claims	None	NO
Inventive step (IS)	Claims	1-8, 14	YES
	Claims	None	NO
Industrial applicability (IA)	Claims	1-8, 14	YES
	Claims	None	NO

2. Citations and explanations :

Reference is made to the following documents:

D1: US 20070130156 A1 (JOUKO U. TENHUNEN et al.) 07 June 2007
D2: KR 10-2008-0022697 A (ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE) 12 March 2008
D3: US 2003-0106022 A1 (ANTHONY JOHN GOODACRE et al.) 05 June 2003
D4: EP 1571547 A1 (RESEARCH IN MOTION LIMITED) 07 September 2005

1. Novelty and Inventive Step

Embodiments of the present invention relate to the field of wireless communication systems. More particularly, embodiments of the present invention relate to a method and system for executing applications on a wireless device.

Independent claims 1, 8 and 14 of the present invention differ from the prior art documents D1-D4 in that the present invention includes the elements of scene components and assets and the steps of generating and rendering. And the invention defined in claims 1, 8 and 14 is not obvious to a person skilled in the art from the documents when taken alone or in combination.

Therefore, independent claims 1, 8, 14 and dependent claims 2-7 meet the requirements of PCT Article 33(2) and (3) with respect to novelty and inventive step.

2. Industrial Applicability

Claims 1-8 and 14 are industrially applicable under PCT Article 33(4).

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Dependent claims 9-12 and 15-20 do not comply with PCT Rule 6.4(c) because all dependent claims shall refer back to one or more previous claims.

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 13 is unclear contrary to PCT Article 6 in that the said claim refers to claim 12 which does not comply with PCT Rule 6.4(c).

PATENT COOPERATION TREATY

RECEIVED

2/9/09

From the INTERNATIONAL SEARCHING AUTHORITY

MHB

PCT

To:

MURABITO, HAO & BARNES LLP
Attn. Tabarrok, Amir A.
2 North Market Street
Third Floor
San Jose, CA 95113
ETATS-UNIS D'AMERIQUE

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)* 30/01/2009
Applicant's or agent's file reference HOMIP004WO	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US2008/009303	International filing date *(day/month/year)* 31/07/2008
Applicant HANDS-ON MOBILE, INC.	

1. [x] 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, Fascimile 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.

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 International Searching Authority 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	Authorized officer Karine Lambert

(See notes on accompanying sheet)

2/2/09

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims,description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume I/A, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped),whether

(i) the claim is unchanged;

(ii) the claim is cancelled;

(iii) the claim is new;

(iv) the claim replaces one or more claims as filed;

(v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."

2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."

3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."

4. [Where various kinds of amendments are made]:
"Claims 1–10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/IPEA/401).

If a demand for international preliminary examination is made, the written opinion of the International Searching Authority will, except in certain cases where the International Preliminary Examining Authority did not act as International Searching Authority and where it has notified the International Bureau under Rule 66.1*bis*(b), be considered to be a written opinion of the International Preliminary Examining Authority. If a demand is made, the applicant may submit to the International Preliminary Examining Authority a reply to the written opinion 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 (Rule 43*bis*.1(c)).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide,* Volume II.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference HOMIP004WO	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2008/009303	International filing date *(day/month/year)* 31/07/2008	(Earliest) Priority Date *(day/month/year)* 01/08/2007
Applicant HANDS-ON MOBILE, INC.		

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 4 sheets.

[X] 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:
      [X] 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. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).
   c. [ ] 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**,
   [X] 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**,
   [X] 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. 5
      [X] 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

INTF NATIONAL SEARCH REPORT

ernational application No
PCT/US2008/009303

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F9/44

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)
G06F H04M 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, WPI Data, IBM-TDB, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 345 279 B1 (LI CHUNG-SHENG [US] ET AL) 5 February 2002 (2002-02-05) abstract column 1, line 24 - line 42 column 2, line 19 - column 7, line 34 column 12, line 9 - line 20 -----	1-41
Y	MIR FAROOQ ALI ET AL: "Building Multi-Platform User Interfaces with UIML" INTERNET CITATION, [Online] XP002280476 Retrieved from the Internet: URL:http://arxiv.org/ftp/cs/papers/0111/0111024.pdf> [retrieved on 2004-05-17] page 1, line 1 - page 2, line 36 page 3, line 3 - line 29 page 4, line 1 - page 5, last line page 10, line 20 - line 27 figure 8 -----	1-41

-/--

[X] Further documents are listed in the continuation of Box C. [X] 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 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
"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
21 January 2009	30/01/2009

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, Fax: (+31-70) 340-3016	Jonsson, Svante

2

Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	MARC ABRAMS & CONTANTINOS PHANOURIOU: "UIML: An XML Language for Building Device-Independent User Interfaces" XML CONFERENCE PROCEEDINGS. PROCEEDINGS OF XML, XX, XX, 1 December 1999 (1999-12-01), XP002161335 page 8, line 15 - page 11, line 9 figure 3 -----	1-41
A	US 2002/109718 A1 (MANSOUR PETER M [US] ET AL) 15 August 2002 (2002-08-15) paragraph [0002] - paragraph [0003] paragraph [0008] paragraph [0021] - paragraph [0024] paragraph [0053] - paragraph [0055] paragraph [0060] paragraph [0064] - paragraph [0075] paragraph [0093] - paragraph [0114] paragraph [0121] - paragraph [0131] paragraph [0150] paragraph [0160] - paragraph [0162] paragraph [0217] - paragraph [0222] claim 1 figure 12 abstract -----	1-41
A	WO 02/103963 A (NOKIA CORP [FI]; NOKIA INC [US]) 27 December 2002 (2002-12-27) abstract page 1, line 23 - page 2, line 23 page 4, line 14 - line 21 page 6, line 1 - line 4 page 7, line 15 - page 8, line 5 page 10, line 1 - page 15, line 17 -----	1-41

2

INTF IATIONAL SEARCH REPORT

Information on patent family members

.rnational application No
PCT/US2008/009303

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6345279 B1	05-02-2002	NONE	
US 2002109718 A1	15-08-2002	AU 2002237773 A1	28-08-2002
		WO 02065273 A2	22-08-2002
		US 2007150822 A1	28-06-2007
WO 02103963 A	27-12-2002	US 2003009567 A1	09-01-2003

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2008/009303	31.07.2008	01.08.2007

International Patent Classification (IPC) or both national classification and IPC
INV. G06F9/44

Applicant
HANDS-ON MOBILE, INC.

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 usually 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 notifed 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:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Jonsson, Svante Telephone No. +49 89 2399-5980

Box No. I Basis of the 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. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. 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.

4. ☐ 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.

5. Additional comments:

Box No. II Priority

1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

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)	Yes:	Claims	1-41
	No:	Claims	
Inventive step (IS)	Yes:	Claims	12,25,39
	No:	Claims	1-11,13-24,26-39,40,41
Industrial applicability (IA)	Yes:	Claims	1-41
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

1 Documents

The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: US-B1-6 345 279 (LI CHUNG-SHENG [US] ET AL) 5 February 2002 (2002-02-05)

D2: MIR FAROOQ ALI ET AL: "Building Multi-Platform User Interfaces with UIML" INTERNET CITATION, [Online] XP002280476 Retrieved from the Internet: URL:http://arxiv.org/ftp/cs/papers/0111/01 11024.pdf> [retrieved on 2004-05-17]

D3: MARC ABRAMS & CONTANTINOS PHANOURIOU: "UIML: An XML Language for Building Device-Independent User Interfaces" XML CONFERENCE PROCEEDINGS. PROCEEDINGS OF XML, XX, XX, 1 December 1999 (1999-12-01), XP002161335

Re Item V.

2 Lack of inventive step of independent claims 1, 14 and 28 (Article 33(3) PCT)

2.1 Document D1, which is considered to represent the **most relevant state of the art, discloses** (the references in parentheses applying to this document; the original wording of the claim is set in *italic font*; features not disclosed in the prior art are set ~~strikeout~~):

A server implemented method (column 12, lines 12 - 13: "the content adaptation process can be deployed on the server-side") *for processing data* (column 2, lines 54 - 55: "content is dynamically adapted to the client device") *for a wireless device* (column 1, line 33: "smart cellular phones"), *said method comprising:*
executing an application program which generates content operable to be rendered on said wireless device (column 2, lines 22 - 22: "adapts multimedia content ... to optimally match the capabilities of the client device requesting it" - it is obvious that

the content is generated by an executing application) *and wherein said content is wireless device generic* (column 2, lines 24 - 25: "Each of these content items is then transcoded into multiple resolution and modality versions so that they can be rendered on different devices" - since the items are transcoded for different devices they are originally device generic)*;*

generating a first screen description based on said content and based on a device profile of said wireless device wherein said device profile describes a rendering capability of said wireless device (column 6, lines 42 - 47: "A content adaptation process 350 uses the client profile 310 to select from among the InfoPyramids 280 the versions 374 that best satisfy the particular client profile. These selected versions are rendered into a document 370 which is an adaptation (i.e., customization) of the original multimedia document"; lines 3 - 4: "A client device is characterized by its profile 310 which lists the capabilities 320 and resources 330 of the device"; lines 11 - 13: "Examples of capabilities that may be specified include: ... image display capability")*;*

~~*translating said first screen description into a second screen description comprising discrete low level rendering commands that are within said rendering capability of said wireless device but that are of a syntax that is wireless device generic;*~~ *and providing said second screen description for transmission to said wireless device* (column 6, lines 47 - 48: "The client device receives the customized document").

2.2 The **subject-matter** of claim 1 therefore **differs** from the disclosure of D1 in that device generic low level commands are used.

2.3 The **objective problem** to be solved by the present invention may therefore be regarded as how to support multiple devices having similar capabilities.

2.4 The **solution** proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) since D2 discloses the use of screen descriptions (Abstract: "canonical description of UIs for different platforms") comprising low level rendering commands (page 5, line 35: "set of generic UI elements" within the rendering capability of the device (page 5, lines 26 - 27: "family refers to multiple platforms that share common layout capabilities") in a device

generic syntax (page 5, lines 32 - 33: "A generic vocabulary of UI elements, used in conjunction with UIML, can describe any UI for any platform within its family").

2.5 Server system claim 14 only comprises features corresponding to those of claim 1. Therefore, the objections concerning lack of inventive step of claim 1 **apply accordingly** to claim 14.

2.6 Server system claim 28 only contains features corresponding to those of claim 1 and the additional feature of "a device profile library operable to store a device profile describing the rendering capability of said wireless device". Since it is considered obvious to the skilled person that the client profiles used in the system of D1 are stored somewhere in the system, this additional feature is not considered to involve an inventive step and therefore the subject-matter of claim 28 is not considered to be inventive in the sense of Article 33(3) PCT.

3 **Lack of inventive step of dependent claims 2 - 11, 13, 15 - 24, 26, 27, 29 - 38, 40 and 41 (Article 33(3) PCT)**

These dependent claims do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(3) PCT), the reasons being as follows:

a. **claims 2, 15** and **29**: that the first screen description is within the rendering capability of the device is disclosed in D1 (column 6, lines 3 - 47). To use a generic syntax for the first screen description is considered obvious to the skilled person in light of the combination of D1 and D2 and can therefore not be considered to involve an inventive step;

b. **claims 3, 16** and **30**: to use relative positions is considered obvious to the skilled person when developing device generic systems and can therefore not be considered to involve an inventive step;

c. **claims 4, 17** and **31**: the use of XML-compliant syntax is disclosed in D2 (page 1, lines 5 - 6) and can therefore not be considered to involve an

inventive step;

d. **claims 5 - 8, 18 - 21** and **32 - 35**: the use of a plurality of rendering blocks, physical positions and parameters is disclosed in D2 (page 5, lines 25 - last and Fig. 2) and can therefore not be considered to involve an inventive step;

e. **claims 9, 22** and **36**: to transmit the screen description to the device is disclosed in D1 (column 6, lines 47 - 48) and can therefore not be considered to involve an inventive step;

f. **claims 10, 23** and **37**: the use of display and audio rendering commands is disclosed in D2 (page 2, lines 16 - 19) and can therefore not be considered to involve an inventive step;

g. **claims 11, 24** and **38**: the use of generic applications is disclosed in D2 (page 1, lines 26 - 29). The use of templates is a technique well known to the skilled person (see also D3, page 8, line 15 - last) and can therefore not be considered to involve an inventive step;

h. **claims 13, 26** and **41**: that the system of D1 comprises a plurality of profiles and that profiles are identified based on device types is considered as obvious to the skilled person and can therefore not be considered to involve an inventive step;

i. **claims 27** and **40**: to store adaptions already made by the system as configurations and select one based on information concerning device type and application would be a normal design decision well in reach of the skilled person and can therefore not be considered to involve an inventive step.

4 **Inventiveness of dependent claims 12, 25 and 39**

The subject-matter of these dependent claims does not seem to be disclosed or anticipated by the available prior art and therefore seems to be **new** and involving an **inventive** step.

Re Item VIII.

5 **Lack of clarity of the independent claim 28 (Article 6 PCT)**

5.1 Claim 28 has been formulated as an independent claim although it comprises all the features of claim 14. This claim should therefore have been formulated so as to define this dependency (Rule 6.4 PCT).

5.2 Additionally, claim 28 comprises references to "said bus" and "said wireless device" although none of these features have been defined earlier in the claim.

5.3 Furthermore, later in the claim (line 5) "a bus" is defined. It is not clear to the reader if this is the same bus which was earlier in the claim referenced by "said bus".

6 **Lack of clarity of the dependent claims 4, 17 and 31 (Article 6 PCT)**

The vague and **unclear** formulation "substantially" used in these claims leaves the reader in doubt as to the matter for which protection is sought.

7 **Lack of clarity of the dependent claims 27 and 40 (Article 6 PCT)**

These claims comprise references to "said custom configuration" although no singular custom configuration has been defined earlier in the claims.

8 **Lack of clarity (Article 6 PCT)**

The **vague and imprecise statement** "spirit of the invention" in the description on page 9 implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT, PCT Guidelines 5.30) when used to interpret them.

Possible steps after receipt of the international search report (ISR) and written opinion of the International Searching Authority (WO-ISA)

General information	For all international applications filed on or after 01/01/2004 the competent ISA will establish an ISR. It is accompanied by the WO-ISA. Unlike the former written opinion of the IPEA (Rule 66.2 PCT), the WO-ISA is not meant to be responded to, but to be taken into consideration for further procedural steps. This document explains about the possibilities.
Amending claims under Art. 19 PCT	Within 2 months after the date of mailing of the ISR and the WO-ISA the applicant may file amended claims under Art. 19 PCT directly with the International Bureau of WIPO. The PCT reform of 2004 did not change this procedure. For further information please see Rule 46 PCT as well as form PCT/ISA/220 and the corresponding Notes to form PCT/ISA/220.
Filing a demand for international preliminary examination	In principle, the WO-ISA will be considered as the written opinion of the IPEA. This should, in many cases, make it unnecessary to file a demand for international preliminary examination. If the applicant nevertheless wishes to file a demand this must be done before expiry of 3 months after the date of mailing of the ISR/WO-ISA or 22 months after priority date, whichever expires later (Rule 54bis PCT). Amendments under Art. 34 PCT can be filed with the IPEA as before, normally at the same time as filing the demand (Rule 66.1 (b) PCT). If a demand for international preliminary examination is filed and no comments/amendments have been received the WO-ISA will be transformed by the IPEA into an IPRP (International Preliminary Report on Patentability) which would merely reflect the content of the WO-ISA. The demand can still be withdrawn (Art. 37 PCT).
Filing informal comments	After receipt of the ISR/WO-ISA the applicant may file informal comments on the WO-ISA directly with the International Bureau of WIPO. These will be communicated to the designated Offices together with the IPRP (International Preliminary Report on Patentability) at 30 months from the priority date. Please also refer to the next box.
End of the international phase	At the end of the international phase the International Bureau of WIPO will transform the WO-ISA or, if a demand was filed, the written opinion of the IPEA into the IPRP, which will then be transmitted together with possible informal comments to the designated Offices. The IPRP replaces the former IPER (international preliminary examination report).
Relevant PCT Rules and more information	Rule 43 PCT, Rule 43bis PCT, Rule 44 PCT, Rule 44bis PCT, PCT Newsletter 12/2003, OJ 11/2003, OJ 12/2003

Bitte beachten Sie, dass angeführte Nichtpatentliteratur (wie z. B. wissenschaftliche oder technische Dokumente) je nach geltendem Recht dem Urheberrechtsschutz und/oder anderen Schutzarten für schriftliche Werke unterliegen könnte. Die Vervielfältigung urheberrechtlich geschützter Texte, ihre Verwendung in anderen elektronischen oder gedruckten Publikationen und ihre Weitergabe an Dritte ist ohne ausdrückliche Zustimmung des Rechtsinhabers nicht gestattet.

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Please be aware that cited works of non-patent literature such as scientific or technical documents or the like may be subject to copyright protection and/or any other protection of written works as appropriate based on applicable laws. Copyrighted texts may not be copied or used in other electronic or printed publications or re-distributed without the express permission of the copyright holder.

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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2008/009302	31.07.2008	01.08.2007

International Patent Classification (IPC) or both national classification and IPC
INV. G06F9/44

Applicant
HANDS-ON MOBILE, INC.

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 usually 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 notifed 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:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Jonsson, Svante Telephone No. +49 89 2399-5980

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2008/009302

Box No. I Basis of the 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. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. 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.

4. ☐ 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.

5. Additional comments:

Box No. II Priority

1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

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)	Yes:	Claims	1-36
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-36
Industrial applicability (IA)	Yes:	Claims	1-36
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

1 Documents

The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: US 2002/109718 A1 (MANSOUR PETER M [US] ET AL) 15 August 2002 (2002-08-15)

D2: SIMON, RAINER ET AL: "Tool-supported Single Authoring for Device Independence and Multimodality" PROCEEDINGS OF THE 7TH INTERNATIONAL CONFERENCE ON HUMAN COMPUTER INTERACTION WITH MOBILE DEVICES & SERVICES, [Online] 19 September 2005 (2005-09-19), - 22 September 2005 (2005-09-22) pages 91-98, XP002511216 Retrieved from the Internet: URL:http://portal.acm.org/citation.cfm?id=1085777.1085793> [retrieved on 2009-01-19]

D3: MIR FAROOQ ALI ET AL: "Building Multi-Platform User Interfaces with UIML" INTERNET CITATION, [Online] XP002280476 Retrieved from the Internet: URL:http://arxiv.org/ftp/cs/papers/0111/01 11024.pdf> [retrieved on 2004-05-17]

Re Item V.

2 Lack of inventive step of independent claims 1, 13, 25 (Article 33(3) PCT)

2.1 Document D1, which is considered to represent the **most relevant state of the art, discloses** (the references in parentheses applying to this document; the original wording of the claim is set in *italic font*; features not disclosed in the prior art are set ~~strikeout~~):

A method of rendering content on a wireless device ([0219]: "the client device 2402

performs the UI rendering tasks"; [0021]: "A distributed user interface (UI) architecture according to the present invention can specifically address the wireless HCD [handheld computing device] scenario"), *said method comprising:*
receiving an identification of a custom configuration of a plurality of rendering blocks of said wireless device ([0160]: "the UI server may send a UI form definition or a corresponding identifier to the client device ... although the client device actually renders the UI, the UI server dictates which UI forms to display"), *wherein said custom configuration is associated with an application and configures said plurality of rendering blocks to render content in a manner customized to said application* ([0093]: "UI forms database element 717 preferably stores information related to the forms, controls, layouts, parameters, and/or characteristics associated with the application UIs. In a practical embodiment, the UI forms database element 717 stores form definitions that are utilized by the client devices during UI processing and rendering");
receiving compiled content generated in part from execution of said application ~~*wherein said compiled content comprises render commands expressed in a syntax that is generic to said wireless device*~~ (Claim 1: "transmitting, from said UI server, a number of source data items ... said number of source data items being related to said server-based application");
using a graphical user interface comprising said plurality of rendering blocks to generate renderable content based on said compiled content and said custom configuration (Claim 1: "instructing a client device to render a UI form corresponding to said UI form definition and ... a number of source data items for population in said UI form"); *and*
rendering said renderable content on said wireless device ([0219]: "the client device 2402 performs the UI rendering tasks").

2.2 The **subject-matter** of claim 1 therefore **differs** from the disclosure of D1 in the use of device generic syntax for render commands.

2.3 The **objective problem** to be solved by the present invention may therefore be regarded as how to support multiple device types in the distributed user interface system of D1.

2.4 The **solution** proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) since D2 discloses the use of a "user interface description language" (page 92 , left column, line 5) in which interfaces are specified "using a set of generic widgets" (page 92, right column, line 16) which at the client are translated and presented to the user (page 92, right column, lines 8 - 10).

2.5 Since both D1 and D2 come from the field of distributed user interfaces for mobile devices, which is the field of the application, it is considered obvious to the skilled person to use the teaching from D2 when trying to improve the system of D1.

2.6 Computer readable media claim 13 and device claim 25 only comprise features corresponding to those of claim 1. Therefore, the objections concerning lack of inventive step of claim 1 **apply accordingly** to claims 13 and 25.

3 **Lack of inventive step of dependent claims 2 - 12, 14 - 24 and 26 - 36 (Article 33(3) PCT)**

These dependent claims do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(3) PCT), the reasons being as follows:

a. **claims 2, 14** and **26**: the use of a reader is disclosed in D2 (page 92, left column, line 6: "presentation server") and issuing commands to rendering blocks based on received commands is disclosed in D1 ([0131]) and can therefore not be considered to involve an inventive step;

b. **claims 3, 15** and **27**: that the content comprises audio and display content is disclosed in D2 (page 92, left column, line 16) and can therefore not be considered to involve an inventive step;

c. **claims 4, 16** and **28**: that the application is operating on a remote server is disclosed in D1 (Abstract) and can therefore not be considered to involve an inventive step;

d. **claims 5, 17** and **29**: that the content is dependent on the capabilities of the device is also disclosed in D1 (e.g. [0217]) and can therefore not be considered to involve an inventive step;

e. **claims 6, 7, 18, 19, 30** and **31**: that devices belong to types sharing a common platform is well known (e.g. see D3, page 5 , lines 26 - 27) and that the rendering blocks and configuration information are device specific and instructed using device generic syntax is disclosed in D1 ([0162]) and can therefore not be considered to involve an inventive step;

f. **claims 8, 20** and **32**: that configuration and content is specific to the application is disclosed in D1 ([0160] and Claim 1) and can therefore not be considered to involve an inventive step;

g. **claims 9, 21** and **33**: that multiple pages sharing the same configuration are received at the client device is implicitly disclosed by the email example in D1 ([0072] - [0075]) and can therefore not be considered to involve an inventive step;

h. **claims 10, 11, 22, 23** and **34**: receiving and storing configurations and receiving an id for identifying a configuration is disclosed in D1 ([0160], [0218]) and can therefore not be considered to involve an inventive step;

i. **claims 12, 24, 35** and **36**: these are well known user interface elements and to use them can therefore not be considered to involve an inventive step.

Re Item VIII.

4 **Lack of clarity of independent claim 25 (Article 6 PCT)**
In claim 25 (third line of the claim) a reference is made to "said bus" although no bus has been defined earlier in the claim.

5 **Lack of clarity (Article 6 PCT)**

The **vague and imprecise statement** "spirit of the invention" in the description on page 9 implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT, PCT

Guidelines 5.30) when used to interpret them.

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2008/009303	31.07.2008	01.08.2007

International Patent Classification (IPC) or both national classification and IPC
INV. G06F9/44

Applicant
HANDS-ON MOBILE, INC.

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 usually 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 notifed 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:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Jonsson, Svante Telephone No. +49 89 2399-5980

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2008/009303

Box No. I Basis of the 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. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. 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.

4. ☐ 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.

5. Additional comments:

Box No. II Priority

1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

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)	Yes:	Claims	1-41
	No:	Claims	
Inventive step (IS)	Yes:	Claims	12,25,39
	No:	Claims	1-11,13-24,26-39,40,41
Industrial applicability (IA)	Yes:	Claims	1-41
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

1 Documents

The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: US-B1-6 345 279 (LI CHUNG-SHENG [US] ET AL) 5 February 2002 (2002-02-05)

D2: MIR FAROOQ ALI ET AL: "Building Multi-Platform User Interfaces with UIML" INTERNET CITATION, [Online] XP002280476 Retrieved from the Internet: URL:http://arxiv.org/ftp/cs/papers/0111/01 11024.pdf> [retrieved on 2004-05-17]

D3: MARC ABRAMS & CONTANTINOS PHANOURIOU: "UIML: An XML Language for Building Device-Independent User Interfaces" XML CONFERENCE PROCEEDINGS. PROCEEDINGS OF XML, XX, XX, 1 December 1999 (1999-12-01), XP002161335

Re Item V.

2 Lack of inventive step of independent claims 1, 14 and 28 (Article 33(3) PCT)

2.1 Document D1, which is considered to represent the **most relevant state of the art, discloses** (the references in parentheses applying to this document; the original wording of the claim is set in *italic font*; features not disclosed in the prior art are set ~~strikeout~~):

A server implemented method (column 12, lines 12 - 13: "the content adaptation process can be deployed on the server-side") *for processing data* (column 2, lines 54 - 55: "content is dynamically adapted to the client device") *for a wireless device* (column 1, line 33: "smart cellular phones"), *said method comprising: executing an application program which generates content operable to be rendered on said wireless device* (column 2, lines 22 - 22: "adapts multimedia content ... to optimally match the capabilities of the client device requesting it" - it is obvious that

the content is generated by an executing application) *and wherein said content is wireless device generic* (column 2, lines 24 - 25: "Each of these content items is then transcoded into multiple resolution and modality versions so that they can be rendered on different devices" - since the items are transcoded for different devices they are originally device generic);
generating a first screen description based on said content and based on a device profile of said wireless device wherein said device profile describes a rendering capability of said wireless device (column 6, lines 42 - 47: "A content adaptation process 350 uses the client profile 310 to select from among the InfoPyramids 280 the versions 374 that best satisfy the particular client profile. These selected versions are rendered into a document 370 which is an adaptation (i.e., customization) of the original multimedia document"; lines 3 - 4: "A client device is characterized by its profile 310 which lists the capabilities 320 and resources 330 of the device"; lines 11 - 13: "Examples of capabilities that may be specified include: ... image display capability");
~~*translating said first screen description into a second screen description comprising discrete low level rendering commands that are within said rendering capability of said wireless device but that are of a syntax that is wireless device generic*~~; *and providing said second screen description for transmission to said wireless device* (column 6, lines 47 - 48: "The client device receives the customized document").

2.2 The **subject-matter** of claim 1 therefore **differs** from the disclosure of D1 in that device generic low level commands are used.

2.3 The **objective problem** to be solved by the present invention may therefore be regarded as how to support multiple devices having similar capabilities.

2.4 The **solution** proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) since D2 discloses the use of screen descriptions (Abstract: "canonical description of UIs for different platforms") comprising low level rendering commands (page 5, line 35: "set of generic UI elements" within the rendering capability of the device (page 5, lines 26 - 27: "family refers to multiple platforms that share common layout capabilities") in a device

generic syntax (page 5, lines 32 - 33: "A generic vocabulary of UI elements, used in conjunction with UIML, can describe any UI for any platform within its family").

2.5 Server system claim 14 only comprises features corresponding to those of claim 1. Therefore, the objections concerning lack of inventive step of claim 1 **apply accordingly** to claim 14.

2.6 Server system claim 28 only contains features corresponding to those of claim 1 and the additional feature of "a device profile library operable to store a device profile describing the rendering capability of said wireless device". Since it is considered obvious to the skilled person that the client profiles used in the system of D1 are stored somewhere in the system, this additional feature is not considered to involve an inventive step and therefore the subject-matter of claim 28 is not considered to be inventive in the sense of Article 33(3) PCT.

3 **Lack of inventive step of dependent claims 2 - 11, 13, 15 - 24, 26, 27, 29 - 38, 40 and 41 (Article 33(3) PCT)**

These dependent claims do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(3) PCT), the reasons being as follows:

a. **claims 2, 15** and **29**: that the first screen description is within the rendering capability of the device is disclosed in D1 (column 6, lines 3 - 47). To use a generic syntax for the first screen description is considered obvious to the skilled person in light of the combination of D1 and D2 and can therefore not be considered to involve an inventive step;

b. **claims 3, 16** and **30**: to use relative positions is considered obvious to the skilled person when developing device generic systems and can therefore not be considered to involve an inventive step;

c. **claims 4, 17** and **31**: the use of XML-compliant syntax is disclosed in D2 (page 1, lines 5 - 6) and can therefore not be considered to involve an

inventive step;

d. **claims 5 - 8, 18 - 21** and **32 - 35**: the use of a plurality of rendering blocks, physical positions and parameters is disclosed in D2 (page 5, lines 25 - last and Fig. 2) and can therefore not be considered to involve an inventive step;

e. **claims 9, 22** and **36**: to transmit the screen description to the device is disclosed in D1 (column 6, lines 47 - 48) and can therefore not be considered to involve an inventive step;

f. **claims 10, 23** and **37**: the use of display and audio rendering commands is disclosed in D2 (page 2, lines 16 - 19) and can therefore not be considered to involve an inventive step;

g. **claims 11, 24** and **38**: the use of generic applications is disclosed in D2 (page 1, lines 26 - 29). The use of templates is a technique well known to the skilled person (see also D3, page 8, line 15 - last) and can therefore not be considered to involve an inventive step;

h. **claims 13, 26** and **41**: that the system of D1 comprises a plurality of profiles and that profiles are identified based on device types is considered as obvious to the skilled person and can therefore not be considered to involve an inventive step;

i. **claims 27** and **40**: to store adaptions already made by the system as configurations and select one based on information concerning device type and application would be a normal design decision well in reach of the skilled person and can therefore not be considered to involve an inventive step.

4 **Inventiveness of dependent claims 12, 25 and 39**

The subject-matter of these dependent claims does not seem to be disclosed or anticipated by the available prior art and therefore seems to be **new** and involving an **inventive** step.

Re Item VIII.

5 **Lack of clarity of the independent claim 28 (Article 6 PCT)**

5.1 Claim 28 has been formulated as an independent claim although it comprises all the features of claim 14. This claim should therefore have been formulated so as to define this dependency (Rule 6.4 PCT).

5.2 Additionally, claim 28 comprises references to "said bus" and "said wireless device" although none of these features have been defined earlier in the claim.

5.3 Furthermore, later in the claim (line 5) "a bus" is defined. It is not clear to the reader if this is the same bus which was earlier in the claim referenced by "said bus".

6 **Lack of clarity of the dependent claims 4, 17 and 31 (Article 6 PCT)**

The vague and **unclear** formulation "substantially" used in these claims leaves the reader in doubt as to the matter for which protection is sought.

7 **Lack of clarity of the dependent claims 27 and 40 (Article 6 PCT)**

These claims comprise references to "said custom configuration" although no singular custom configuration has been defined earlier in the claims.

8 **Lack of clarity (Article 6 PCT)**

The **vague and imprecise statement** "spirit of the invention" in the description on page 9 implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT, PCT Guidelines 5.30) when used to interpret them.

Electronic Patent Application Fee Transmittal

Application Number:	11888803
Filing Date:	01-Aug-2007
Title of Invention:	Method and system for rendering content on a wireless device
First Named Inventor/Applicant Name:	Pierre Carion
Filer:	Darby Jing-Da Chan/Steven Dieu (DJCH)
Attorney Docket Number:	38285-705.201

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

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:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	14458711
Application Number:	11888803
International Application Number:	
Confirmation Number:	5085
Title of Invention:	Method and system for rendering content on a wireless device
First Named Inventor/Applicant Name:	Pierre Carion
Customer Number:	21971
Filer:	Darby Jing-Da Chan/Steven Dieu (DJCH)
Filer Authorized By:	Darby Jing-Da Chan
Attorney Docket Number:	38285-705.201
Receipt Date:	13-DEC-2012
Filing Date:	01-AUG-2007
Time Stamp:	13:07:09
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$180
RAM confirmation Number	13240
Deposit Account	232415
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		IDS38285-705-201-12-13-12.pdf	209435 5dca9f8ccca55b5cccc55b91c16c0b7ca6dace1f	yes	9
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Transmittal Letter		1	4	
	Information Disclosure Statement (IDS) Form (SB08)		5	9	
Warnings:					
Information:					
2	Foreign Reference	EP1571547A1.pdf	1550902 8af8ca915fb272a57f682125beedd0ab84b777f0	no	31
Warnings:					
Information:					
3	Foreign Reference	KR20070003418A.pdf	583778 4a65ea230a7a8b45f139e03334d38ee8b20872eb	no	12
Warnings:					
Information:					
4	Foreign Reference	KR20080022697A.pdf	428089 51bf2fc3ac12198d1725177fbac0b71df474e09f	no	10
Warnings:					
Information:					
5	Non Patent Literature	Z-ABRAMS-UIML-an-XML.PDF	1520511 5d8ae71a77c8fd1186ad3a6666dd976633317e75	no	15
Warnings:					
Information:					
6	Non Patent Literature	Z-ALI-Building-multi-2004.pdf	818037 37ee11c8acb16a0744146299acc6825fab88901b	no	12
Warnings:					
Information:					
7	Non Patent Literature	Z-FOA-06-29-10-USApp-12-098670.pdf	423701 0eaad010eb08c7cf5ff879c2515b71d7f31410c5	no	12
Warnings:					
Information:					
8	Non Patent Literature	Z-FOA-05-12-09-USApp-11-977186.pdf	532549 bf29f6bd320a296c1b80a246cc69cc073273cfaa	no	15

Warnings:					
Information:					
9	Non Patent Literature	Z-ISR-WO-02-17-09-PCT-US08-009302.pdf	439880 c2d07a9e75605527b01a3672cc31054759f6f4f3	no	12
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Information:					
10	Non Patent Literature	Z-ISR-10-06-09-PCT-US09-001514.pdf	280782 eeae3287ec648c37e30b425428a8614761362efc	no	6
Warnings:					
Information:					
11	Non Patent Literature	Z-ISR-WO-10-06-09-PCT-US09-001516.pdf	367953 4d3778a5b7309ff279285cbf4e7e67e7b46515b1	no	10
Warnings:					
Information:					
12	Non Patent Literature	Z-ISR-WO-1-30-2009-PCT-US2008-009303-WSGR704-601.PDF	1490432 474b3803b5ff92dd03f39ec6521aba055af5e841	no	17
Warnings:					
Information:					
13	Non Patent Literature	Z-OA-02-07-11-USApp-11-888799.pdf	231777 18a969062d3646789be641b2b7cf7eef799140d0	no	7
Warnings:					
Information:					
14	Non Patent Literature	Z-OA-06-25-10-USApp-11-888799.pdf	440149 0104c5a049f9d3702242d58b13807f1ea6c9bf67	no	14
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Information:					
15	Non Patent Literature	Z-OA-03-09-12-USApp-12-018141.pdf	861576 de79abc419c79e52c12e950eca229fc58903d2f6	no	22
Warnings:					
Information:					
16	Non Patent Literature	Z-OA-04-18-11-USApp-12-001001.pdf	669641 c900749ba4997559b72e0e6c253417a530ae4894	no	19
Warnings:					
Information:					
17	Non Patent Literature	Z-OA-07-07-11-USApp-12-018141.pdf	678797 10508a8bc7e02e81d4bf67870baac07a76717db2	no	19

Warnings:					
Information:					
18	Non Patent Literature	Z-OA-10-31-11-USApp-12-001001.pdf	826341 790b1fde393eebee9af7995658f5fe5dbd1c24a5	no	22
Warnings:					
Information:					
19	Non Patent Literature	Z-OA-08-19-10-USApp-11-977319.pdf	729440 90b5aa3babfeb6bd6aecc0efd4307dec2743694e	no	18
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Information:					
20	Non Patent Literature	Z-OA-12-03-08-USApp-11-977186.pdf	359491 429cdadeaa6300722321dc10c5e00e54f3c40827	no	12
Warnings:					
Information:					
21	Non Patent Literature	Z-OA-02-16-10-USApp-11-977186.pdf	678531 1615037b950bf703c9201576fe16fb9db01d5667	no	19
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Information:					
22	Non Patent Literature	Z-OA-01-07-10-USApp-12-098670.pdf	346571 2a7cd17370f73424c4d36a36808978220906c454	no	10
Warnings:					
Information:					
23	Non Patent Literature	Z-OA-07-30-10-USApp-11-977229.pdf	315596 25bf1532e335f6d8539306522ff1c741f45dad08	no	8
Warnings:					
Information:					
24	Non Patent Literature	Z-OA-07-09-10-USApp-11-977186.pdf	559255 2d0ec76a43817090bb4154001335d942383d9ee7	no	17
Warnings:					
Information:					
25	Non Patent Literature	Z-OA-06-21-10-USApp-11-977212.pdf	725300 77705052754850aac69a2a10982551d98ea3a78d	no	20
Warnings:					
Information:					
26	Non Patent Literature	Z-OA-09-17-09-USApp-11-977212.pdf	458712 2568e6bd7943c80620422a6f27e7d471c1c54435	no	13

Warnings:					
Information:					
27	Non Patent Literature	Z-OA-09-02-09-USApp-11-977186.pdf	554068 4610c565d8c2a7f2ddd3c3d2fa264d433a866274	no	17
Warnings:					
Information:					
28	Non Patent Literature	Z-WO-02-01-10-PCT-US08-009302.pdf	342821 c6e7a80c4c067eb06f57daa4e6efff356aaf2cb1	no	8
Warnings:					
Information:					
29	Non Patent Literature	Z-WO-02-01-10-PCT-US08-009303.pdf	383943 3992957e4619bded5effe4dd56d4613618169406	no	8
Warnings:					
Information:					
30	Non Patent Literature	Z-ZIEGERT-Device-independent-244.pdf	537037 72f378323fed248c5f9a63561502689efbeb334c	no	12
Warnings:					
Information:					
31	Fee Worksheet (SB06)	fee-info.pdf	29960 12d61086f84b7cc43440f3450d91de0f6b06f9fc	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	18375055	

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.

<u>New Applications Under 35 U.S.C. 111</u>
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.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
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.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
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

Inventor: Pierre CARION, et al.	Group Art Unit: 2646
Serial Number: 11/888,803	Examiner: Kashif Siddiqui
Filing Date: August 1, 2007	**CONFIRMATION NO: 5085**
Title: METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE	

FILED ELECTRONICALLY ON: December 13, 2012

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.97

Sir:

An Information Disclosure Statement along with attached PTO/SB/08 is hereby submitted. A copy of each listed publication is submitted, if required, pursuant to 37 CFR §§1.97-1.98, as indicated below.

The Examiner is requested to review the information provided and to make the information of record in the above-identified application. The Examiner is further requested to initial and return the attached PTO/SB/08 in accordance with MPEP §609.

The right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered, is hereby reserved.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, prior art or material to patentability as defined in §1.56.

A. ☐ *37 CFR §1.97(b).* This Information Disclosure Statement should be considered by the Office because:

☐ (1) It is being filed within 3 months of the filing date of a national application and is other than a continued prosecution application under §1.53(d);

-- OR --

☐ (2) It is being filed within 3 months of entry of the national stage as set forth in §1.491 in an international application;

-- OR --

☐ (3) It is being filed before the mailing of a first Office action on the merits;

-- OR --

☐ (4) It is being filed before the mailing of a first Office action after the filing of a request for continued examination under §1.114.

B. ☒ *37 CFR §1.97(c).* Although this Information Disclosure Statement is being filed after the period specified in *37 CFR §1.97(b),* above, it is filed before the mailing date of the earlier of (1) a final office action under §1.113, (2) a notice of allowance under §1.311, or (3) an action that otherwise closes prosecution on the merits, this Information Disclosure Statement should be considered because it is accompanied by one of:

☐ a statement as specified in §1.97(e) provided concurrently herewith;

-- OR --

☒ a fee of $180.00 as set forth in §1.17(p) authorized below, enclosed, or included with the payment of other papers filed together with this statement.

C. ☐ *37 CFR §1.97(d).* Although this Information Disclosure Statement is being filed after the mailing date of the earlier of (1) a final office action under §1.113 or (2) a notice of allowance under §1.311, it is being filed before payment of the issue fee and should be considered because it is accompanied by:

i. a statement as specified in §1.97(e);

-- AND --

ii. a fee of $180.00 as set forth in §1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this Statement.

D. ☐ *37 CFR §1.97(e).* Statement.

☐ A statement is provided herewith to satisfy the requirement under 37 CFR §§1.97(c);

-- AND/OR --

☐ A statement is provided herewith to satisfy the requirement under 37 CFR §§1.97(d);

-- AND/OR --

☐ A copy of a dated communication from a foreign patent office clearly showing that the information disclosure statement is being submitted within 3 months of the filing date on the communication is provided in lieu of a statement under 37 C.F.R. § 1.97(e)(1) as provided for under MPEP 609.04(b) V.

E. ☐ *Statement Under 37 C.F.R. §1.704(d).* Each item of information contained in the information disclosure statement was first cited in a communication from a foreign patent office in a counterpart application that was received by an individual designated in § 1.56(c) not more than thirty (30) days prior to the filing of this information disclosure statement. This statement is made pursuant to the

requirements of 37 C.F.R. §1.704(d) to avoid reduction of the period of adjustment of the patent term for Applicant(s) delay.

F. ☒ *37 CFR §1.98(a)(2).* The content of the Information Disclosure Statement is as follows:

☐ Copies of each of the references listed on the attached Form PTO/SB/08 are enclosed herewith.

-- OR --

☒ Copies of U.S. Patent Documents (issued patents and patent publications) listed on the attached Form PTO/SB/08 are NOT enclosed.

-- AND/OR --

☒ Copies of Foreign Patent Documents and/or Non Patent Literature Documents listed on the attached Form PTO/SB/08 are enclosed in accordance with 37 CFR §1.98 (a)(2).

-- AND/OR --

☐ Copies of pending unpublished U.S. patent applications are enclosed in accordance with 37 CFR §1.98(a)(2)(iii).

G. ☒ *37 CFR §1.98(a)(3).* The Information Disclosure Statement includes non-English patents and/or references.

☐ Pursuant to 37 CFR §1.98(a)(3)(i), a concise explanation of the relevance of each patent, publication or other information provided that is not in English is provided herewith.

☐ Pursuant to MPEP 609(B), an English language copy of a foreign search report is submitted herewith to satisfy the requirement for a concise explanation where non-English language information is cited in the search report.

-- OR --

☐ A concise explanation of the relevance of each patent, publication or other information provided that is not in English is as follows: _____

☒ Pursuant to 37 CFR §1.98(a)(3)(ii), a copy of a translation, or a portion thereof, of the non-English language reference(s) is provided herewith.

H. ☐ *37 CFR §1.98(d).* Copies of patents, publications and pending U.S. patent applications, or other information specified in 37 C.F.R. § 1.98(a) are not provided herewith because:

☐ Pursuant to 37 CFR §1.98(d)(1) the information was previously submitted in an Information Disclosure Statement, or cited by examiner for another application under which this application claims priority for an earlier effective filing date under 35 U.S.C. 120.

Application in which the information was submitted: _____

Information Disclosure Statement(s) filed on: _____

AND

☐ The information disclosure statement submitted in the earlier application complied with paragraphs (a) through (c) of 37 CFR §1.98.

I. ☒ *Fee Authorization*. The Commissioner is hereby authorized to charge the above-referenced fees of $180.00 and charge any additional fees or credit any overpayment associated with this communication to Deposit Account No. 23-2415 (Docket No. 38285-705.201).

Respectfully submitted,

WILSON SONSINI GOODRICH & ROSATI

Dated: December 13, 2012

By: /Darby J. Chan/
Darby J. Chan
Reg. No. 62,407

650 Page Mill Road
Palo Alto, CA 94304-1050
(650) 493-9300
Customer No. 021971

PATENT
Attorney Docket No. 38285-705.201

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 11/888,803	Confirmation No.: **5085**
First Named Inventor: Pierre Carion	Examiner: Kashif Siddiqui
Filed: August 1, 2007	Group Art Unit: 2617
Title: METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE	Customer No.: **21971**

FILED ELECTRONICALLY ON: DECEMBER 12, 2012

AMENDMENT/RESPONSE TO NON-FINAL OFFICE ACTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

In response to Examiner's Non-Final Office Action mailed June 14, 2012, Applicant respectfully requests reconsideration of the above-referenced application in view of the following amendments and remarks. This submission is accompanied by a three-month extension fee, extending the time for response to December 14, 2012.

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims begin on page 3 of this paper.

Remarks begin on page 10.

Amendments to the Specification

Please replace lines 1 and 2 in page 41 with the following:

Accordingly, a collection of basic commands 410, 430, 440, and 490 forms a single unified page to be rendered by the wireless device.

Amendments to the Claims

The following listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method of rendering content on a wireless device, said method comprising:

receiving an identification of a custom configuration of a plurality of rendering blocks of said wireless device, wherein said custom configuration is associated with an application and configures said plurality of rendering blocks to render content in a manner customized to said application;

receiving compiled content generated in part from execution of said application wherein said compiled content comprises render commands expressed in a syntax that is generic to said wireless device;

using a graphical user interface comprising said plurality of rendering blocks to generate renderable content based on said compiled content and said custom configuration; and

rendering said renderable content on said wireless device,

wherein said receiving compiled content comprises:

receiving first compiled content specific to a first page of said application; and

receiving second compiled content specific to a second page of said application, wherein said custom configuration is applicable to both said first and second compiled content.

2. (Original) A method as described in Claim 1 wherein said using a graphical user interface comprising said plurality of rendering blocks to generate renderable content comprises:

processing said compiled content using a reader of said wireless device; and

issuing commands from said reader to individual rendering blocks of said graphical user interface based on said rendering commands of said compiled content.

3. (Original) A method as described in Claim 1 wherein said renderable content comprises audio content and display content.

4. (Original) A method as described in Claim 1 wherein said compiled content is partially resultant from said application operating on a remote server.

5. (Original) A method as described in Claim 1 wherein said compiled content is specific to the rendering capabilities of said wireless device.

6. (Original) A method as described in Claim 1 wherein each of said plurality of rendering blocks operates specific to a wireless device type of said wireless device and each is instructed using a syntax that is generic to said wireless device type.

7. (Original) A method as described in Claim 6 wherein said custom configuration comprises a syntax that is generic regarding said wireless device type.

8. (Original) A method as described in Claim 1 wherein said custom configuration comprises configuration information and content specific to said application.

9. (Cancelled)

10. (Original) A method as described in Claim 1 wherein said custom configuration is one of a plurality of memory-stored custom configurations stored by said wireless device and wherein further said identifying said custom configuration comprises receiving an identifier that identifies said custom configuration.

11. (Original) A method as described in Claim 1 further comprising receiving and storing said custom configuration.

12. (Original) A method as described in Claim 1 wherein said plurality of rendering blocks of said graphical user interface comprises:

a first block that controls the rendering of ticker information across a display screen of said wireless device;

a second block that controls the rendering of button images on said display screen; and

a third block that controls the rendering of audio on a speaker of said wireless device.

13. (Currently Amended) A non-transitory computer usable medium ~~computer readable media~~ comprising instructions therein that when executed by a processor implement a method of rendering content on a wireless device, said method comprising:

receiving an identification of a custom configuration of a plurality of rendering blocks of said wireless device, wherein said custom configuration is associated with an application and configures said plurality of rendering blocks to render content in a manner customized to said application;

receiving compiled content generated in part from execution of said application wherein said compiled content comprises render commands expressed in a syntax that is generic to said wireless device;

using a graphical user interface comprising said plurality of rendering blocks to generate renderable content based on said compiled content and said custom configuration; and

rendering said renderable content on said wireless device, wherein said receiving compiled content comprises:

receiving first compiled content specific to a first page of said application; and

receiving second compiled content specific to a second page of said application, wherein said custom configuration is applicable to both said first and second compiled content.

14. (Currently Amended) A non-transitory computer usable medium ~~computer readable media~~ as described in Claim 13 wherein said using a graphical user interface comprising said plurality of rendering blocks to generate renderable content comprises:

processing said compiled content using a reader of said wireless device;

and

issuing commands from said reader to individual rendering blocks of said graphical user interface based on said rendering commands of said compiled content.

15. (Currently Amended) A non-transitory computer usable medium ~~computer readable media~~ as described in Claim 13 wherein said renderable content comprises audio content and display content.

16. (Currently Amended) A non-transitory computer usable medium ~~computer readable media~~ as described in Claim 13 wherein said compiled content is partially resultant from said application operating on a remote server.

17. (Currently Amended) A non-transitory computer usable medium ~~computer readable media~~ as described in Claim 13 wherein said compiled content is specific to the rendering capabilities of said wireless device.

18. (Currently Amended) A non-transitory computer usable medium ~~computer readable media~~ as described in Claim 13 wherein each of said plurality of rendering blocks operates specific to a wireless device type of said wireless device and each is instructed using a syntax that is generic to said wireless device type.

19. (Currently Amended) A non-transitory computer usable medium ~~computer readable media~~ as described in Claim 18 wherein said custom configuration comprises a syntax that is generic regarding said wireless device type.

20. (Currently Amended) A non-transitory computer usable medium ~~computer readable media~~ as described in Claim 13 wherein said custom configuration comprises configuration information and content specific to said application.

21. (Cancelled)

22. (Currently Amended) A non-transitory computer usable medium ~~computer readable media~~ as described in Claim 13 wherein said custom configuration is one of a plurality of memory-stored custom configurations stored by said wireless device and wherein further said identifying said custom configuration comprises receiving an identifier that identifies said custom configuration.

23. (Currently Amended) A non-transitory computer usable medium ~~computer readable media~~ as described in Claim 13 wherein said method further comprises receiving and storing said custom configuration.

24. (Currently Amended) A non-transitory computer usable medium ~~computer readable media~~ as described in Claim 13 wherein said plurality of rendering blocks of said graphical user interface comprises:

a first block that controls the rendering of ticker information across a display screen of said wireless device;

a second block that controls the rendering of button images on said display screen; and

a third block that controls the rendering of audio on a speaker of said wireless device.

25. (Currently Amended) A wireless device operable to communicate with a remote server, said wireless device comprising:

a transceiver coupled to a [[said]] bus and operable to receive a custom configuration that is associated with an application, said transceiver also operable to receive compiled content generated in part from execution of said application and comprising a plurality of rendering commands expressed in a syntax that is generic to said wireless device;

a memory coupled to said bus and operable to store said compiled content and said custom configuration;

a processor coupled to said bus and operable to implement the following:

a graphical user interface comprising a plurality of rendering blocks and operable to generate renderable content based on said compiled content and said custom configuration wherein said custom configuration is operable to configure said plurality of rendering blocks to render content in a manner customized to said application; and

an engine for reading said compiled content and responsive thereto for causing said graphical user interface to generate said renderable content based on said render commands; and

a display device coupled to said bus and operable to render a portion of said renderable content, wherein said compiled content comprises:

a first compiled content specific to a first page of said application; and

a second compiled content specific to a second page of said application, wherein said custom configuration is applicable to both said first and second compiled content.

26. (Original) The wireless device as described in Claim 25 wherein said engine is further operable to issue commands to individual rendering blocks of said graphical user interface based on said plurality of rendering commands of said compiled content.

27. (Original) The wireless device as described in Claim 25 further comprising an audio rendering device coupled to said bus and wherein said renderable content comprises audio content and display content.

28. (Original) The wireless device as described in Claim 25 wherein said compiled content is partially resultant from said application operating on a remote server.

29. (Original) The wireless device as described in Claim 25 wherein said compiled content is specific to the rendering capabilities of said wireless device.

30. (Original) The wireless device as described in Claim 25 wherein each of said plurality of rendering blocks operates specific to a wireless device type of said wireless device and each is instructed using a syntax that is generic to said wireless device type.

31. (Original) The wireless device as described in Claim 30 wherein said custom configuration is expressed in a syntax that is generic to said wireless device type.

32. (Original) The wireless device as described in Claim 25 wherein said custom configuration comprises configuration information and content specific to said application.

33. (Cancelled)

34. (Original) The wireless device as described in Claim 25 wherein said custom configuration is one of a plurality of memory-stored custom configurations stored in said memory.

35. (Original) The wireless device as described in Claim 25 wherein said plurality of rendering blocks of said graphical user interface comprises:

a first block that controls the rendering of ticker information across said display screen of said wireless device;

a second block that controls the rendering of button images on said display screen; and

a third block that controls the rendering of audio on a speaker of said wireless device.

36. (Original) The wireless device as described in Claim 25 wherein said plurality of rendering blocks of said graphical user interface comprises:

a first block that controls the rendering of a scroll bar on said display screen of said wireless device;

a second block that controls the rendering of an input box on said display screen of said wireless device; and

a third block that control the rendering of a text display region on said display screen of said wireless device.

SUMMARY OF CLAIMS

Claims 1, 13-20, and 22-25 are herein amended. Claims 9, 21, and 33 are herein canceled. Claims 1-8, 10-20, 22-32, and 34-36 are currently pending.

REMARKS

The following remarks are in response to the Examiner's Final Office Action mailed on June 14, 2012. Reconsideration and allowance of this application are respectfully requested in light of the following remarks.

Objections to Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include reference character 440 not mentioned in the specification. As noted above, the specification has been amended to include reference character 440. Accordingly, withdrawal of the objection to the drawings is respectfully requested.

Claim Rejections under 35 U.S.C. § 112

Claims 25-36 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As noted above, claim 25, from which claims 26-36 either directly or indirectly depend, are now amended as suggested by the Examiner to overcome the indefiniteness rejections.

Claim Rejections under 35 U.S.C. § 101

Claims 13-24 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. As noted above, claims 13-20 and 22-24 are now amended as suggested by the Examiner to overcome the 101 rejections. Claim 21 is now cancelled. In particular, the term "computer readable media" has been amended to be "non-transitory computer usable medium."

Allowable Subject Matter

Claims 9, 21 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants thank the Examiner for finding the subject matter allowable.

Independent claim 1 has been amended to incorporate all of the limitations of claim 9. Independent claim 21 has been amended to incorporate all of the limitations of claim 21. Independent claim 33 has been amended to incorporate all of the limitations of claim 33. Claims 9, 21, and 33 are now cancelled. Accordingly, claims 1, 9, and 33 are allowable, as are the remaining claims in the application which each depend directly or indirectly from one of those three independent claims.

Claim Rejections under 35 U.S.C. § 102

Claims 1-8, 10-20, 22-32, 34, and 35 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Pub. No. 2008/0134018 A1 to Kembel; John Albert et al. ("Kembel"). As discussed above, independent claims 1, 9, and 33 have been amended to place all pending claims in condition for allowance. Accordingly, the anticipation rejection over Kembel is moot. Withdrawal of the 102 rejections is respectfully requested.

Claim Rejections under 35 U.S.C. § 103

Claim 36 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kembel as applied to claim 25 above, and further in view of U.S. Patent No. 5,430,836A to Wolf; Julie M. et al. ("Wolf"). As discussed above, independent claims 1, 9, and 33 have been amended to place all pending claims in condition for allowance. Accordingly, the obviousness rejection over Kembel and Wolf is moot. Withdrawal of the 103 rejections is respectfully requested.

CONCLUSION

Applicant submits that this paper fully addresses the Office Action mailed on June 14, 2012. Should the Examiner have any question, the Examiner is encouraged to contact the undersigned.

The Commissioner is authorized to charge any additional fees which may be required, including petition fees and extension of time fees, to Deposit Account No. 23-2415 (Docket No. 38285-705.201).

Respectfully submitted,

Date: December 12, 2012

By: /Darby J. Chan/
Darby J. Chan, Reg. No. 62,407

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Electronic Patent Application Fee Transmittal

Application Number:	11888803
Filing Date:	01-Aug-2007
Title of Invention:	Method and system for rendering content on a wireless device
First Named Inventor/Applicant Name:	Pierre Carion
Filer:	Darby Jing-Da Chan/Lydia Vosburgh (DJC/lcv)
Attorney Docket Number:	38285-705.201

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

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:				
Extension-of-Time:				
Extension - 3 months with $0 paid	1253	1	1290	1290

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**1290**

Electronic Acknowledgement Receipt

EFS ID:	14454586
Application Number:	11888803
International Application Number:	
Confirmation Number:	5085
Title of Invention:	Method and system for rendering content on a wireless device
First Named Inventor/Applicant Name:	Pierre Carion
Customer Number:	21971
Filer:	Darby Jing-Da Chan/Lydia Vosburgh (DJC/lcv)
Filer Authorized By:	Darby Jing-Da Chan
Attorney Docket Number:	38285-705.201
Receipt Date:	12-DEC-2012
Filing Date:	01-AUG-2007
Time Stamp:	21:07:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1290
RAM confirmation Number	9203
Deposit Account	232415
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		38285-705-201-Response-12-12-12.pdf	457692 e4949471b4abe257b2587f9b19022ccc5cfdf660	yes	12

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Specification	2	2
	Claims	3	9
	Applicant Arguments/Remarks Made in an Amendment	10	12

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30225 38307010698ee6cdbcaad5ed89581e6309ce0ea5	no	2

Warnings:

Information:

Total Files Size (in bytes):	487917

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.

<u>New Applications Under 35 U.S.C. 111</u>
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.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
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.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
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 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
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.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
11/888,803	08/01/2007	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☐ RATE ($)	SMALL ENTITY FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			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 $250 ($125 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			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 12/12/2012	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 33	Minus	** 36	= 0	X $ =		OR	X $62=	0
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $ =		OR	X $250=	0
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

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

Legal Instrument Examiner:
/Tina J. Barden/

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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/888,803	08/01/2007	Pierre Carion	38285-705.201	5085

21971 7590 06/14/2012
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

EXAMINER
SIDDIQUI, KASHIF

ART UNIT	PAPER NUMBER
2617	

MAIL DATE	DELIVERY MODE
06/14/2012	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.

Office Action Summary	Application No.	Applicant(s)	
	11/888,803	CARION ET AL.	
	Examiner	Art Unit	
	KASHIF SIDDIQUI	2617	

-- 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 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, 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 *04 October 2011*.

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) *1-36* 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) *1-8 and 10-36* is/are rejected.

8)☒ Claim(s) *9* is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☒ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *01 August 2007* 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).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

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) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement(s) (IDS) submitted on 8/27/2007 (2) and 6/2/2009 is/are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement(s) is/are being considered by the examiner.

Oath/Declaration

2. The oath or declaration is in compliance with 37 CFR 1.67(a) and is thus being considered by the Examiner.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 440. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 25-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 recites the limitation "said bus" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim. For the purposes of examination, the Examiner shall interpret “said bus” as “a bus” as appropriate. Claims 26-36 are rejected under this heading due to their dependency upon claim 25.

Claim Rejections - 35 USC § 101

6. 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.

7. Claims 13-24 is/are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim(s) is/are NOT directed to a process, machine, manufacture or composition of matter. The claimed “computer readable media” is/are defined in Applicant’s specification (114-115) where a computer

program product may be "any medium that participates in providing instructions to processor 360 for execution" and "may take many forms ... transmission media." Therefore, a reasonable interpretation in light of the specification leads to the conclusion that the claim encompasses transitory signals, which does not fall within the definition of a process, machine, manufacture or composition of matter. Examiner suggests amending the claims to recite "A non-transitory computer program product" or "a non-transitory computer usable medium/program code" where appropriate. See Official Gazette Notice 1351 OG 212 (February 23, 2010).

Allowable Subject Matter

8. Claims 9, 21, and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. This objection is contingent upon correction of any matters pertaining to 35 USC § 101 and § 112 as indicated in the headings above.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claim(s) 1-8, 10-20, 22-32, 34, and 35 is/are rejected under 35 U.S.C. 102(e) as being anticipated by US 20080134018 A1 to Kembel; John Albert et al.**

Re: Claim(s) 1

Kembel discloses a method of rendering content on a wireless device (Fig. 1; 0019, 0044, 0045; method of displaying (i.e. rendering) content on a client computer is disclosed. The network communicates with the client computer via a wireless transmission channel (therefore client computer is a wireless device)),

said method comprising: receiving an identification of a custom configuration of a plurality of rendering blocks of said wireless device (0044, 0056-0058, 0124, 0130-0131, 0220; Application media package (aka dot) is used by an application media viewer to render content. The dot represents browser readable language that is parsed and defines the appearance of the dot, its functionality, and what content it may present. A dot can be identified by a Global ID (GlobaliD). The Dot may be indexed and stored on a web server can be served (therefore transmitted) to the client computer. A plurality of dots can be grouped and saved together and thus served together (therefore a custom configuration of a plurality of rendering blocks)),

wherein said custom configuration is associated with an application and configures said plurality of rendering blocks to render content in a manner customized to said application (0019, 0020, 0056; an application media viewer (an application) parses and executes the application media package (therefore the

package/configuration is associated with the viewer/application). Further, the application media package represents a client side mini application which is capable of controlling the presentation of content and the application behavior and are constructed to represent specific data for a specific application (therefore application specific));

receiving compiled content generated in part from execution of said application (0019; 0054; 0056; the execution of the application media package by the application media viewer causes the application media package to be able to present Internet content (therefore, the Internet content is received/generated from the execution),

wherein said compiled content comprises render commands expressed in a syntax that is generic to said wireless device (0056-0057, 0078; the dot comprises browser readable language which defines the appearance and presentation of content. The language can be in XML, dHTML, etc. (e.g. syntax generic to the device since these are cross-platform languages));

using a graphical user interface comprising said plurality of rendering blocks to generate renderable content based on said compiled content and said custom configuration; and rendering said renderable content on said wireless device (0020; the application media packages have a definable format which is the graphical user interface as presented on the client computer).

Re: Claim(s) 2

Kembel discloses wherein said using a graphical user interface comprising said plurality of rendering blocks to generate renderable content comprises: processing said

compiled content using a reader of said wireless device; and issuing commands from said reader to individual rendering blocks of said graphical user interface based on said rendering commands of said compiled content (0019, 0056-0057; Application media viewer parses and executes application media package(s) to create the user experience. The dot comprises browser readable language which defines the appearance and presentation of content (therefore commands)).

Re: Claim(s) 3

Kembel discloses wherein said renderable content comprises audio content and display content (0172; the content can be text, images, and audio).

Re: Claim(s) 4

Kembel discloses wherein said compiled content is partially resultant from said application operating on a remote server (0054, 0058, 0060; the content for the dot may be stored on a remote server. The dot developer may host content for the dot. Per the context of the reference, the dot is purely content and replaces a web application (see 0058). Therefore, the content being hosted and served by the dot developer is analogous to an application operating remotely).

Re: Claim(s) 5

Kembel discloses wherein said compiled content is specific to the rendering capabilities of said wireless device (0023; inherent. The application media view is

installed on the client computer and is necessary to parse and execute the application media package. If the client computer was not capable of utilizing the viewer/package, then the content would never be executed (i.e. the software must be compatible with the device upon which it is installed in order to function - therefore specific to the capabilities of the device)).

Re: Claim(s) 6

Kembel discloses wherein each of said plurality of rendering blocks operates specific to a wireless device type of said wireless device and each is instructed using a syntax that is generic to said wireless device type (0078, 0212-0213, the dots can be served to mobile devices since they are broken up into smaller more focuses software components (i.e. specific to device type). Generic browser readable language such as XML is still being used).

Re: Claim(s) 7

Kembel discloses wherein said custom configuration comprises a syntax that is generic regarding said wireless device type (0078, 0212-0213, the dots can be served to mobile devices since they are broken up into smaller more focuses software components (i.e. specific to device type). Generic browser readable language such as XML is still being used).

Re: Claim(s) 8

Kembel discloses wherein said custom configuration comprises configuration information and content specific to said application (0019-0020; the application media package is constructed to represent specific data for a specific application).

Re: Claim(s) 10

Kembel discloses wherein said custom configuration is one of a plurality of memory-stored custom configurations stored by said wireless device and wherein further said identifying said custom configuration comprises receiving an identifier that identifies said custom configuration (Fig. 1, 0046-0049, 0124; client computer 20 comprises random access memory 30 which includes the Application media packages 104-1 to 104-n. A dot can be identified by a Global ID (GlobaliD)).

Re: Claim(s) 11

Kembel discloses receiving and storing said custom configuration (Fig. 8, 0019-0020; the dot is requested by a client and the server transmits the dot to the client (steps 241-244). Since the application media viewer is executing the dot, it would be necessary to store said dot).

Re: Claim(s) 12

Kembel discloses wherein said plurality of rendering blocks of said graphical user interface comprises: a first block that controls the rendering of ticker information

across a display screen of said wireless device (0053; the application media package (dot) can represent a scrolling stock ticker);

a second block that controls the rendering of button images on said display screen (0103; the dot can define the layout of control interfaces such as buttons);

and a third block that controls the rendering of audio on a speaker of said wireless device (0172 and reference claim 4; the content can be audio and the presentation of said audio can be controlled by the dot. A speaker would be inherent to the device; otherwise the audio could not be presented).

Re: Claim(s) 13

Kembel discloses a computer readable media comprising instructions therein that when executed by a processor implement a method of rendering content on a wireless device (Fig. 1; 0019, 0044, 0045, 0465; method can be implemented on computer readable media. method of displaying (i.e. rendering) content on a client computer is disclosed. The network communicates with the client computer via a wireless transmission channel (therefore client computer is a wireless device)),

said method comprising: receiving an identification of a custom configuration of a plurality of rendering blocks of said wireless device (0044, 0056-0058, 0124, 0130-0131, 0220; Application media package (aka dot) is used by an application media viewer to render content. The dot represents browser readable language that is parsed and defines the appearance of the dot, its functionality, and what content it may present. A dot can be identified by a Global ID (GlobaliD). The Dot may be indexed and stored

on a web server can be served (therefore transmitted) to the client computer. A plurality of dots can be grouped and saved together and thus served together (therefore a custom configuration of a plurality of rendering blocks)),

wherein said custom configuration is associated with an application and configures said plurality of rendering blocks to render content in a manner customized to said application (0019, 0020, 0056; an application media viewer (an application) parses and executes the application media package (therefore the package/configuration is associated with the viewer/application). Further, the application media package represents a client side mini application which is capable of controlling the presentation of content and the application behavior and are constructed to represent specific data for a specific application (therefore application specific));

receiving compiled content generated in part from execution of said application (0019; 0054; 0056; the execution of the application media package by the application media viewer causes the application media package to be able to present Internet content (therefore, the Internet content is received/generated from the execution),

wherein said compiled content comprises render commands expressed in a syntax that is generic to said wireless device (0056-0057, 0078; the dot comprises browser readable language which defines the appearance and presentation of content. The language can be in XML, dHTML, etc. (e.g. syntax generic to the device since these are cross-platform languages));

using a graphical user interface comprising said plurality of rendering blocks to generate renderable content based on said compiled content and said custom

configuration; and rendering said renderable content on said wireless device (0020; the application media packages have a definable format which is the graphical user interface as presented on the client computer).

Re: Claim(s) 14

Kembel discloses wherein said using a graphical user interface comprising said plurality of rendering blocks to generate renderable content comprises: processing said compiled content using a reader of said wireless device; and issuing commands from said reader to individual rendering blocks of said graphical user interface based on said rendering commands of said compiled content (0019, 0056-0057; Application media viewer parses and executes application media package(s) to create the user experience. The dot comprises browser readable language which defines the appearance and presentation of content (therefore commands)).

Re: Claim(s) 15

Kembel discloses wherein said renderable content comprises audio content and display content (0172; the content can be text, images, and audio).

Re: Claim(s) 16

Kembel discloses wherein said compiled content is partially resultant from said application operating on a remote server (0054, 0058, 0060; the content for the dot may be stored on a remote server. The dot developer may host content for the dot. Per the

context of the reference, the dot is purely content and replaces a web application (see 0058). Therefore, the content being hosted and served by the dot developer is analogous to an application operating remotely).

Re: Claim(s) 17

Kembel discloses wherein said compiled content is specific to the rendering capabilities of said wireless device (0023; inherent. The application media view is installed on the client computer and is necessary to parse and execute the application media package. If the client computer was not capable of utilizing the viewer/package, then the content would never be executed (i.e. the software must be compatible with the device upon which it is installed in order to function - therefore specific to the capabilities of the device)).

Re: Claim(s) 18

Kembel discloses wherein each of said plurality of rendering blocks operates specific to a wireless device type of said wireless device and each is instructed using a syntax that is generic to said wireless device type (0078, 0212-0213, the dots can be served to mobile devices since they are broken up into smaller more focuses software components (i.e. specific to device type). Generic browser readable language such as XML is still being used).

Re: Claim(s) 19

Kembel discloses wherein said custom configuration comprises a syntax that is generic regarding said wireless device type (0078, 0212-0213, the dots can be served to mobile devices since they are broken up into smaller more focuses software components (i.e. specific to device type). Generic browser readable language such as XML is still being used).

Re: Claim(s) 20

Kembel discloses wherein said custom configuration comprises configuration information and content specific to said application (0019-0020; the application media package is constructed to represent specific data for a specific application).

Re: Claim(s) 22

Kembel discloses wherein said custom configuration is one of a plurality of memory-stored custom configurations stored by said wireless device and wherein further said identifying said custom configuration comprises receiving an identifier that identifies said custom configuration (Fig. 1, 0046-0049, 0124; client computer 20 comprises random access memory 30 which includes the Application media packages 104-1 to 104-n. A dot can be identified by a Global ID (GlobaliD)).

Re: Claim(s) 23

Kembel discloses wherein said method further comprises receiving and storing said custom configuration (Fig. 8, 0019-0020; the dot is requested by a client and the

server transmits the dot to the client (steps 241-244). Since the application media viewer is executing the dot, it would be necessary to store said dot).

Re: Claim(s) 24

Kembel discloses wherein said plurality of rendering blocks of said graphical user interface comprises: a first block that controls the rendering of ticker information across a display screen of said wireless device (0053; the application media package (dot) can represent a scrolling stock ticker);

a second block that controls the rendering of button images on said display screen (0103; the dot can define the layout of control interfaces such as buttons);

and a third block that controls the rendering of audio on a speaker of said wireless device (0172 and reference claim 4; the content can be audio and the presentation of said audio can be controlled by the dot. A speaker would be inherent to the device; otherwise the audio could not be presented).

Re: Claim(s) 25

Kembel discloses a wireless device operable to communicate with a remote server (Fig. 1 and 8; 0019, 0044, 0045; method of displaying (i.e. rendering) content on a client computer is disclosed. The network communicates with the client computer via a wireless transmission channel (therefore client computer is a wireless device). Communication is between a client and a server),

said wireless device comprising: a transceiver coupled to said bus and operable to receive a custom configuration that is associated with an application (0045, 0048, the server and the client are connected via a wireless transmission channel. Therefore a transmitter/receiver or transceiver is inherent. The client computer 20 comprises internal buses for interconnecting elements),

said transceiver also operable to receive compiled content generated in part from execution of said application (0019; 0054; 0056; the execution of the application media package by the application media viewer causes the application media package to be able to present Internet content (therefore, the Internet content is received/generated from the execution),

and comprising a plurality of rendering commands expressed in a syntax that is generic to said wireless device (0056-0057, 0078; the dot comprises browser readable language which defines the appearance and presentation of content. The language can be in XML, dHTML, etc. (e.g. syntax generic to the device since these are cross-platform languages));

a memory coupled to said bus and operable to store said compiled content and said custom configuration (Fig. 1 and 8, 0019-0020, 0046, 0048; the dot is requested by a client and the server transmits the dot to the client (steps 241-244). Since the application media viewer is executing the dot, it would be necessary to store said dot. Further, client computer 20 comprises random access memory 30 which includes the Application media packages. The client computer 20 comprises internal buses for interconnecting elements);

a processor coupled to said bus (Fig. 1, 0046, 0048; client computer 20 comprises a CPU. The client computer 20 comprises internal buses for interconnecting elements),

and operable to implement the following: a graphical user interface comprising a plurality of rendering blocks and operable to generate renderable content based on said compiled content and said custom configuration (0020; the application media packages have a definable format which is the graphical user interface as presented on the client computer);

wherein said custom configuration is operable to configure said plurality of rendering blocks to render content in a manner customized to said application (0019, 0020, 0056; an application media viewer (an application) parses and executes the application media package (therefore the package/configuration is associated with the viewer/application). Further, the application media package represents a client side mini application which is capable of controlling the presentation of content and the application behavior and are constructed to represent specific data for a specific application (therefore application specific));

and an engine for reading said compiled content and responsive thereto for causing said graphical user interface to generate said renderable content based on said render commands (0056-0057, 0078; the dot comprises browser readable language which defines the appearance and presentation of content. The language can be in XML, dHTML, etc. (e.g. syntax generic to the device since these are cross-platform languages). The application media viewer parses and executes the dot(s));

and a display device coupled to said bus and operable to render a portion of said renderable content (Fig. 1, 0020, 0046-0048; the application media packages have a definable format which is the graphical user interface as presented on the client computer. Client computer 20 comprises output means that can be a display. The client computer 20 comprises internal buses for interconnecting elements).

Re: Claim(s) 26

Kembel discloses wherein said engine is further operable to issue commands to individual rendering blocks of said graphical user interface based on said plurality of rendering commands of said compiled content (0019, 0056-0057; Application media viewer parses and executes application media package(s) to create the user experience. The dot comprises browser readable language which defines the appearance and presentation of content (therefore commands)).

Re: Claim(s) 27

Kembel discloses an audio rendering device coupled to said bus and wherein said renderable content comprises audio content and display content (0172; the content can be text, images, and audio).

Re: Claim(s) 28

Kembel discloses wherein said compiled content is partially resultant from said application operating on a remote server (0054, 0058, 0060; the content for the dot may

be stored on a remote server. The dot developer may host content for the dot. Per the context of the reference, the dot is purely content and replaces a web application (see 0058). Therefore, the content being hosted and served by the dot developer is analogous to an application operating remotely).

Re: Claim(s) 29

Kembel discloses wherein said compiled content is specific to the rendering capabilities of said wireless device (0023; inherent. The application media view is installed on the client computer and is necessary to parse and execute the application media package. If the client computer was not capable of utilizing the viewer/package, then the content would never be executed (i.e. the software must be compatible with the device upon which it is installed in order to function - therefore specific to the capabilities of the device)).

Re: Claim(s) 30

Kembel discloses wherein each of said plurality of rendering blocks operates specific to a wireless device type of said wireless device and each is instructed using a syntax that is generic to said wireless device type (0078, 0212-0213, the dots can be served to mobile devices since they are broken up into smaller more focuses software components (i.e. specific to device type). Generic browser readable language such as XML is still being used).

Re: Claim(s) 31

Kembel discloses wherein said custom configuration is expressed in a syntax that is generic to said wireless device type (0078, 0212-0213, the dots can be served to mobile devices since they are broken up into smaller more focuses software components (i.e. specific to device type). Generic browser readable language such as XML is still being used).

Re: Claim(s) 32

Kembel discloses wherein said custom configuration comprises configuration information and content specific to said application (0019-0020; the application media package is constructed to represent specific data for a specific application).

Re: Claim(s) 34

Kembel discloses wherein said custom configuration is one of a plurality of memory-stored custom configurations stored in said memory (Fig. 1, 0046-0049, 0124; client computer 20 comprises random access memory 30 which includes the Application media packages 104-1 to 104-n. A dot can be identified by a Global ID (GlobaliD)).

Re: Claim(s) 35

Kembel discloses wherein said plurality of rendering blocks of said graphical user interface comprises: a first block that controls the rendering of ticker information

across said display screen of said wireless device (0053; the application media package (dot) can represent a scrolling stock ticker);

a second block that controls the rendering of button images on said display screen (0103; the dot can define the layout of control interfaces such as buttons);

and a third block that controls the rendering of audio on a speaker of said wireless device (0172 and reference claim 4; the content can be audio and the presentation of said audio can be controlled by the dot. A speaker would be inherent to the device; otherwise the audio could not be presented).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 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.

8. **Claim(s) 36 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Kembel as applied to claim 25 above, and further in view of US 5430836 A to Wolf; Julie M. et al.**

Re: Claim(s) 36

Kembel discloses those limitations as set forth in the rejection of claim 25 above.

Further, **Kembel** discloses wherein said plurality of rendering blocks of said graphical user interface comprises: a third block that control the rendering of a text display region on said display screen of said wireless device (Fig. 5, 0103; a dot can comprise a visual indicator of likelihood of rain expressed as a percentage (i.e. text display)).

Kembel does/do not appear to explicitly disclose wherein said plurality of rendering blocks of said graphical user interface comprises: a first block that controls the rendering of a scroll bar on said display screen of said wireless device; a second block that controls the rendering of an input box on said display screen of said wireless device.

However, attention is directed to **Wolf** which discloses wherein said plurality of rendering blocks of said graphical user interface comprises: a first block that controls the rendering of a scroll bar on said display screen of said wireless device; a second block that controls the rendering of an input box on said display screen of said wireless device (Fig. 4, col. 3 ll. 15-30, col. 5 ll. 28-47; disclosed is a method of using a common user access interface in a computer system. A control module (i.e. a block) is linked to an application and includes functional elements related to the application. The GUI components (i.e. the elements) can be editfields (i.e. input box) and scroll bars).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the **Kembel** invention by employing the teaching as taught by **Wolf** to provide the ability to include blocks suitable for rendering a scroll bar and an input box. Doing so would merely involve applying a known, related method

to another known related method to achieve predictable results; namely that the application media package could also comprise browser readable language for configuring a scroll bar and an input box. The motivation for the combination is given by **Wolf** (col. 1 ll. 18-22, where the invention aims to provide a common user access (CUA) interface with a computer operating environment throughout multiple applications utilizing dynamically linked, shared code).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KASHIF SIDDIQUI whose telephone number is (571)270-3188. The examiner can normally be reached on Monday through Thursday 6:30-16:30 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamran Afshar can be reached on (571)272-7796. 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.

/KASHIF SIDDIQUI/
Examiner, Art Unit 2617

Notice of References Cited	Application/Control No. 11/888,803	Applicant(s)/Patent Under Reexamination CARION ET AL.	
	Examiner KASHIF SIDDIQUI	Art Unit 2617	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,430,836 A	07-1995	Wolf et al.	715/744
*	B	US-2003/0151621 A1	08-2003	McEvilly et al.	345/744
*	C	US-2008/0134018 A1	06-2008	Kembel et al.	715/234
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	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.

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BIB DATA SHEET

CONFIRMATION NO. 5085

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/888,803	08/01/2007 **RULE**	370	2617	38285-705.201

APPLICANTS

Pierre Carion, La Jolla, CA;
Kevin Smith, San Diego, CA;

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

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

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

08/15/2007

Foreign Priority claimed	☐ Yes ☑ No		STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Yes ☑ No	☐ Met after Allowance				
Verified and Acknowledged	/KASHIF SIDDIQUI/ Examiner's Signature	Initials	CA	9	36	3

ADDRESS

WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050
UNITED STATES

TITLE

Method and system for rendering content on a wireless device

FILING FEE RECEIVED		
1800	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

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11888803	CARION ET AL.
	Examiner	**Art Unit**
	KASHIF SIDDIQUI	2617

✓	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	06/11/2012								
	1	✓								
	2	✓								
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	36	✓								

OIPE IAP6 AUG 27 2007 PATENT & TRADEMARK OFFICE

Attorney Docket No.: HOMI-P003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Inventor(s): Carion, et al. Group Art Unit: Not yet assigned.

Filed: 08/01/2007 Examiner: Not yet assigned.

Application No.: 11/888,803

Title: A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

Form 1449

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A	6,884,172	04/26/2005	Lloyd, et al.	463	42	10/25/2001
	B						
	C						
	D						
	E						
	F						
	G						
	H						
	I						
	J						
	K						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation Yes	Translation No
	L							
	M							
	N							
	O							
	P							
	Q							

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	R	
	S	
	T	

Examiner	Date Considered
/Kashif Siddiqui/	06/07/2012

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.S./

Receipt date: 08/27/2007

11888803 - GAU: 2617

Attorney Docket No.: HOMI-P003

OIPE AUG 27 2007 PATENT & TRADEMARK OFFICE

I hereby certify that this transmittal of the below described document is being deposited with the United States Postal Service in an envelope bearing First Class Postage and addressed to the Commissioner of Patents and Trademarks, P.O. Box 1450, Alexandria, VA 22313-1450, on the below date of deposit.					
Date of Deposit:	8/22/07	Name of Person Making the Deposit:	Mina Oliveri	Signature of the Person Making the Deposit:	Mina Oliveri

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Carion, et al.	Confirmation No.:	Not yet assigned.
Serial No.:	11/888,803	Art Unit:	Not yet assigned.
Filed:	8/01/07	Examiner:	Not yet assigned.
For:	A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE		

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure provisions of 37 C.F.R. §1.56, there is hereby provided certain information which the Examiner may consider material to the examination of the subject U.S. patent application. It is requested that the Examiner make this information of record if it is deemed material to the examination of the application.

1. ☒ Enclosures accompanying this Information Disclosure Statement are:

1a. ☒ A list of all patents, publications, applications, or other information submitted for consideration by the office.

1b. ☐ A legible copy of :

☐ Each foreign patent;

☐ Each publication or that portion which caused it to be listed on the PTO-1449;

☐ For each cited pending U.S. application, the application specification including the claims, and any drawing of the application, or portion of the application which caused it to be listed on the PTO-1449 including any claims directed to that portion;

☐ all other information or portion which caused it to be listed on the PTO-1449.

1c. ☐ An English language copy of search report(s) from a counterpart foreign application or PCT International Search Report.

/Kashif Siddiqui/ 06/07/2012

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.S./

1d. ☐ Explanations of relevancy (ATTACHMENT 1(d), hereto) or English language abstracts of the non-English language publications.

2. ☒ This Information Disclosure Statement is filed under 37 C.F.R. §1.97(b):

2a. ☐ Within three months of the filing date of a national application other than a continued prosecution application under §1.53(d);

2b. ☐ Within three months of the date of entry of the national stage as set forth in §1.491 in an international application;

2c. ☒ Before the mailing of the first Office action on the merits;

2d. ☐ Before the mailing of a first Office action after the filing of a request for continued examination under §1.114.

3. ☐ This Information Disclosure Statement is filed under 37 C.F.R. §1.97(c) after the period specified in 37 C.F.R §1.97(b), but before the mailing date of any of a final action under 37 C.F.R. §1.113, a notice of allowance under 37 C.F.R. §1.311 or an action that otherwise closes prosecution in the application.

(Check either Item 3a or 3b)

3a. ☐ The Certification Statement in Item 5 below is applicable. Accordingly, no fee is required.

3b. ☐ The $180.00 fee set forth in 37 C.F.R. §1.17(p) in accordance with 37 C.F.R. §1.97(c) is:

☐ enclosed
☐ to be charged to Murabito, Hao & Barnes Deposit Account No. 50-4160 (order no.).

(Item 3b to be checked if any reference known for more than 3 months)

4. ☐ This Information Disclosure Statement is filed under 37 C.F.R. §1.97(d) after the period specified in 37 C.F.R. §1.97(c), but on or before the date of payment of the issue fee.

(Check either Item 4a or 4b)

4a. ☐ The Certification Statement in Item 5 below is applicable.

4.b ☐ The $180.00 fee set forth in 37 C.F.R. §1.17(p) is:
enclosed.to be charged to Murabito, Hao & Barnes Deposit Account No. 50-4160 (order no.).

5. ☐ Certification Statement (applicable if Item 3a or Item 4a is checked)

(Check either Item 5a, 5b or 5c)

5a. ☐ In accordance with 37 C.F.R. §1.97(e)(1), it is certified that each item of information contained in this Information Disclosure Statement was first cited

/Kashif Siddiqui/ 06/07/2012

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.S./

in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

5b. ☐ Each item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart application, and the communication was not **received** by any individual designated in 37 C.F.R. §1.56(c) more than thirty days prior to the filing of this information disclosure statement.

5c. ☐ Pursuant to 37 C.F.R. §1.704(d), each item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart application, and the communication was not **received** by any individual designated in 37 C.F.R. §1.56(c) more than thirty days prior to the filing of this information disclosure statement.

6. ☐ Copies of each cited U.S. patent and each U.S. patent application publication are not enclosed pursuant to the USPTO OG Notice dated 05 August 2003 waiving the requirement under 37 C.F.R. 1.98(a)(2)(i) for U.S. patent applications filed after June 30, 2003.

7. ☐ This application is a continuation application under 37 C.F.R. §1.53(b) or (d).

(Check appropriate Items 7a, 7b and/or 7c)

7a. ☐ A Petition to Withdraw from issue under 37 C.F.R. §1.313(b)(5) is concurrently filed herewith.

7b. ☐ Copies of publications listed on Form PTO-1449 from prior application Serial No. **XXXX**, filed on **XXXX** , of which this application claims priority under 35 U.S.C. §120, are not being submitted pursuant to 37 C.F.R. §1.98(d).

7c. ☐ Copies of the publications listed on Form PTO-1449 were not previously cited in prior application Serial No. , filed on , and are provided herewith.

8. ☐ This is a Supplemental Information Disclosure Statement. (Check Item 8a)

8a. ☐ This Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(f) supplements the Information Disclosure Statement filed on ******. A bona fide attempt was made to comply with 37 C.F.R. §1.98, but inadvertent omissions were made. These omissions have been corrected herein. Accordingly, additional time is requested so that this Supplemental Information Disclosure Statement can be considered as if properly filed on *********.

9. ☐ In accordance with 37 C.F.R. §1.98, a concise explanation of what is presently understood to be the relevance of each non-English language publication is:

(Check Item 9a, 9b, or 9c)

9a. ☐ satisfied because all non-English language publications were cited on the

/Kashif Siddiqui/ 06/07/2012

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.S./

enclosed English language copy of the PCT International Search Report or the search report from a counterpart foreign application indicating the degree of relevance found by the foreign office.

9b. ☐ set forth in the application.

9c. ☐ enclosed as an attachment hereto.

10. ☒ The Commissioner is authorized to charge any additional fee required or credit any overpayment for this Information Disclosure Statement and/or Petition to Murabito, Hao & Barnes Deposit Account No. 50-4160.

11. ☒ No admission is made that the information cited in this Statement is, or is considered to be, material to patentability nor a representation that a search has been made (other than a search report of a foreign counterpart application or PCT International Search Report if submitted herewith). 37 C.F.R. §§1.97(g) and (h).

Respectfully submitted,

Date: August 22, 2007

~~Amir A. Tabarrok~~ 57,137 (Reg. No.)

MURABITO, HAO & BARNES
Two North Mark Street, Third Floor
San Jose, CA 95113
(408) 938-9060

/Kashif Siddiqui/ 06/07/2012

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PTO/SB/08a (03-09)
Approved for use through 04/30/2009. 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	11888803
Filing Date	2007-08-01
First Named Inventor	Pierre Carion
Art Unit	
Examiner Name	
Attorney Docket Number	HOMI-P003

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	6345279		2002-02-05	Li , et al.	

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	20020109718		2002-08-15	Mansour, Peter M. ; et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] ¡	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	02103963	WO		2002-12-27	NOKIA CORPORATION		☐

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]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.S./

Receipt date: 06/02/2009	Application Number	11888803	11888803 - GAU: 2617
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2007-08-01	
	First Named Inventor	Pierre Carion	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	HOMI-P003	

	1	Grundy, John et al; "An Architecture for Building Multi-device Thin-Client Web User Interfaces" Advanced Information Systems Engineering, vol. 2348/2002, 1 January 2002 (2002-01-01), pages 728-732, XP002511217	☐
	2	Mir Farooq Ali et al: "Building Multi-Platform User Interfaces with UIML" Internet Citation, [online] XP002280476 Retrieved from the Internet: URL:http://arxiv.org/ftp/cs/papers/0111/0111024.pdf> [Retrieved on 2004-05-17]	☐
	3	Simon, Rainer et al: "Tool-Supported Single Authority for Device Independence and Multimodality" Proceedings of the 7th International Conference on Human Computer Interaction with Mobile Devices & Services, [Online] 19 September 2005 (2005-09-19), 22 September 2005 (2005-09-22) pages 91-98, XP002511216 Retrieved from the Internet: URL: http//portal.acm.org/citation.cfm?id=1085777.1085793> [Retrieved on 2009-01-19] abstract	☐
	4	Thomas Ziegert et al: "Device Independent Web Applications-The Author Once- Display Everywhere Approach" Web Engineering; [Lecture Notes in Computer Science; LNCS], Springer-Verlag, Berlin/Heidelberg, vol. 3140, 7 July 2004 (2004-07-07), pages 244-255, XP019009054	☐
	5	VanderDonckt, Jean et al: "Synchronised Model-Based Design of Multiple User Interfaces" Internet Article, [online] 10 September 2004 (2004-09-10),pages 1-8, XP002511218 Retrieved from the Internet: URL: http://web.archive.org/web/20040910043454/http://www.isys.ucl.ca.be/bchi/members/qli/pub/Vanderdonckt-IHM2001.pdf> [retrieved on 2009-01-20]	☐

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EXAMINER SIGNATURE

Examiner Signature	/Kashif Siddiqui/	Date Considered	06/07/2012

*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.

[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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /K.S./

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11888803	CARION ET AL.
	Examiner	**Art Unit**
	KASHIF SIDDIQUI	2617

SEARCHED

Class	Subclass	Date	Examiner
709	246	6/11/2012	KS
455	414.1-414.4, 566	6/11/2012	KS
715	200, 234-240, 744-747	6/11/2012	KS

SEARCH NOTES

Search Notes	Date	Examiner
Searched EAST	6/11/2012	KS
Searched Google Patents	6/11/2012	KS
Assignee Search	6/11/2012	KS
Inventor Search	6/11/2012	KS
Searched EPO/WIPO	6/11/2012	KS
Consulted with K. Afshar (SPE)	6/7/2012	KS

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner

/KASHIF SIDDIQUI/
Examiner.Art Unit 2617

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/888,803	08/01/2007	Pierre Carion	38285-705.201

CONFIRMATION NO. 5085

POA ACCEPTANCE LETTER

21971
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

OC000000050322609

Date Mailed: 10/14/2011

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/04/2011.

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.

/sibrahim/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/888,803	08/01/2007	Pierre Carion	GOTV-002/00US 310663-2006

CONFIRMATION NO. 5085

POWER OF ATTORNEY NOTICE

OC000000050322499

58249
COOLEY LLP
ATTN: Patent Group
Suite 1100
777 - 6th Street, NW
WASHINGTON, DC 20001

Date Mailed: 10/14/2011

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/04/2011.

- 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).

/sibrahim/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application:			
Inventor:	Pierre Carion, et al	Confirmation No.:	**5085**
Application No.:	11/888,803	Examiner:	Marcos L. Torres
Filed:	August 1, 2007	Group Art Unit:	2617
Title:	**METHODS AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE**	Customer No.	**021971**
		File No. 38285-705.201	

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO and 3.73 STATEMENT

☒ I hereby appoint the practitioners associated with Customer Number: **021971**

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO).

☒ Please address all correspondence for the above-identified application to: **021971**

STATEMENT UNDER 37 CFR 3.73(b)

GoTV Networks, Inc. a California corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is: the assignee of the entire right, title and interest; in the patent application/patent identified above by virtue of either:

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 , Frame , ***or for which a copy thereof is attached.***

OR

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

1. From: **Pierre Carion, Kevin Smith** To: **Hands-On Mobile, Inc.**
   The document was recorded in the United States Patent and Trademark Office at
   Reel **019707**, Frame **0233**, ***or for which a copy thereof is attached.***
2. From: **Hands-On Mobile, Inc.** To: **GoTV Networks, Inc.**
   The document was recorded in the United States Patent and Trademark Office at
   Reel **024306**, Frame **0841**, ***or for which a copy thereof is attached.***

I am an authorized representative of the:

☒ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is incorporated herein.

SIGNATURE of Assignee of Record

Signature

Name/Title Alan S. Knitowski, CEO

Date 9/27/2011 Telephone No. (512) 745-4080

Electronic Acknowledgement Receipt

EFS ID:	11111967
Application Number:	11888803
International Application Number:	
Confirmation Number:	5085
Title of Invention:	Method and system for rendering content on a wireless device
First Named Inventor/Applicant Name:	Pierre Carion
Customer Number:	58249
Filer:	Um Ping Peter Eng/Lydia Vosburgh (UPE/lcv)
Filer Authorized By:	Um Ping Peter Eng
Attorney Docket Number:	GOTV-002/00US 310663-2006
Receipt Date:	04-OCT-2011
Filing Date:	01-AUG-2007
Time Stamp:	20:40:31
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	Power of Attorney	38285-705-201-POA.pdf	58115 9eac98b16bebb8d16ba24eaf8d9fb0361ad7d683	no	1

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Information:

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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.

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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/888,803	08/01/2007	Pierre Carion	GOTV-002/00US 310663-2006

CONFIRMATION NO. 5085

POA ACCEPTANCE LETTER

OC000000043105271

58249
COOLEY LLP
ATTN: Patent Group
Suite 1100
777 - 6th Street, NW
WASHINGTON, DC 20001

Date Mailed: 08/23/2010

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 08/11/2010.

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.

/mteklemichael/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/888,803	08/01/2007	Pierre Carion	HOMI-P003

CONFIRMATION NO. 5085

POWER OF ATTORNEY NOTICE

MURABITO HAO & BARNES LLP
Third Floor
Two North Market Street
San Jose, CA 95113

OC000000043105264

Date Mailed: 08/23/2010

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 08/11/2010.

- 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).

/mteklemichael/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

REVOCATION AND NEW POWER BY ASSIGNEE AND STATEMENT UNDER 37 C.F.R. §3.73(b)

The Assignee, GoTV Networks, Inc., of the entire right, title, and interest in the applications listed in the attached Appendix A, and as evidenced by the assignments previously recorded at the reel and frame numbers listed in Appendix A, hereby revokes all previously granted powers and grants the registered practitioners of Cooley LLP included in the Customer Number provided below power to act, prosecute, and transact all business in the U.S. Patent and Trademark Office in connection with the applications listed in Appendix A, any applications claiming priority to the applications listed in Appendix A, and any patents issuing therefrom.

Please direct all telephone calls and correspondence to:

CUSTOMER NUMBER: **58249**

COOLEY LLP
ATTN: Patent Group
777 6th Street NW, Suite 1100
Washington, DC 20001
Tel: (703) 456-8000
Fax: (202) 842-7899

The undersigned (whose title is supplied below) is empowered to sign this statement on behalf of the assignee.

Date: 8-9-10

Signature: Ken Levinson
Name: KEN LEVINSON
Title: VP. FINANCE
Company: GoTV Networks, Inc.

448550 v1/RE

APPENDIX A
REVOCATION AND NEW POWER BY ASSIGNEE GoTV NETWORKS, INC.
AND STATEMENT UNDER 37 C.F.R. §3.73(b)

Application No.	Filing Date	Confirm. No.	First Named Inventor	Title	New Attorney Docket No.	Old Attorney Docket No.	Assignment Reel/Frame
12/098,595	04/07/2008	2705	Philippe Clavel	METHOD AND SYSTEM FOR EXECUTING APPLICATIONS ON A WIRELESS DEVICE	GOTV-009/00US 310663-2002	HOMI-P009	020765/0169 024306/0841
12/098,670	04/07/2008	2849	Philippe Clavel	SERVER METHOD AND SYSTEM FOR EXECUTING APPLICATIONS ON A WIRELESS DEVICE	GOTV-010/00US 310663-2003	HOMI-P010	020765/0550 024306/0841
11/888,799	08/01/2007	5349	Pierre Carion	SERVER METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE	GOTV-001/00US 310663-2005	HOMI-P004	019695/0102 024306/0841
11/888,803	08/01/2007	5085	Pierre Carion	METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE	GOTV-002/00US 310663-2006	HOMI-P003	019707/0233 024306/0841
12/018,141	01/22/2008	7623	Philippe Clavel	METHOD AND SYSTEM FOR CUSTOMIZING CONTENT ON A SERVER FOR RENDERING ON A WIRELESS DEVICE	GOTV-003/01US 310663-2007	HOMI-P006	020553/0458 024306/0841

APPENDIX A
REVOCATION AND NEW POWER BY ASSIGNEE GoTV NETWORKS, INC.
AND STATEMENT UNDER 37 C.F.R. §3.73(b)

Application No.	Filing Date	Confirm. No.	First Named Inventor	Title	New Attorney Docket No.	Old Attorney Docket No.	Assignment Reel/Frame
11/977,186	10/23/2007	2215	Pierre Carion	METHOD AND SYSTEM FOR ACCESSING WIRELESS ACCOUNT INFORMATION	GOTV-005/00US 310663-2008	HOMI-P007	020066/0030 024306/0841
11/977,212	10/23/2007	1784	Philippe Clavel	CLIENT-SIDE WIRELESS COMMUNICATIONS LINK SUPPORT FOR MOBILE HANDHELD DEVICES	GOTV-006/00US 310663-2009	HOMI-P001	020439/0898 024306/0841
11/977,229	10/23/2007	1885	Pierre Carion	METHOD AND SYSTEM FOR COLLECTION AND USE OF WIRELESS APPLICATION ACTIVITY INFORMATION	GOTV-007/00US 310663-2010	HOMI-P008	020374/0361 024306/0841
11/977,319	10/23/2007	2210	Philippe Clavel	SERVER-SIDE WIRELESS COMMUNICATIONS LINK SUPPORT FOR MOBILE HANDHELD DEVICES	GOTV-008/00US 310663-2011	HOMI-P002	020421/0563 024306/0841

Electronic Acknowledgement Receipt

EFS ID:	8196032
Application Number:	11888803
International Application Number:	
Confirmation Number:	5085
Title of Invention:	Method and system for rendering content on a wireless device
First Named Inventor/Applicant Name:	Pierre Carion
Correspondence Address:	MURABITO HAO & BARNES LLP Third Floor Two North Market Street - San Jose CA 95113 US 4089389060 -
Filer:	C. Scott Talbot/Karen Hodgson
Filer Authorized By:	C. Scott Talbot
Attorney Docket Number:	HOMI-P003
Receipt Date:	11-AUG-2010
Filing Date:	01-AUG-2007
Time Stamp:	17:54:57
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

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1	Power of Attorney	Power.pdf	126100 32699d13148bb309cf3003a30e41ff36ee1889c3	no	3
Warnings:					
Information:					
		Total Files Size (in bytes):	126100		

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<u>New Applications Under 35 U.S.C. 111</u>
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.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
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.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
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 (03-09)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	11888803
Filing Date	2007-08-01
First Named Inventor	Pierre Carion
Art Unit	
Examiner Name	
Attorney Docket Number	HOMI-P003

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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
	1	6345279		2002-02-05	Li , et al.	

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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
	1	20020109718		2002-08-15	Mansour, Peter M. ; et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] ¡	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	02103963	WO		2002-12-27	NOKIA CORPORATION		☐

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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]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	11888803
	Filing Date	2007-08-01
	First Named Inventor	Pierre Carion
	Art Unit	
	Examiner Name	
	Attorney Docket Number	HOMI-P003

	1	Grundy, John et al; "An Architecture for Building Multi-device Thin-Client Web User Interfaces" Advanced Information Systems Engineering, vol. 2348/2002, 1 January 2002 (2002-01-01), pages 728-732, XP002511217	☐
	2	Mir Farooq Ali et al: "Building Multi-Platform User Interfaces with UIML" Internet Citation, [online] XP002280476 Retrieved from the Internet: URL:http://arxiv.org/ftp/cs/papers/0111/0111024.pdf> [Retrieved on 2004-05-17]	☐
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SYSTEM AND METHOD FOR PROVIDING FEATURE-BASED DEVICE DESCRIPTION AND CONTENT ANNOTATION

Abstract:

Abstract of WO 02103963

(A1) A system (10) and method for providing authored content (41) to any of a plurality of requesting user network terminal devices (13), the method including specifying a feature-value set (49) for the network terminal devices (13), the feature-value set (49) having a set of selected device features (151), each feature (151) with one or more discrete feature values (153). The method further includes annotating the authored content (41) with markup information to provide a device-independent content (43), associating one or more of the device feature values with the requesting user network terminal device (19), and converting the device-independent content (43) into a device-specific content (29) adapted to the requesting user network terminal device (19).; The system (10) includes a network terminal device detector (21) for receiving the network terminal device request (27), an origin server (51) for providing device-independent content (43) corresponding to the request (27), and a transformer (25) for associating one or more device feature values (153) with the requesting user network terminal device (19) in the conversion of the device-independent content (43).

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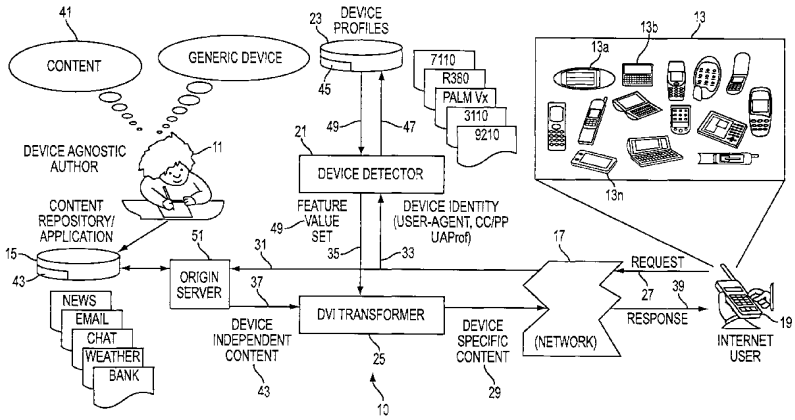

(57) Abstract: A system (10) and method for providing authored content (41) to any of a plurality of requesting user network terminal devices (13), the method including specifying a feature-value set (49) for the network terminal devices (13), the feature-value set (49) having a set of selected device features (151), each feature (151) with one or more discrete feature values (153). The method further includes annotating the authored content (41) with markup information to provide a device-independent content (43), associating one or more of the device feature values with the requesting user network terminal device (19), and converting the device-independent content (43) into a device-specific content (29) adapted to the requesting user network terminal device (19). The system (10) includes a network terminal device detector (21) for receiving the network terminal device request (27), an origin server (51) for providing device-independent content (43) corresponding to the request (27), and a transformer (25) for associating one or more device feature values (153) with the requesting user network terminal device (19) in the conversion of the device-independent content (43).

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SYSTEM AND METHOD FOR PROVIDING FEATURE-BASED DEVICE DESCRIPTION AND CONTENT ANNOTATION

FIELD OF THE INVENTION

This invention relates to network communication and, in particular, to a system and method for providing authored content to user network terminal devices.

BACKGROUND OF THE INVENTION

As the Internet began to evolve, personal computers (PCs) and desktop terminals were typical terminal devices used to access the Internet. Because the configurations of PCs and desktop terminals were relatively mature, their capabilities and attributes did not vary widely from device to device. For example, these network terminal devices could be considered as having the same form factor without any loss of effectiveness of content delivery. Accordingly, content authors, or web developers, could generate content for the PCs and terminals without needing to consider different form factors. The most common display device, a PC monitor, already had an essentially standard form-factor in place before the advent of the Internet.

Thus, although the sizes and shapes of PC monitors did vary from device to device, it was not necessary for the content author to customize the content to the physical aspects of the display. When it became necessary or desirable to modify the content to accommodate a particular PC display, the modification was usually simple enough so as not to require the intervention of the content author. Such simple modifications were typically incorporated by a browser lay-out manager, or by some automatic mechanism on the user network terminal device itself.

On the Internet, content is usually requested by user for display on or delivery to a terminal device. Until recently, the terminal device most commonly used would be either a desktop Personal Computer (PC) or a Network Terminal or Workstation. More recently, with the development of wireless internet and handheld display

devices, the concept of 'terminal device' has been extended to a much wider array of delivery devices, including for example, cellular telephones (having communication and display methods such as WAP, Imode, and HDML), PDAs (such as Palm Pilot, Psion, and Revo) with wireless or wired access to the network, and combinations of PDAs and cellular telephones. In general, 'terminal device' will be understood to mean any device which has a capability for making a request for Internet content, and has a capability of delivering the Internet content to the terminal device user. It should be pointed out that a terminal device may not necessarily include a display, as in the devices intended for use in an automobile, or for use by vision-impaired persons.

In the present state of the art, the Internet can also be accessed by other types of user network terminal devices, such as wireless data transceivers or mobile stations. While this has created new and expanding information service possibilities for the users, the content author has been presented with the challenge of providing content for new network terminal devices having diverse form factors.

With the increased use of cell phones, Personal Data Assistants (PDAs), and other types of wireless terminal devices, the content author can no longer consider the network terminal device displays to be essentially equivalent to one another. The capabilities, features, and variations in form factor among such devices are not insignificant, and ignoring these differences usually results in a decrease in the fidelity of content delivery. Moreover, the development of newer wireless terminal devices continues, with the availability of new features and applications as well as additional changes in the basic form factor.

Software developers and content authors incorporate new features or a change to an existing feature so as to fully realize the capabilities of more sophisticated user network terminal devices without overwhelming simpler terminal devices. However, as the number of different types of network terminal devices continues to grow, it

becomes increasingly difficult for a content author to generate code to automatically convert the content to fit the user network terminal device, for example, as both created content and terminal devices become more numerous.

There are at least three options available to address this situation. In the first option, the content author creates content for the simplest type of network terminal device and provides this basic content to all types of terminal devices, from simplest to the most sophisticated (i.e., content is created for the lowest common denominator). The first option requires minimal input from the content author, but it precludes utilizing the capabilities available in the more sophisticated devices.

In the second option, the content author can precisely identify the capabilities of all types of network terminal devices and then generate respective content versions for each type. The second option provides the most effective utilization of the capabilities of the various user network terminal devices but requires a greater effort on part of the content author.

The second option is not practical for several reasons. For example, there are no standard methods for identifying or describing the capabilities of network terminal devices. Accordingly, a design solution developed without reference to a standard method will therefore be a custom or an individual solution which cannot be readily shared by other content developers, or even reused by the original content developer. As another example, maintaining a list of user network terminal device characteristics becomes impractical as new designs and features appear as a continuation of the ongoing development of terminal devices. Moreover, the task of generating content to precisely match the capabilities of particular user network terminal devices, known in the relevant art as 'fine-grain matching,' becomes very daunting.

In most instances, an automated process, devoid of any knowledge of the meaning of the content, is inadequate for adapting authored content to a particular

user network terminal device. For example, if an authored page contains a picture, but is loaded into an 'audio-only' device, the picture cannot be 'read' and will usually be ignored. In some conventional systems, replacement 'text' may be substituted in place of the picture.

However, if the content author knew that the content might be directed to audio-only devices, he might have included in the authored content an audio file that assisted in visualizing the picture. Other examples could be provided of circumstances in which the author may have had a 'better' idea of how to modify his content, where the particular modification depends on the device type. Autonomous systems, on the other hand, will ignore such intent resulting in a system having a lower fidelity. As used in the present specification, the term 'author intent' will refer to the inclusion of the intent of the content author as a meta-data (viz., not as part of the main data but as auxiliary information).

In the third option, there is provided an autonomous system having adequate intelligence to make correct decisions in transforming the content for a particular user network terminal device. The autonomous system, when invoked, would transform 'device-independent' content into 'device-specific' content. In way of example, the automatic system may utilize the process of 'web-clipping,' where applicable software makes use of an intelligent scheme in determining how to modify content formatted for a conventional terminal device (e.g., a personal computer) into a format suitable for a wireless terminal device (e.g., a Palm PDA).

In general, there are similar situations in which the intent of the author is required when modifying the content. It is usually not possible for a system to automatically make appropriate decisions without first having knowledge of the author intent. A practical system would thus require automation as well as author's knowledge of the different devices in which the content may be displayed. The

capabilities of such a system can range from a substantially automatic system to a system primarily controlled by the author or developer.

The content typically contains no author information to assist in such a modification process. Furthermore, in situations where it becomes necessary to generate supplemental content, that is, to 'fill' a larger network terminal device display with content not initially provided, the 'fill process' requires the authored content to include all the information necessary to enable an otherwise automatic system to carry out the content specialization in an effective manner. In other words, a system which takes 'hints' from the author is more practical than a fully-automatic system which utilizes no such inputs.

In the present state of the art, the content developer does not have standardized tools by which to conduct independent authoring. The content developer may make use of technologies such as Resource Description Format (RDF), to describe user preferences and wireless terminal device capabilities. RDF, an XML syntax for describing resources, is not used alone but can be used in conjunction with a Composite Capability/Preference Profile (CC/PP) or with a User Agent Profile (UAProf) to describe the features of a wireless terminal device, for example.

CC/PP uses RDF to describe device capabilities by setting up a detailed framework for such purposes. However, describing the device is accomplished in a 'developer-unfriendly' manner. For example, CC/PP documentation provides the following 'print and display' vocabularies:

charWidth:
charHeight:
charset:
pix-x:
pix-y:
color: (e.g., 'binary,' 'grey,' 'limited,' 'mapped,' 'full')

While, in theory, this information is enough to allow a content author to 'tailor' content for the network terminal device, the process is not straightforward.

Absolute pixel values and character sizes are too fine-grained in comparison to the process by which content is differentiated between network terminal devices. For example, such fine-grained information may be useful in the task of calculating line breaks or page widths, but is not suitable for expressing author intent.

UAProf, developed by the WAP Forum, is similar to CC/PP by using RDF to describe the network terminal device. However, use of UAProf poses problems similar to CC/PP, as discussed above, in that the defined variables, listed below, are not appropriate for developer usage.

Model	
BitsPerPixel	
OutputCharSet	
PointingResolution	
PixelAspectRatio	
NumberOfSoftKeys	
ScreenSize	(e.g., 160×160, 640×480)
ScreenSizeChar	(e.g., 12×4, 16×8)

Such information is not useful precisely because it is presented in too great a detail.

As an alternative, Extensible Hypertext Markup Language (XHTML) @media tags allow specific stylesheets to be loaded depending on the type of media (e.g., desktop, handheld, phone, printer). The job of writing the appropriate stylesheets is still left to the developer, and this is not a trivial task by any means. Moreover, XHTML @media tags is designed more for formatting than for content differentiation based on author intent and is not typically considered for displaying author intent.

It can be appreciated by one skilled in the relevant art that, although it is possible for a developer to adapt his content to the network terminal device using either CC/PP or UAProf attributes, this method still presents a challenge to the content author. Moreover, by distinguishing between network terminal devices on the basis of features such as character size or number of soft keys, the adaptation process may become more detailed and complex than is desirable. Thus, the task has been made more difficult by requiring the content author to address features in general

instead of being selective in first establishing which features are really necessary to properly display content. In short, the description of a device feature in either UAProf or CC/PP is not 'developer-friendly.'

As should be understood, these conventional methods using CC/PP and UAProf have not attained acceptance in the relevant art because of the mismatch between minimizing author effort and maximizing utilization of devices for that level of effort. It can be shown that the conventional methods are, essentially, an all-or-nothing solution, and using a conventional method requires the content author to determine how different content-types should be annotated for a given feature.

What is needed is a system and method that predictably reflect the intent of the content author when content is displayed in a network communication terminal device, even if the content requires transformation for compatibility with the network communication terminal device.

SUMMARY OF THE INVENTION

The present invention results from the observation that an abstract, generic terminal device can be defined in terms of a set of discrete values of a plurality of selected terminal device features to provide an approximate representation of any user network terminal device, and that, if a content author creates content for the generic terminal device, the created content is adaptable to any of the user network terminal devices. The disclosed method includes specifying a feature-value set for the network terminal devices, the feature-value set having a set of selected device features, each feature with one or more discrete feature values, annotating the authored content with markup information to provide a device-independent content, associating one or more of the device feature values with the requesting user network terminal device, and converting the device-independent content into a device-specific content adapted to the requesting user network terminal device. The system includes a network terminal

device detector for receiving the network terminal device request, an origin server for providing device-independent content corresponding to the request, and a transformer for associating one or more device feature values with the requesting user network terminal device in the conversion of the device-independent content to device-specific content formatted for the user network terminal device.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention description below refers to the accompanying drawings, of which:

Fig. 1 is a diagrammatical representation of a network communication system in which the intent of a content author is accurately displayed on a user terminal device;

Fig. 2 is a flow diagram illustrating operation of the network communication system of Fig. 1;

Fig. 3 is a flow diagram illustrating the process followed by the content author in producing the device-independent content of Fig. 1;

Fig. 4 is an example of meta-data introduced into an HTML markup providing a news story;

Fig. 5 is a flow diagram illustrating the identification of a requesting user terminal device;

Fig. 6 is an example of meta-data introduced into a WML markup providing a news story;

Fig. 7 is a table listing various features of a user terminal device display along with corresponding feature values;

Fig. 8 is an illustration of a display comprised of a number of horizontal pixels and a number of vertical pixels;

Fig. 9 illustrates how a device feature display size can be represented by the number of available pixels along the x- and y-axes of the device display;

Fig. 10 illustrates a mathematical mapping of display size in pixels to variations in content display;

Fig. 11 shows a profile illustrating a user terminal device assigned values for its features;

Figs. 12A and 12B illustrate the display produced by the code of Fig. 4 on a device with brief content and a small image and on a device with a detailed content and a large image;

Fig. 13 an example of meta-data introduced into an HTML markup providing a weather forecast;

Figs. 14A and 14B illustrate the display produced by the code of Fig. 13 on a device with a portrait table and scrolling and on a device with a landscape table using a screen;

Fig. 15 is an illustration of the concept of `feature;'

Fig. 16 is an illustration of features having a plurality of values;

Fig. 17 is an illustration of a feature value set;

Fig. 18 is an illustration of the relationship of entire device space to available instances;

Fig. 19 is an illustration of the method by which feature evolution is accommodated;

Fig. 20 is an illustration of the convergence of a feature to a constant value; and,

Fig. 21 is an illustration of the growth of the feature value set when feature evolution is accommodated.

DETAILED DESCRIPTION OF AN ILLUSTRATIVE EMBODIMENT

There is shown in Fig. 1 a network communication system 10 in which the intent of a content author 11, or software developer, is accurately realized when authored content 41 is displayed on a user network terminal device 19 as intended by the content author 11. The user terminal device can be any of a plurality of network terminal devices available to a user of the network communication system 10, here represented as network terminal devices 13a, 13b,...,13n. A content repository 15 includes device-independent content 43 available for display in any of the network terminal devices 13a, 13b,...,13n. The device-independent content 43 may include, for example, news, e-mail, weather information, and stock quotes. The device-independent content 43, which is derived from the authored content created by the content author 11, can be adapted for optimal viewing in any of the network terminal devices 13a, 13b,...,13n, as described in greater detail below.

As used herein, content refers to graphic and textual content, as well as author-provided software for generating content, destined for display on the terminal device accessing the Internet, including wireless and wired internets. For clarity of illustration, wireless devices are shown in the Figures but it should be understood that the disclosed method is applicable to wired devices as well. Internet content is typically configured in the form of Hypertext Markup Language (HTML), Extensible Hypertext Markup Language (XHTML), Wireless Markup Language (WML), or some other markup language. As used herein, 'content' comprises both static content and content generated by a dynamic content generation mechanism, such as Common Gateway Interface (CGI) scripts, JAVA Servlets, Active Server Pages (ASP), Java Server Pages (JSP), or other means available in Internet servers.

The disclosed method utilizes the concept of an abstract, generic terminal device 13. The generic terminal device 13 includes a set of device features selected

from the display features of the network terminal devices 13a, 13b,...,13n. Each display feature selected for inclusion in the generic terminal device 13 is assigned one or more discrete values, and these discrete values are also included in the generic terminal device 13 to form a feature-value set of discrete feature values. As explained in greater detail below, if the display of the authored content 41 in the user network network terminal device 19 is dependent on the feature value of a particular user terminal device display feature, that particular display feature has preferably been included in the generic terminal device 13 as a selected feature. If the display of authored content does not depend on the value of the particular user terminal device display feature, that display feature is not included.

Because discrete values are used in the generic terminal device 13, most devices can be adequately described by using the generic device concept and selecting one of the discrete feature values from the possible feature values that most closely approximates the actual feature value. For example, graphics capability is considered to be a feature having two possible values – true, and false. Preferably, features and feature values are selected so as to facilitate their use by a content author when generating content. In other words, the generic terminal device 13 is utilized as a tool in establishing which of the network terminal device display features need to be taken into account by the content author 11 in the process of generating content for the variety of network terminal device displays. Accordingly, the content author 11 creates device-independent content in view of the display features and discrete feature values included (i.e., taken into account) in the generic terminal device 13. The task of the content author 11 is thus simplified as he does not need to take into account terminal device display features not included in the generic terminal device 13.

When creating device-independent content intended for display on any of the plurality of network terminal devices 13a, 13b,...,13n, the content author 11 adds intent markup information, preferably in device-independent markup language

(DVIML), overlaid on previously-authored content, as explained in greater detail below. The previously-authored content may also include conventional markup information, such as can be provided using wireless markup language (WML). In contrast to WML, which is used to provide conventional markup information, DVIML is used to express author intent as to how the content should be particularly transformed, where the particular transformation is a function of the characteristics of the user terminal device.

With the ongoing evolution of user network terminal devices, there are a multitude of form-factors, modes and network characteristics present where any particular network terminal device can include any combination of these variables. In order to optimally utilize the attributes of these different types of network terminal devices, it is necessary for content to be transformed (e.g. truncated, filtered or modified in some manner). The content is transformed so that the user network terminal device is not over-whelmed (which may lead to web clipping as a solution) and not under-utilized (which would leave un-utilized space or other resources).

Depending on the type of authored content 41 or its meaning to the human reader, it is possible in many cases for an automated system to carry out this transformation autonomously, based upon the characteristics of the network terminal device only, without loss of fidelity. However, there are also many examples of authored content where such an autonomous transformation is prone to destroy content fidelity because the autonomous system is unaware of the 'meaning' of the content. In such cases, author intent is required as an input so that the transformation system may defer decision-making to the author via author intent as embedded in the authored content.

DVIML is a markup language that can be utilized, in conjunction with the DVI transformer 25, to take into account both the characteristics of the identified user network terminal device 19 as well as the author intent to transform the authored

content 41 into a device-specific form which utilizes the features of a device optimally. Incorporation of author intent, expressed via DVIML, assures a greater fidelity to the original intentions of the content author 11. DVIML is defined by using the XML (Extensible Markup Language) authorized by the W3C (World Wide Web Consortium). Since the contents of DVIML data are marked up by tags (e.g., <title>, <shape>, <area>), a user of the DVIML markup can understand the data easily, and a computer can process and search the data quickly, making DVIML both human-readable and machine-parsable.

The disclosed method can be best explained with reference to the flowchart of Fig. 2 in which the user network terminal device 19 makes a request 27 for the authored content 41, at step 101. The request 27 is transmitted along a path 31 to an origin server 51 and, contemporaneously, along a path 33 to a terminal device detector 21, at step 103. Preferably, the selected features of the user network terminal device 19 have been previously included in the generic terminal device 13, and a user device terminal features profile 45, corresponding to the user network terminal device 19, is resident in a device profiles repository 23, as explained in greater detail below.

Accordingly, when the request 27 is received at the terminal device detector 21, the terminal device detector 21 ascertains the identity of the user network terminal device 19 from the header, or network terminal device information, contained in the request 27 and provides an identification 47 to the device profiles repository 23, at step 105. The device profiles repository 23 responds by using the identification 47 to select the user terminal device features profile 45 and to provide a user display feature-values set 49 that presents the closest match to the identified user network terminal device 19. The process of determining features and feature values from the feature-value set are described in greater detail below. The user display feature-values set 49 is then provided to a device-independent (DVI) transformer 25 along a path 35, at step 107.

The device-independent content 43 produced by the content author from the authored content 41 is retrieved from the content repository 15 by the origin server 51. The origin server 51 provides the device-independent content 43 to the DVI transformer 25 along a path 37, at step 109. At this stage, the device-independent content 43 comprises annotated authored content that includes DVIML markup information and may also include other markup information, such as WML markup information.

The DVI transformer 25 utilizes the user display feature-values set 49 obtained from the device profiles repository 23 along with the DVIML 'author-intent' markup to transform the device-independent authored content 43 into device-specific authored content 29 adapted for the requesting user network terminal device 19, at step 111. The device-specific authored content 29 may retain WML or other markup information found in the device-independent authored content 43. However, the DVIML markup is not needed once the user network terminal device 19 has been identified and the related feature values have been determined. Accordingly, the DVI transformer 25 removes the DVIML markup from the annotated authored content. The device-specific authored content 29 is provided to the user network terminal device 19 along a path 39, at step 113.

Feature-Value Set

The disclosed method includes the process of first describing a particular network terminal device in terms of selected device features. As used in the present disclosure, the term 'selected device feature' refers to a network terminal device attribute which affects the way in which the delivery of authored content or of user interaction is presented, and which provides information for a specific purpose. Device features meeting one or both of these preestablished criteria are then included in the generic terminal device 13. For example, while the color of a network terminal device is a feature, the device color is not relevant to the display of the authored

content and is not, therefore, selected to be included in the generic terminal device 13. Thus, selected features are those features which require little or no additional processing by the content developer when the selected features are used to generate the device-independent content.

Examples of selected device features are the display size, aspect ratio, the display line count, and the color capability of the network terminal device. Each of the selected device features is assigned one or more discrete values. The display aspect ratio, for example, may have discrete values of 'square,' 'portrait,' or 'landscape.' The display line count may have discrete values of 5, 10, or 20. The color capability of the terminal device may have discrete values of 'monochrome,' 'color,' or 'grayscale.'

Supplemental device features may be also be selected, such as the graphics capability, variable size text capability, different font capability, and the input capability of the network terminal device, and the network bandwidth may be taken into consideration. The values assigned to such supplemental device features typically include 'yes,' 'no,' and 'default.' The set of supplemental features along with corresponding discrete values are also included in the feature-value set.

Author Intent

No single process for adapting content to a device is applicable in all cases. By way of example, consider the case of text layout when the display screen size varies with network terminal devices. In some applications, the server or browser can perform an automatic transformation, such as when text layout on a display screen requires line breaks to be inserted at appropriate places so that the screen is filled up without any cropping or overflows. Such transformations are referred to in the relevant art as 'autonomous transformations' and do not require author participation. This process depends on computations, and does not depend on the 'meaning' of the

content. The 'meaning of the content' is a concept understood by the content author 11 but not by a computing device.

On the other hand, there are some types of adaptation which require hints or instructions from the content author 11, or from someone who understands the meaning of the content. For example, a news article containing hundreds of words of text must be edited if it is to fit into the small display and memory of a wireless phone or PDA. Such editing cannot be done automatically because the software is not sophisticated enough to understand the content and to decide what text should be kept and which text should be discarded. It is left to a person to make this decision by reading and understanding the content to determine the author intent.

Obviously, the person most qualified to state author intent is the content author 11. For example, the content author 11 may wish to specify which parts of the news article should be retained for a small display, for a medium display, and for a large display. The content author 11 accomplishes this by using some form of meta-data in the associated mark-up language, preferably using DVIML as described in greater detail below.

Author intent, expressed as a form of markup in the content, thus provides instructional 'hints' whereby processing software can adapt the authored content 41 depending upon the device features of a particular user terminal device. This is accomplished in two steps. In the first step, a particular device feature is selected from all the device features of a network terminal device as a feature of interest, and the variation of this feature is determined. For example, the physical dimensions of the display screen (i.e., width and height) could be selected as features. If these device feature values are simply measured and tallied, the results will be a continuous range of values, since these values are a function of the range of manufacturers' screen designs. In the disclosed method, the process of selecting device display features and assigning discrete values to the features is intended to facilitate the

objective of maximum capability utilization in the network terminal device with minimum effort expended by the content author.

Some device display features can be considered to have constant value. An example is the brightness of the display. When the brightness does vary, it does not require adaptation of the authored content to utilize this variation. Thus, in the generic terminal device 13, the brightness feature is considered to have a constant value, and is therefore not a selected feature. By carefully selecting features to be included in the generic device, an entire device space may be defined, where the term 'space' is used as in mathematical set theory. Each possible combination of values of the mutually exclusive features thus represents a member of a set. Further, these features are specified to vary in discrete quantities, thus resulting in a few discrete values rather than producing a continuous range of values, as described above. The generic terminal device 13, with its discrete feature values, becomes the target device for content authors.

Method of Embedding Meta-Data

The disclosed method utilizes meta-data embedded into the authored content 41 when the content is developed. The meta-data thus embedded matches the generic terminal device and conveys the intent of the content author 11. Moreover, there is accommodation for evolution of the network terminal devices 13a, 13b,...,13n.

The process followed by the content author 11 in producing the device-independent content 43 is shown in the flow diagram of Fig. 3. The content author 11 first ascertains, or obtains, the value set of the generic terminal device 13, in step 121. The value set includes the features of the generic terminal device 13 and the various discrete values that can be assigned to a particular feature. Accordingly, the content author 11 does not need to consider the features of all possible network terminal devices 13a, 13b,...,13n commercially available, but needs to consider only the

features-value set 49 of the generic terminal device 13. As can be appreciated by one skilled in the relevant art, the features included in the feature-value set 49 are mutually exclusive, in that the features have no dependence on each other, and interactions between features do not have to be considered in the process of embedding meta-data. A graphics capability feature, for example, is mutually exclusive from a display size feature.

Authored content 41 which may require author intervention when being transformed by the DVI transformer 25 is identified, in step 123. By identifying and addressing only that authored content 41 which requires author annotation, the content author 11 saves the expenditure of unnecessary effort for which there would be no significant benefit realized in the process. By way of example, if the authored content 41 is of sufficiently small extent that it can be displayed in all the network terminal devices 13a, 13b,...,13n in unmodified form, author intervention would not be required. Or, if the authored content 41 can be modified automatically, with the addition of line breaks or scroll bars when the browser shape is changed, for example, author intervention is also not needed.

For authored content 41 in which the content author 11 needs to provide information for the modification of content, DVIML is used to embed meta-data in the authored content 41, in step 125, where the meta-data is based on the feature value set. For example, in an application in which the browser shape is changed, the content author 11 may wish to change to a different graphics file so as to display an image which is more closely formatted to the geometry of the browser. In such a case, embedding DVIML markup in two or more graphics files will direct the DVI transformer 25 in accordance with the preferences of the content author 11.

After the meta-data has been embedded, DVIML markup is added to produce the device-independent content 43, at step 127. The markup may be added by using a text editor, or a specialized editor such as word-processor software. Because DVIML

is based on XML, an XML editor tool can also be used for adding markup. If the authored content 41 was provided in a plain text format, then a 'stand-alone' mode of DVIML can be used. In the stand-alone mode, a full overhead of XML prologue and a root element is added, in accordance with the common practices for a conventional XML document.

For authored content 41 provided in a conventional markup format, such as WML or XHTML, for example, DVIML is used in an 'import' mode. In the import mode, the original document-type definition (DTD) is augmented to import the DVIML element declarations, if validation of the authored content 41 is required. The authored content 41 itself will then have DVIML overlaid on the existing underlying markup. Additionally, a DVIML namespace '*nda*' is declared to assure that there is no conflict between the overlaid DVIML and the element and attribute names in the underlying markup (e.g., WML, XHTML). Each DVIML element name is prefixed with a namespace qualifier. As appreciated by one skilled in the relevant art, the use of namespace qualifiers and importing elements are both standardized concepts in XML.

Operation of DVI Transformer

An example of meta-data embedded in HTML markup code is provided in Fig. 4. The meta-data is shown in bold text, such as in lines 9, 10, 12, and 13, for example. As this markup and code is passed through the DVI transformer 25, the meta-data in lines 9, 10, 12, and 13 is removed without intervention by the content author 11. This process includes 'defaults' if a new or an unrecognizable network terminal device 13a, 13b,...,13n requests the authored content 41. The origin server 51 or the content-author 11 can also invoke 'default device' values, and thereby override actual network terminal device features values by using special activation headers. The special activation headers provide a method of 'graceful degradation' functionality if problems arise during operation of the DVI transformer 25.

Operation of the DVI transformer 25 is initiated with receipt at the terminal device detector 21 of the request 27 from the user network terminal device 19, in Fig. 1. As noted above, the request 27 may be provided over a wired or wireless network connection. The terminal device detector 21 responds by identifying the user network terminal device 19 from which the request 27 originated, and providing the corresponding identification 47 to the device profiles repository 23. This is preferably accomplished using the conventional UserAgent header if the request 27 is an HTML request, at step 131, in Fig. 5. Alternatively, other mechanisms such as UAProf or CC/PP can be used if the request 27 is provided using another protocol. For example, Fig. 6 shows the above meta-data as can be embedded in WML markup code. The terminal device detector 21 includes and maintains a list of known network terminal devices 13a, 13b,...,13n to provide the identification capability.

Additionally, the terminal device detector 21 includes a mapping algorithm which attempts a 'best-effort' match of the requesting user network terminal device 19 to one of the known network terminal devices 13a, 13b,...,13n. As used herein, 'best-effort matching' means that if the exact device is not found in the list of known devices in the device profiles repository 23, then an alternate device present in the list will be chosen instead. For example, if the actual device sought, a Nokia 7190, is not in the list, then a best-effort match may be a Nokia 7110, which is similar to the Nokia 7190. If the identification effort is completely unsuccessful, at decision block 133, a 'default' device is provided as the identification 47, at step 137, and operation proceeds to step 139. The feature values for the default device are 'default' feature values, where the default feature values are 'lowest common denominator' values, selected such that content adapted to the default device in accordance with the default feature values can be displayed on the user network terminal device 19 without loss of content. Otherwise, the nearest values of the features for a matched device are retrieved from the device profiles repository 23 as the user terminal device features

profile 45 and provided to the DVI transformer 25, at step 135. The request 27 is also received at the origin server 51 which responds by providing the device independent content 43, obtained from the content repository 15, to the DVI transformer 25. The device-independent content 43 is placed in a response object, defined in HTML, and transmitted to the DVI transformer 25 by the origin server 51.

The DVI transformer 25 also receives the user device feature-values set 49 from the device profiles repository 23 via the device detector 21 for this particular response. The device-independent content 43 is then transformed into the device-specific content 29 using both the user device feature-values set 49 and the embedded DVIML meta-data, if any, at step 139. Finally, the DVI transformer also removes all DVIML markup, at step 141. If the requesting user network terminal device 19 has not been identified, a default feature-values set is used, but the device-specific content 29 is still rendered DVIML-free. If the original content is in some extended form of XML, then DVIML can be used to mark-up such content. If the original content is not XML (such as, a plain text file), then DVIML can still be used to mark-up such content as long as it contains only textual data or URL to non-text data.

Preferably, the file extension suffix of DVIML files comprises *.dviml* or *.dvm*. These suffixes are used to indicate whether the respective file is a DVIML file. DVIML can be used in conjunction with WML, or XHTML, or some other extension of XML. In such cases, the file extension *.dviml* or *.dvm* is appended to the existing extension. Thus, when a WML file, *test.wml*, is overlaid with DVIML markup, the file extension becomes *test.wml.dviml*. MIME (Multipurpose Internet Mail Extensions) Media Type of DVIML files is *application/x-dviml*. For combined data types, the form is preferably either *application/x-dviwml* or *application/x-wml.dviml*.

Document Type Declaration

According to one variation of the invention, the XML declaration of DVIML data is as follows:

```
<?xml version="1.0" encoding="xxx"?>
<!DOCTYPE dviml SYSTEM "http://nda.nokia.com/001/dviml.dtd">
```

The value of the attribute 'encoding' (i.e., *xxx* in the above description) is subject to the XML specification. Possible encoding types depend on each DVIML system.

The DVIML can be defined by using XML. Disclosed herein is a DVIML-specific specification. The element, the outline, basic and simple examples, the attribute, and the content are explained below. In order to prescribe the values of each attribute and content, the Extended Backus-Naur Form is utilized. As can be appreciated by one skilled in the art, the notation 'DVIML' represents the language specification, and the notation 'dviml' represents the root element of the DVIML when DVIML is used as in a standalone manner, without any underlying markup. When DVIML is overlaid on existing markup, then the root element of that markup remains, and no 'dviml' root element is introduced. In addition, the data described subject to the DVIML specification is denoted as 'DVIML data', and the file containing DVIML data is denoted as a 'DVIML file.'

DVIML Elements

The dviml element is the root element of the DVIML and can be described. The dviml element shows that the data is a DVIML data. For example,

```
<dviml version="0.10">
   <area>
      <segment> ... </segment>
</dviml>
```

The dviml element has an attribute of *version*.. The *version* attribute specifies the DVIML version and can take values [0-9], for example. The default value for *version* is the latest version of the DVIML.

When DVIML is used as an overlay on another mark-up, the root element *<dviml>* is absent. In the disclosed method, a name-space attribute, *nda* is defined

via a URL. In this case, the URL is used to indicate the version of DVIML in use. The dviml element has the following child elements:

<rigid>, <shape>, <list>, <columns>, and *<area>*,

as defined below, and which are preferably described in the order shown above. The *<area>* and *<list>* elements do not need to be described, or can be described once. The *<rigid>* element contains content which is 'rigid' and not ordinarily modifiable by browsers. The content may not be actual content but can be the resource pointed to by a URL. Thus an image URL can be contained in a *<rigid>* element.

As discussed above, any user terminal device can be described by providing a list of the device attributes. For example, most terminal devices have size, weight, color, an input mechanism, and a scroll mechanism. From the perspective of a content author or a user, only some attributes are germane to the development task and attributes such as weight, case, or color are irrelevant.

In general, a feature is an attribute of a terminal device that is, preferably, mutually exclusive from other features of the device, with respect to content delivery and rendition by that device. It should be understood that non-mutually exclusive features, that is, features sharing some characteristics with other features, can also be included in the set of selected device features. A device features set having only mutually-exclusive features will comprise a set of minimum size. Not all attributes of a device are considered as a feature. Features can be single attributes, such as the display size of the device, or combinations of physical attributes. Such a combination is exemplified by an 'input-mechanism,' for example, which may comprise software for character recognition, a touch-sensitive screen, and a stylus.

To qualify as a feature, the attribute should serve a unit function in either the acquisition and delivery of content or interaction with the user. In addition, features should be mutually exclusive with respect to content delivery or user interaction and

possible values. For example, the color capability and size of a terminal device are mutually exclusive with respect to how content rendition is affected, and these values can change independently. Physical or practical constraints may limit possible combinations of values. An attribute qualifies as a feature if its values can be independently changed. Examples of features include the display-size of the terminal device, color capability, network bandwidth, and input mechanism. Each feature of the generic device 13 can take on various values resulting in a representation of a terminal device which is an approximation of various physical user terminal devices.

Feature Display Size and DVIML

Table 150 in Fig. 7 lists various features 151 of the display of the user network terminal device 19 along with corresponding values 153. The most significant feature of the network terminal device 19 is typically display size 155. Display size is most conveniently represented as an array (X, Y) of pixels, shown in Fig. 8, where X is the number of horizontal pixels in a display 181 and Y is the number of vertical pixels. As can be appreciated by one skilled in the relevant art, a hardware-oriented feature of a device, such as the number of its horizontal pixels (X), can be directly translated to the author-oriented measure of columns and, likewise, the number of vertical pixels (Y) can be translatable to rows. The use of a default font and font size is assumed, and presumed to be the same for all user terminal devices. This is an approximation and is justified to maintain simplicity of the system. As the content author 11 expresses intent in rows and columns, the present device and method transforms these intentions to pixels for display on the device.

A feature-value set which included all display sizes of all available physical terminal display devices would include a relatively large number of values. As a consequence, the task facing the content author 11 coding for such a value set would be tedious and overwhelming. Instead, the feature-based device description method

of the present invention specifies a greatly-reduced number of discrete display sizes for which the content author 11 would be required to create content.

Table 160 in Fig. 7 lists five content-specific characteristics 161 that determine how the authored content 41 can be displayed, along with corresponding DVIML elements 163 and content examples 165. Certain content is not capable of manipulation, exemplified by a WBMP image 171. As can be appreciated by one skilled in the relevant art, the WBMP image 171 either will, or will not, fit into a particular device display. The most accommodating format is that of a stream of text characters, exemplified by free-form text 179, which can be easily 'wrapped' in the display by the browser software with little or no loss of information. In between these feature forms are content such as tables 173, columns 175, and lists 177 whose characteristics are amenable to intelligent manipulation.

Fig. 8 illustrates how the size a device display 181 is universally represented by the number of available pixels along the x- and y-axes of the device display. In portrait displays, such as exemplified in terminal devices 183 and 185, in Fig. 9, the value of X is smaller than the value of Y. Similarly, in landscape displays, such as exemplified by terminal devices 187 and 189, the value of X is larger than the value of Y.

Table 191, in Fig. 10, shows the mathematical mapping of display size in pixels to the variations in content display based on the substitution of the content characteristics (DVIML elements described below) in the X-Y representation of the display. The possible values of features can be discretized from the actual variation possible for that feature. This discretization reduces the degree of variation that the content author 11 has to deal with, but at the same time renders the matching process as approximate rather than as exact. This approximation is justifiable for the resulting simplicity presented to the content author 11. Table 193, in Fig. 11, shows a profile illustrating how a user terminal device is assigned 'values' for its 'features.' A

plurality of such profiles is used, one profile for each type of user terminal device recognized by the network communication system 10.

Rigid Content and DVIML Element <rigid>

Graphic images have a fixed-form content characteristic. That is, graphic images cannot be manipulated without risk of losing meaning or coherence. The content-specific characteristics 161 (in Fig. 7) indicate that graphic image content is usually represented in the fixed form (*X, Y*), that is in pixel format. The DVIML elements 163 indicates that the content author 11 can mark up graphic image content using the <*rigid*> element. Three differently-sized images, small, medium, and large, are shown in the content examples 165. The content author 11 specifies a <pick> element for each image, and the corresponding element takes a value specifying the actual pixel count of the image along the *x* and *y* axes. The disclosed method, knowing the number of pixels available on each device display, selects the appropriately-sized image for each user network terminal device 19. For example, if one <*pick*> element specifies attributes of (*200, 200*), while another <*pick*> element specifies (*300, 300*), then the network communication system 10 chooses an image having no more than a 300×300 pixel size for devices whose display uses at least 200×200 pixels but less than 300×300, and an image having an image of at least 300×300 pixels for devices which can display more than 300×300 pixels. Otherwise, the image is suppressed.

Generated Content and DVIML Element <shape>

Tables and vector graphics have a generated-fixed-form content characteristic. That is, tables and vector graphics can be manipulated by the network terminal device 19 browser to a limited extent, but can be better manipulated at the point of generation by a server before being sent to the user network terminal device 19. The content-specific characteristics 161 indicates table and vector graphic content as being

represented in the form of an aspect ratio. That is, an aspect ratio of *X/Y*, or the number of *x*-axis pixels divided by the number of *y*-axis pixels. The DVIML elements 163 shows that the content author 11 marks up table and vector graphics content using the <*shape*> element. The content examples 165 shows a single table generated in two different formats. One format is suitable for a landscape-shaped display, and the other format is suitable for a portrait-shaped display.

The content author 11 can generate different copies of the content, where each is destined for a user terminal device having a particular aspect-ratio value. The content author 11 then marks up this content using the <*shape*> element, within which one or more <*pick*> elements are specified. Each <*pick*> element accepts an aspect ratio attribute whose value can either be square, portrait, or landscape. The network communication system 10 then sends content marked with the square attribute to devices whose displays are defined as square in the device configuration file. Similarly, the network communication system 10 sends content tagged as 'portrait' to portrait-shaped display devices; and content tagged as 'landscape' to terminal devices having a landscape-shaped display.

List Type Content and DVIML Element <list>

Content that fits all displays along one axis and hence is not of concern along that axis has the uni-axis free form content characteristic. For lists, content along the *x*-axis is typically not of concern. To be more specific, although a browser may modify content along the *x*-axis, such modification is deemed unnecessary since it is assumed that content along the *x*-axis never exceeds display capability of the user network terminal device 19. By way of example, a uni-axis free form content, free along the *x*-axis, is a list of names taken from a telephone address book. As the DVIML elements 163 shows, the content author 11 may use the <*list*> element in order to specify alternatives to provide for devices which are vertically restricted. To

do this, the content author 11 specifies a <*list*> element, and within it one or more <*segment*> elements, each specifying a value which is the number of supported rows, that is, the number of rows concatenated to produce a display. In processing such marked-up content, the system will pick the particular <*segment*> most suited for the requesting user device. As with <*columns*>, below, concatenation of segments is supported. The semantics for <*segment*> is slightly different from that for <*pick*>, as it is possible to specify the concatenation of <*segment*>. This eliminates the need to repeat in the second segment, for example, information already specified in the first segment (assuming that the first segment is more restricted than the second segment).

Columnar Content and DVIML Element <columns>

Content that fits all displays along one axis and hence is not of concern along that axis has the uni-axis free form content characteristic. For columns, content along the *y*-axis is not of concern. Although a browser may modify content along the *y*-axis, such modification is deemed unnecessary since it is assumed that content along the *y*-axis does not exceed the display capability of the user network terminal device 19. An example of uni-axis free form content, free along the *y*-axis, is a line of text that cannot be broken, or a horizontal table with only one row. In each case, the columnar content will fit all displays vertically, but is cropped horizontally. As indicated in the DVIML elements 165, the content author 11 may use the <*columns*> element in order to specify alternatives to provide for devices which are horizontally restricted. To do this, within each <*columns*> element, the content author 11 may specify one or more <*segment*> elements, each specifying a value which is the number of supported, or concatenated, columns. In processing such marked-up content, the system will pick the particular <*segment*> most suited for the requesting user device.

Free-Form Textual Content and DVIML Element <area>

Content such as text is said to have the characteristic bi-axially free form because it can be displayed equally effectively on devices having an equally sized display area, even though the shape of the display area may differ from device to device. For example, a paragraph of text that fits into a display having an area of 100 units will fit equally well whether the display is square (e.g., 10×10) or rectangular (e.g., 25×4). However, if user terminal devices differ in display size area, the number of characters sent to the particular terminal device is limited based on available area. As the DVIML elements 163 indicates, the content author 11 may use the *<area>* element in order to specify alternatives to provide for devices which differ in display area. Within the *<area>* element, the content author 11 can specify one or more ** elements, each specifying a character count. The network communication system 10 will then select the segment whose character count accords with the display size of the requesting user device. Here again, as with rows and columns, the content author 11 may use concatenation of segments in order to avoid repeating the same content in different segments. It can be seen that specifying a high character count has the effect of setting a low priority for that segment of text in that it will not be displayed on user terminal devices having smaller display areas.

Authored Content Display

Fig. 12 shows a user network terminal device 201, such as a mobile telephone, having a portrait display screen. When the content request 27 is made by the user network terminal device 201, the terminal device detector 21 receives the request 27 and identifies the user network terminal device 201 as a Nokia 6210, for example. The corresponding device feature values for a Nokia 6210 are obtained from the device profiles repository 23 and provided to the DVI transformer 25. The content repository 15 provides the device-independent content 43 to the origin server 51, such as the content exemplified by the code of Fig. 4 above, for example. The DVI

transformer 25 converts the device-independent content 43 into device-specific content 29 for a Nokia 6210. In the resulting display, the device-specific content 29 is formatted into a first screen 203a showing an initial portion of text, a second screen 205a showing a subsequent portion of text, and a third screen 207a showing a small graphic image, for example, where individual screens are accessed by scrolling.

In comparison, when the content request 27 is made by a user network terminal device 211, such as a mobile hand-held computing device with a relatively large screen, the resulting display will differ from that provided by the user network terminal device 201. The terminal device detector 21 receives the request 27 and identifies the user network terminal device 211 as a Palm Vx, for example. The corresponding device feature values for a Palm Vx are obtained from the device profiles repository 23 and provided to the DVI transformer 25. The content repository 15 provides the code of Fig. 4 above, and the DVI transformer 25 converts the device-independent content 43 into device-specific content 29 for a Palm Vx. In the resulting display, the device-specific content 29 is formatted into a detailed screen 213 and can display a larger image 215 in comparison to the screens 203-207 of the user network terminal device 201.

In another example, authored content for a weather report, exemplified by the markup code of Fig. 13, is provided to the DVI transformer 25 as the device independent content 43 for the user network terminal device 201, shown in Fig. 14. In the resulting display, the device-specific content 29 is formatted into a first screen 203b showing the forecast for the initial part of the week, a second screen 205b showing the forecast for the middle of the week, and a third screen 207b showing the forecast for the latter part of the week, for example, where individual screens are accessed by scrolling.

In comparison, when the content request 27 is made by a user network terminal device 221, such as a mobile telephone having a landscape display screen,

the resulting display will differ from that provided by the user network terminal device 201. In the example provided, the device detector 21 identifies the user network terminal device 221 as an Ericsson R380, for example. In the resulting display, the device-specific content 29 is formatted into a detailed landscape screen 223 which can display the entire week's weather forecast.

Generic Terminal Device

The concept of the generic terminal device 13 is described in greater detail with reference to Fig. 15 in which are shown a series of Greek letters α, β, χ and δ representing variables, or features. The generic terminal device 13 can be defined in terms of device features having one or more values, much as a mathematical function term can be a function of variables with discrete values. In this example, the English equivalent letter *a* is written in different fonts to represent the different possible values for the feature α, the English equivalent letter *b* is written in different fonts to represent values for the feature β, and so on, in Fig. 16.

The space of all possible instances is described by the feature set {P} along with the corresponding values of the features, where all possible combinations of values exist, as represented in Fig. 17. Fig. 18 illustrates the relationship between the entire device space, represented by the feature set {P}, and the range of available devices, represented by a currently-available set {C}, where {C} is a subset of {P}. When a new feature is introduced, or evolves, represented by ϵ in Fig. 19, the feature set {P} is increased accordingly. Because old features are not deleted from the feature set {P}, the disclosed method is backwardly compatible with earlier systems.

In Fig. 20, even though an old feature, represented by *d*, has stopped evolving and has acquired a constant value of *D*, the feature is not deleted from the feature set {P}. Thus, old content and processors remain valid, even they now have limited functionality in comparison to the new content and processor. As new features are

added to the original feature set {P}, the set expands to include the region indicated by *E* in Fig. 21.

A judicious identification of the evolving feature ϵ can determine whether to include ϵ as a new feature. The process of feature evolution may occur when the features take on new values, when different combinations of different feature-values are instantiated, when new features are introduced, or when old feature values converge to a constant value. By a judicious identification of features, evolving changes can be covered without the need for their introduction as new features. This in turn, means that the content author will not need to modify his production methods to support new products of the evolving process. When new features are introduced, the feature set {P} will need to be augmented, but will remain fully backwardly compatible.

The generic terminal device is a device which itself morphs or changes. For example, the generic terminal device can have a color capability feature which can take values of black and white, or color. The display screen size of the generic terminal device can be a small size, a medium size, or a large size. As the generic terminal device has values for features, and the values can change, the generic terminal device can represent all and more real terminal devices and is a superset of all possible terminal devices.

All features whose values change on the communication device may not be included in the feature set {P}. If no developer participation is required to modify content to utilize a feature or to maintain fidelity, then that feature is not included in the feature set {P}. In other words, features which can be accommodated in an automatic manner are ignored in the published feature set {P}, simplifying the set that the content author has to address.

While the invention has been described with reference to particular embodiments, it will be understood that the present invention is by no means limited to the particular constructions and methods herein disclosed and/or shown in the drawings, but also comprises any modifications or equivalents within the scope of the claims.

What is claimed is:

CLAIMS

1. A method for providing authored content (41), from device-independent content (43) generated by a content author (11), to any of a plurality of requesting user network terminal devices (13), each requesting user network terminal device (13) having means for delivering at least a portion of the authored content (41) received, the presentation of authored content (41) so delivered being dependent on feature values (153) of the requesting network terminal device (19), characterized in that said method comprises the steps of:

associating one or more of the device feature values (153) with a requesting user network terminal device (19) in response to said requesting user network terminal device (19) transmitting a request (27) for the authored content (41); and

converting the device-independent content (43) into a device-specific content (29) adapted to said requesting user network terminal device (19),

such that said device-specific content (29) provides for a display on said requesting user network terminal (19) device in a format as intended by the content author (11).

2. The method of claim 1 further comprising the step of specifying a feature-value set (49) for the plurality of user network terminal devices (13), said feature-value set (49) including a set of selected device features with one or more discrete feature values assigned to each said selected device feature, each said selected device feature selected from the features of the plurality of user network terminal devices (13) in accordance with a pre-established criterion.

3. The method of claim 2 wherein said set of selected device features comprises a member of the group consisting of display size, aspect ratio, display line count,

color capability, graphics capability, variable size text capability, different font capability, input capability, and input bandwidth.

4. The method of claim 2 wherein said pre-established criterion includes a determination that a particular said selected device feature affects the manner in which the authored content is presented.

5. The method of claim 2 wherein said feature value set comprises discrete values assigned to selected features of a generic network terminal device.

6. The method of claim 5 wherein said generic network terminal device comprises a set of device features selected from the display features of the plurality of user network terminal devices.

7. The method of claim 1 further comprising the step of annotating the authored content with markup information to provide the device-independent content, said markup information specifying intent of the content author for one or more corresponding device feature values;.

8. The method of claim 7 wherein said step of converting the device-independent content comprises the step of invoking said markup information corresponding to the device feature values associated with said requesting user network terminal device.

9. The method of claim 7 wherein said step of converting the device-independent content comprises the step of removing said markup information from said device-independent content.

10. The method of claim 7 wherein said step of annotating the authored content comprises the steps of:

identifying that content in said authored content which requires author annotation; and

embedding meta-data into said content requiring author annotation, said meta-data based on the feature values.

11. The method of claim 1 wherein said requesting user network terminal device comprises a member of the group consisting of a wireless telephone and a personal digital assistant.

12. The method of claim 1 further comprising the step of identifying said requesting user network terminal device prior to said step of associating one or more of the device feature display values.

13. The method of claim 12 wherein said step of identifying said requesting user network terminal device comprises the step of reading network terminal device information contained in said request.

14. The method of claim 1 wherein said step of converting the device independent content comprises the steps of:

determining the array of display pixels available in said requesting user network terminal device from the feature values;

comparing said array of display pixels with an array of image pixels corresponding to an authored content image;

selecting said authored content image for display in said requesting user network terminal device if said array of image pixels does not exceed said array of display pixels; and

suppressing said authored content image from display if said array of image pixels does exceed said array of display pixels.

15. The method of claim 1 wherein said step of converting the device independent content comprises the steps of:

determining an aspect ratio for said requesting user network terminal device from the feature values;

sending authored content marked with an attribute of square to said requesting user network terminal device if said aspect ratio is square;

sending authored content marked with an attribute of portrait to said requesting user network terminal device if said aspect ratio is portrait; and

sending authored content marked with an attribute of landscape to said requesting user network terminal device if said aspect ratio is landscape.

16. The method of claim 1 wherein said step of converting the device independent content comprises the steps of:

determining that said authored content is marked as having a uni-axis free form characteristic;

identifying the number of segments supported by the display in said requesting user network terminal device;

concatenating a number of rows for sending to said requesting user network terminal device if said uni-axis free form characteristic includes a list

characteristic, wherein said number of rows corresponds to said number of segments supported; and

concatenating a number of columns for sending to said requesting user network terminal device if said uni-axis free form characteristic includes a column characteristic, wherein said number of columns corresponds to said number of segments supported.

17. The method of claim 1 wherein said step of converting the device independent content comprises the steps of:

determining that said authored content is marked as having a bi-axially free form characteristic;

identifying the character count supported by a display in said requesting user network terminal device;

sending to said requesting user network terminal device a segment of authored content, wherein the character count in said segment corresponds to said character count supported by said display.

18. A communication system (10) for providing authored content (41) to any of a plurality of requesting user network terminal devices (13), each requesting user network terminal device (13) having means for delivering at least a portion of the authored content (41) received, the presentation of authored content (41) so delivered being dependent on features of the requesting user network terminal device (19), characterized in that said communication system (10) comprises:

a network terminal device detector (21) for receiving a display request (27) from the requesting user network terminal device (19) and

providing therefrom identification (47) of the requesting user network terminal device (19);

an origin server (51) for receiving said display request (27) and, in response thereto, providing device-independent content (43) corresponding to said display request (27);

a transformer (25) for associating one or more user network terminal device feature values (49) with said requesting user network terminal device (19) in response to receiving said user network terminal device identification (47) from said terminal device detector (21), for receiving said device-independent content (43) from said origin server (51), and for transforming said device-independent content (43) into device-specific content (29) formatted for the requesting user network terminal device (19).

19. The communication system of claim 18 wherein said device-independent content comprises markup information providing information for displaying said authored content in compliance with author intent.

20. The communication system of claim 18 further comprising a device profile repository accessible by said network terminal device detector, said device profile repository including a feature-value set for the requesting user network terminal device, said feature-value set including a set of selected user network terminal device features with one or more discrete device feature values assigned to each said selected user network terminal device feature.

21. The communication system of claim 18 further comprising a content repository accessible by said origin server, said content repository for storing

annotated authored content generated by the content author whereby said origin server provides device-independent content from said annotated authored content.

22. The communication system of claim 18 wherein each said selected user network terminal device feature is selected from the features of the plurality of requesting user network terminal devices in accordance with a pre-established criterion.

23. The communication system of claim 18 wherein said set of selected device features comprises a member of the group consisting of display size, aspect ratio, display line count, color capability, graphics capability, variable size text capability, different font capability, and input capability.

24. The communication system of claim 18 wherein said requesting user network terminal device comprises a member of the group consisting of a wireless telephone and a personal digital assistant.

25. A method of presenting content to a terminal device (19) having particular display characteristics, said method comprising the step of receiving a request (27) for content (41) from the terminal device (19); characterized in that said method further comprises the steps of:

based on said request (27), identifying display characteristics (45) associated with the terminal device (19);

converting the content (41) into a device-dependent format (29) compatible with said identified display characteristics (45); and

transmitting said device-dependent formatted content (29) to the terminal device (19).

26. The method of claim 25 wherein said step of converting comprises the step of converting the content by interpreting metatags embedded in the content.

27. The method of claim 25 wherein said step of converting comprises the step of converting the content into a landscape-formatted display format if the terminal device has a landscape-formatted display, and converting the content into a portrait-formatted display format if the terminal device has a portrait-formatted display.

28. The method of claim 25 wherein said step of converting comprises the step of converting the content into a first aspect ratio if the terminal device has said first aspect ratio, and converting the content into a second aspect ratio of the terminal device has said second aspect ratio.

29. The method of claim 25 wherein said step of converting comprises the step of converting the content into a small-sized image if the terminal device accommodates only small-sized images, and converting the content into a large-sized image if the terminal device accommodates large-sized images.

30. The method of claim 25 further comprising the step of annotating the content with meta-data to indicate the manner in which portions of the content should be represented on a plurality of different terminal devices, the terminal devices having mutually incompatible display characteristics.

31. The method of claim 25 wherein said step of converting comprises the step of performing a best-fit match between said display characteristics and one of a plurality of display formats.

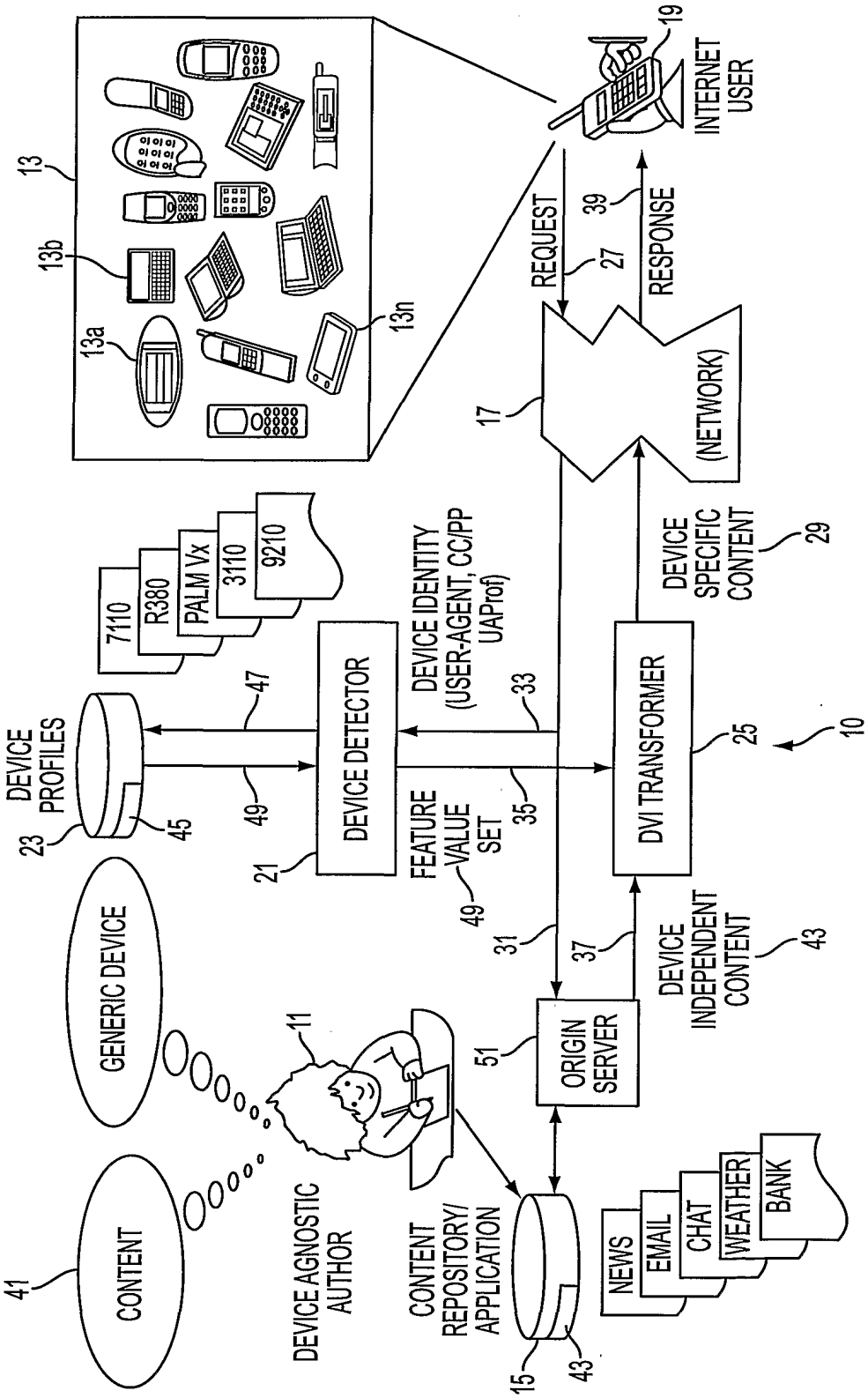
13
13a
13b
13n
19
INTERNET USER
REQUEST
27
39
RESPONSE
17
(NETWORK)
DEVICE SPECIFIC CONTENT
29
7110
R380
PALM Vx
3110
9210
DEVICE IDENTITY (USER-AGENT, CC/PP UAProf)
33
47
DEVICE PROFILES
23
45
49
DEVICE DETECTOR
21
FEATURE VALUE SET
35
DVI TRANSFORMER
25
10
49
31
37
DEVICE INDEPENDENT CONTENT
43
GENERIC DEVICE
11
51
ORIGIN SERVER
41
CONTENT
DEVICE AGNOSTIC AUTHOR
CONTENT REPOSITORY/ APPLICATION
15
43
NEWS
EMAIL
CHAT
WEATHER
BANK

FIG. 1

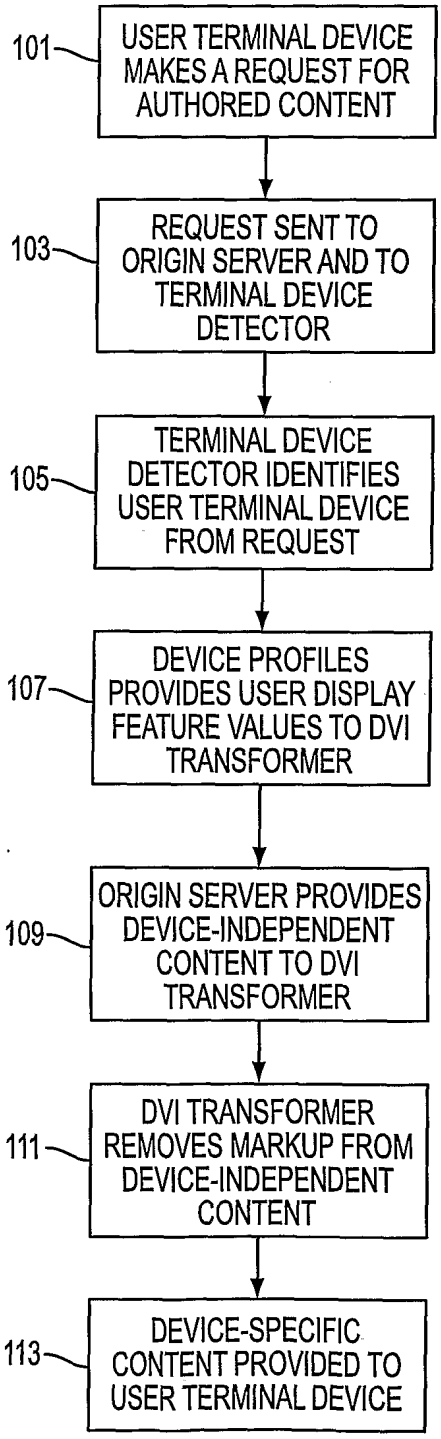
101
USER TERMINAL DEVICE MAKES A REQUEST FOR AUTHORED CONTENT
103
REQUEST SENT TO ORIGIN SERVER AND TO TERMINAL DEVICE DETECTOR
105
TERMINAL DEVICE DETECTOR IDENTIFIES USER TERMINAL DEVICE FROM REQUEST
107
DEVICE PROFILES PROVIDES USER DISPLAY FEATURE VALUES TO DVI TRANSFORMER
109
ORIGIN SERVER PROVIDES DEVICE-INDEPENDENT CONTENT TO DVI TRANSFORMER
111
DVI TRANSFORMER REMOVES MARKUP FROM DEVICE-INDEPENDENT CONTENT
113
DEVICE-SPECIFIC CONTENT PROVIDED TO USER TERMINAL DEVICE

FIG. 2

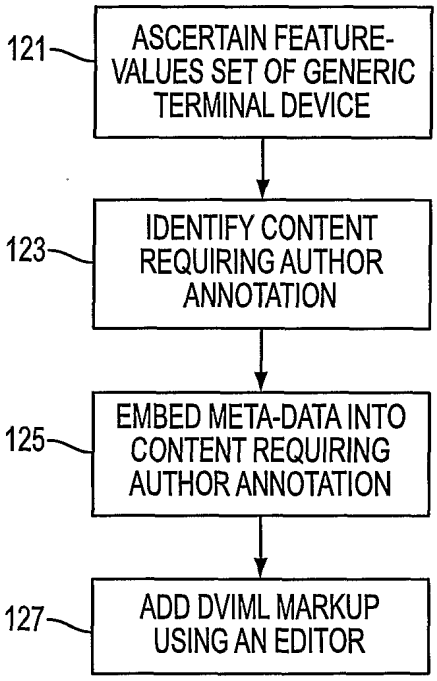
121
ASCERTAIN FEATURE-VALUES SET OF GENERIC TERMINAL DEVICE
123
IDENTIFY CONTENT REQUIRING AUTHOR ANNOTATION
125
EMBED META-DATA INTO CONTENT REQUIRING AUTHOR ANNOTATION
127
ADD DVIML MARKUP USING AN EDITOR

FIG. 3

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE dviml PUBLIC "-//DVIML//DTD DVIML 0.1//EN"
"http://nda.nokia.com/DTD/dviml0.1xml">
<dviml version="0.10">
        Giant Deep-Sea Creature
        <area concat="true">
            <segment char="200">
            Amazes Spanish Scientists
          </segment>
          <segment char="200">
            Friday November 3 4:35 PM ET MADRID (Reuters) <br/>
          <segment>
          <segment char="50">
            Fishermen off northern Spain have captured a giant
            specimen of a strange, light-emitting, deep sea
            cephalopod, scientists said Friday.
          </segment>
          <segment char="100">
            The octopus-like creature, a taningia danae, weighs in
            at 275 pounds, measures seven feet and is easily the
            biggest of its type discovered. Disappointingly for big
            eaters near the Asturian port of Ribadesella it will not
            end up on their plates, but will be preserved and
            displayed in a marine center whose most impressive
            cephalopod to date was a mere 140 pound example.
          </segment>
        </area>
        <area concat="false">
            <segment char="50">
            picture50
          </segment>
          <segment char="200">
          picture200
          </segment>
        </area>
</dviml>
```

FIG. 4

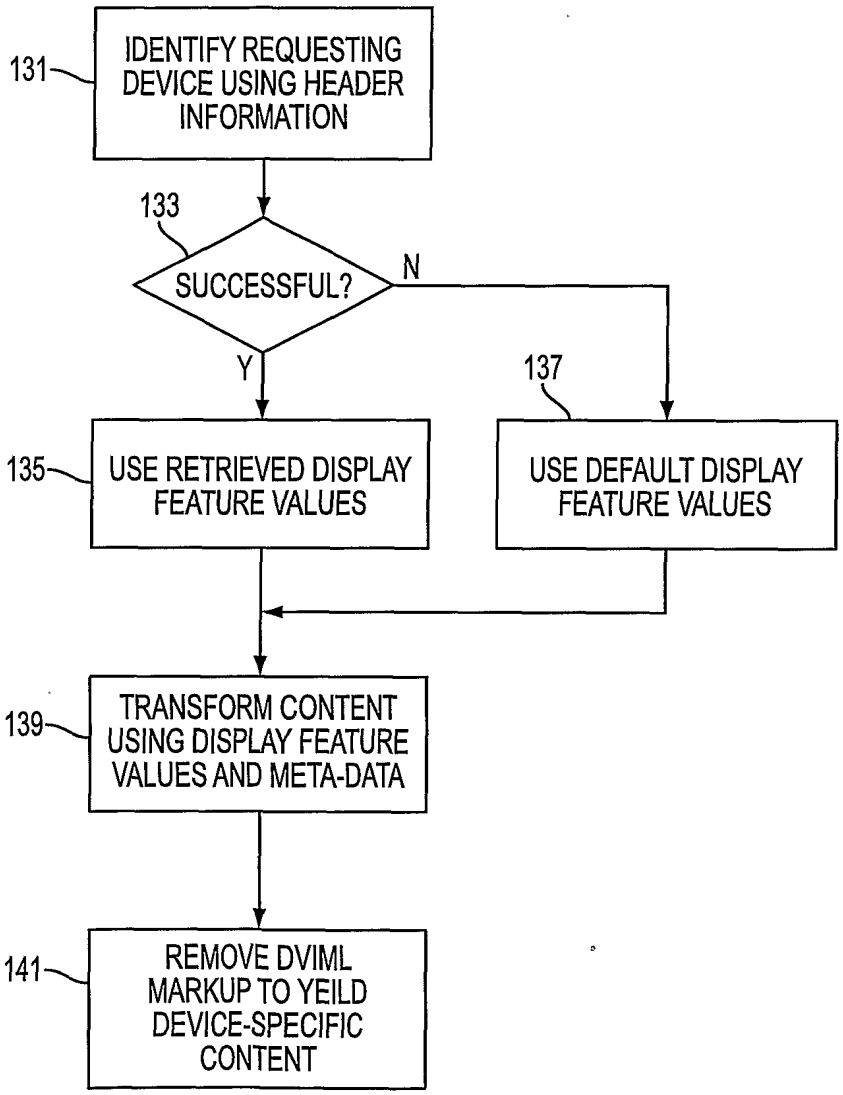
131
IDENTIFY REQUESTING DEVICE USING HEADER INFORMATION
133
SUCCESSFUL?
N
Y
137
135
USE RETRIEVED DISPLAY FEATURE VALUES
USE DEFAULT DISPLAY FEATURE VALUES
139
TRANSFORM CONTENT USING DISPLAY FEATURE VALUES AND META-DATA
141
REMOVE DVIML MARKUP TO YEILD DEVICE-SPECIFIC CONTENT

FIG. 5

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
"http://www.wapforum.org/DTD/wml_1.2.xml">
<wml xmlns:nda="http://nda.nokia.com/deviceAdapter">
  <card>
   <p>
     Giant Deep-Sea Creature
     <nda:area nda:concat="true">
         <nda:segment nda:char="200">
         Amazes Spanish Scientists
       </nda:segment>
     </nda:area>
   </p>
   <p>
     <nda:area nda:concat="true">
       <nda:segment nda:char="200">
           Friday November 3 4:35 PM ET
       MADRID (Reuters) <br/>
       </nda:segment>
       <nda:segment nda:char="50">
           Fishermen off northern Spain have captured a giant
           specimen of a strange, light-emitting, deep sea
           cephalopod, scientists said Friday.
       </nda:segment>
       <nda:segment nda:char="100">
           The octopus-like creature, a taningia danae, weighs in
           at 275 pounds, measures seven feet and is easily the
           biggest of its type discovered. Disappointingly for big
           eaters near the Asturian port of Ribadesella it will not
           end up on their plates, but will be preserved and
           displayed in a marine center whose most impressive
           cephalopod to date was a mere 140 pound example.
       </nda:segment>
     </nda:area>

     <nda:area nda:concat="false">
       <nda:segment nda:char="50">
         <a href="picture50"> Picture </a>
       </nda:segment>
       <nda:segment nda:char="200">
         <a href="picture200"> Picture </a>
       </nda:segment>
     </nda:area>
   </p>
  </card>

</wml>
```

FIG. 6

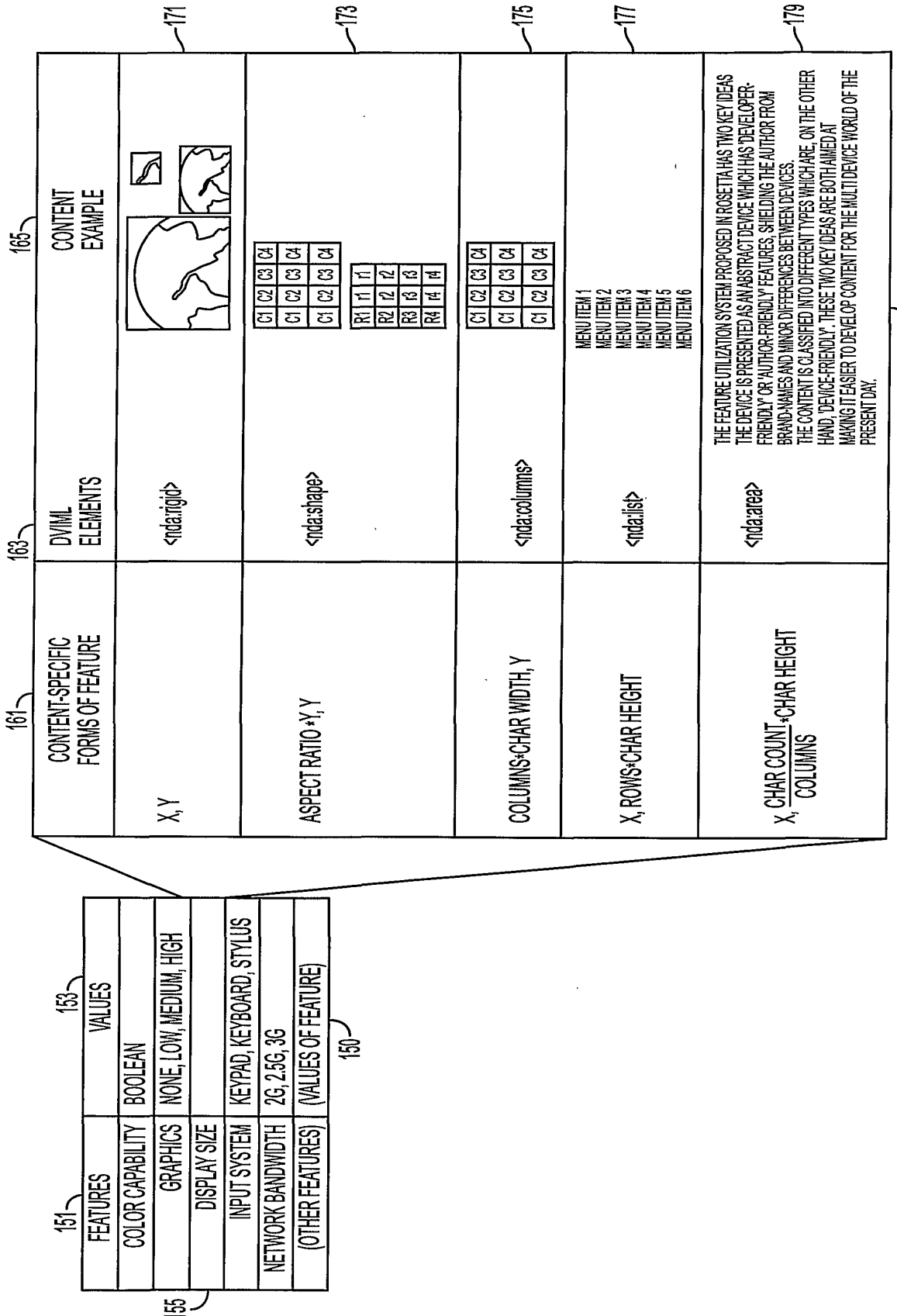
151
FEATURES
153
VALUES
COLOR CAPABILITY
BOOLEAN
GRAPHICS
NONE, LOW, MEDIUM, HIGH
DISPLAY SIZE
INPUT SYSTEM
KEYPAD, KEYBOARD, STYLUS
NETWORK BANDWIDTH
2G, 2.5G, 3G
(OTHER FEATURES)
(VALUES OF FEATURE)
150
155
161
CONTENT-SPECIFIC FORMS OF FEATURE
163
DVIML ELEMENTS
165
CONTENT EXAMPLE
171
173
175
177
179
160
X, Y
<nda:rigid>
ASPECT RATIO*Y, Y
<nda:shape>
C1 C2 C3 C4
R1 r1 r1
R2 r2 r2
R3 r3 r3
R4 r4 r4
COLUMNS*CHAR WIDTH, Y
<nda:columns>
X, ROWS*CHAR HEIGHT
<nda:list>
MENU ITEM 1
MENU ITEM 2
MENU ITEM 3
MENU ITEM 4
MENU ITEM 5
MENU ITEM 6
X, CHAR COUNT/COLUMNS*CHAR HEIGHT
<nda:area>
THE FEATURE UTILIZATION SYSTEM PROPOSED IN ROSETTA HAS TWO KEY IDEAS THE DEVICE IS PRESENTED AS AN ABSTRACT DEVICE WHICH HAS 'DEVELOPER-FRIENDLY' OR 'AUTHOR-FRIENDLY' FEATURES, SHIELDING THE AUTHOR FROM BRAND-NAMES AND MINOR DIFFERENCES BETWEEN DEVICES.
THE CONTENT IS CLASSIFIED INTO DIFFERENT TYPES WHICH ARE, ON THE OTHER HAND, 'DEVICE-FRIENDLY'. THESE TWO KEY IDEAS ARE BOTH AIMED AT MAKING IT EASIER TO DEVELOP CONTENT FOR THE MULTI DEVICE WORLD OF THE PRESENT DAY.

FIG. 7

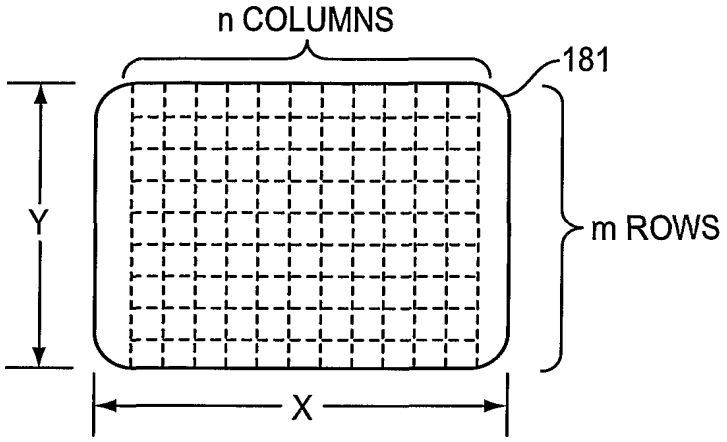

FIG. 8

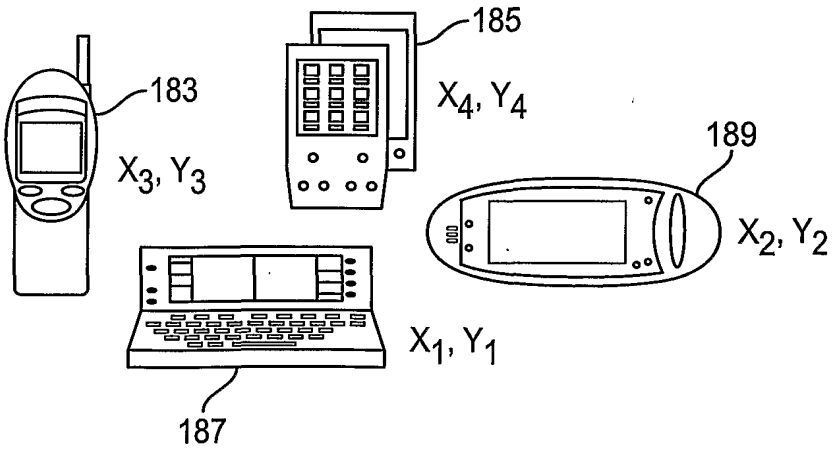

FIG. 9

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DISPLAY SIZE DVIML ELEMENTS AND VALUES

CONTENT CHARACTERISTIC	RELEVANT DEVICE DISPLAY ATTRIBUTE	DVIML ELEMENT	VALUE FOR ACTUAL DEVICE	VALUE FOR GENERIC DEVICE
IMAGES (FIXED FORM)	X, Y	<RIGID>	ZERO TO INFINITY AND ALL INTEGERS IN BETWEEN (0 TO ∞)	SAME AS FOR THE ACTUAL DEVICE.
TABLES AND VECTOR GRAPHICS (GENERATED FIXED FORM)	ASPECT RATIO	<SHAPE>	ZERO TO INFINITY AND ALL NUMBERS IN BETWEEN (0 TO ∞)	SQUARE PORTRAIT LANDSCAPE
COLUMNS (Y-AXIS FREE FORM)	COLUMNS	<COLUMS>	ZERO TO INFINITY AND ALL INTEGERS IN BETWEEN (0 TO ∞)	5 10 20+
LISTS OR ROWS (X-AXIS FREE FORM)	ROWS	<LIST>	ZERO TO INFINITY AND ALL INTEGERS IN BETWEEN (0 TO ∞)	5 10 20+
TEXT (BI-AXIALLY FREE FORM)	CHAR COUNT	<AREA>	ZERO TO INFINITY AND ALL INTEGERS IN BETWEEN (0 TO ∞)	50 100 200+

FIG. 10

DEVICE PROFILE FOR PALM Vx (ILLUSTRATIVE ONLY) 193

FEATURE	POLYMORPH	VALUE
DISPLAY SIZE	X, Y	160, 160
	ASPECT RATIO	SQUARE
	COLUMNS	20
	ROWS	20
	CHAR COUNT	200+
GRAPHICS		YES
COLOR		NO
KEYBOARD INPUT		NO
SCREEN INPUT		YES

FIG. 11

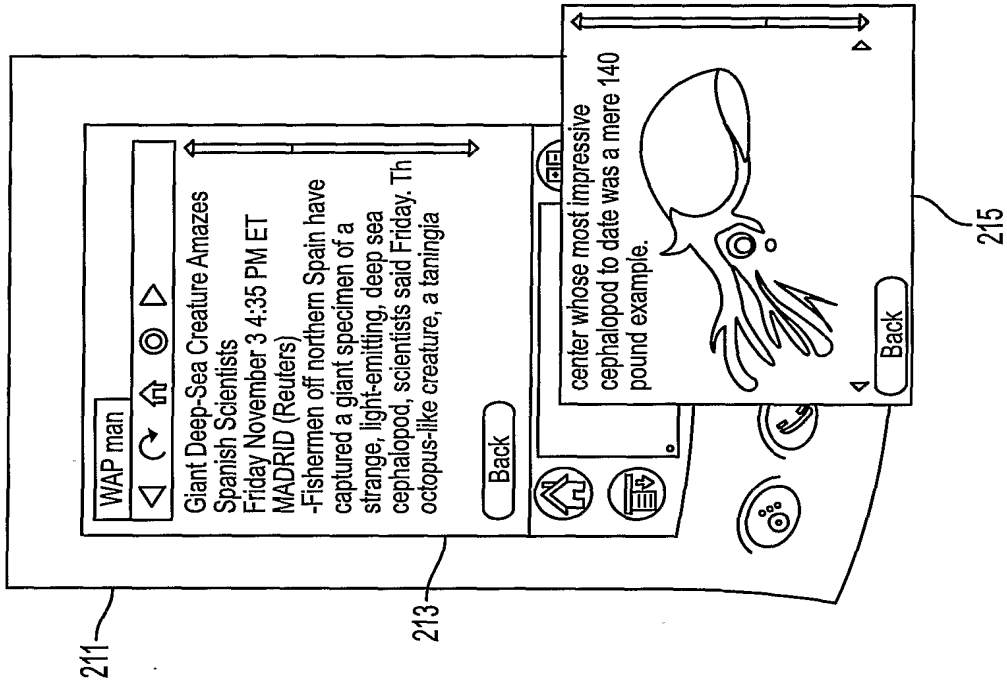

FIG. 12B

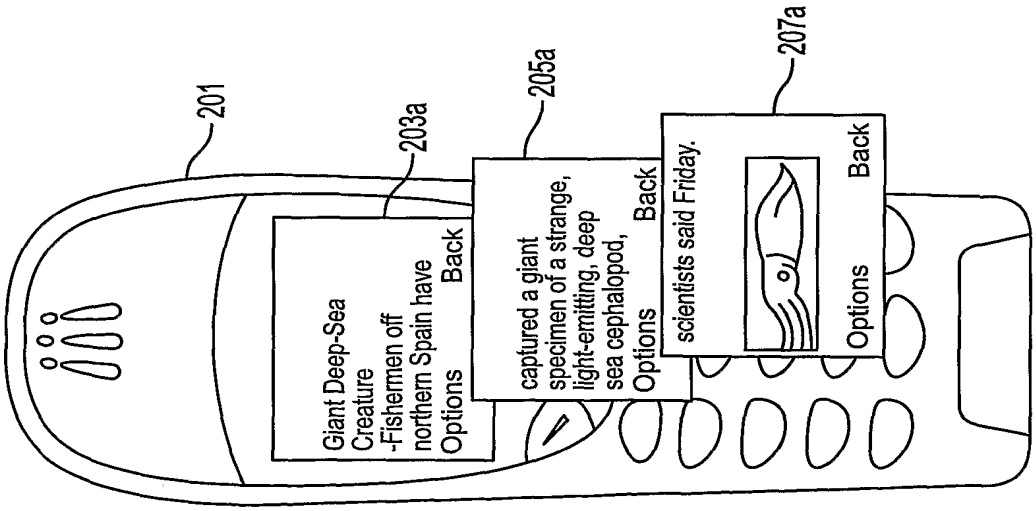

FIG. 12A

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
"http://www.wapforum.org/DTD/wml_1.2.xml">
<wml xmlns:nda="http://nda.nokia.com/deviceAdapter">
 <card id="Forecast" newcontext="true" title="Forecast">
  <p align="center">
   <nda:shape>
    <nda:pick nda:aspect_ratio="landscape">
     <table align="CCCCC" columns="5">
      <tr>
       <td>M</td>
       <td>T</td>
       <td>W</td>
       <td>Th</td>
       <td>S</td>
      </tr>
      <tr>
       <td><img alt="clouds"
src="../images/weather/clouds.wbmp"></img></td>
       <td><img alt="mixed"
src="../images/weather/mixed.wbmp"></img></td>
       <td><img alt="ptcloudy"
src="../images/weather/ptcloudy.wbmp"></img></td>
       <td><img alt="rain"
src="../images/weather/rain.wbmp"></img></td>
       <td><img alt="sun"
src="../images/weather/sun.wbmp"></img></td>
      </tr>
      <tr>
       <td>78 F</td>
       <td>89 F</td>
       <td>95 F</td>
       <td>88 F</td>
       <td>79 F</td>
      </tr>
      <tr>
       <td>68 F</td>
       <td>69 F</td>
       <td>75 F</td>
       <td>68 F</td>
       <td>65 F</td>
      </tr>
     </table>
```

FIG. 13A

```
            </nda:pick>
            <nda:pick nda:aspect_ratio="portrait">
              <table align="LCR" columns="3">
                <tr>
                  <td>M M</td>
                  <td><img alt="clouds"
src="../images/weather/clouds.wbmp"></img></td>
                  <td>Hi  78 F<br></br>Lo  68 F</td>
                </tr>
                <tr>
                  <td>T</td>
                  <td><img alt="mixed"
src="../images/weather/mixed.wbmp"></img></td>
                  <td>Hi  89 F<br></br>Lo  69 F</td>
                </tr>
                <tr>
                  <td>W</td>
                  <td><img alt="ptcloudy"
src="../images/weather/ptcloudy.wbmp"></img></td>
                  <td>Hi  95 F<br></br>Lo  75 F</td>
                </tr>
                <tr>
                  <td>Th</td>
                  <td><img alt="rain"
src="../images/weather/rain.wbmp"></img></td>
                  <td>Hi  88 F<br></br>Lo  68 F</td>
                </tr>
                <tr>
                  <td>S</td>
                  <td><img alt="sun"
src="../images/weather/sun.wbmp"></img></td>
                  <td>Hi  79 F<br></br>Lo  65 F</td>
                </tr>
              </table>
              </nda:pick>
            </nda:shape>
          </p>
        </card>
      </wml>
```

FIG. 13B

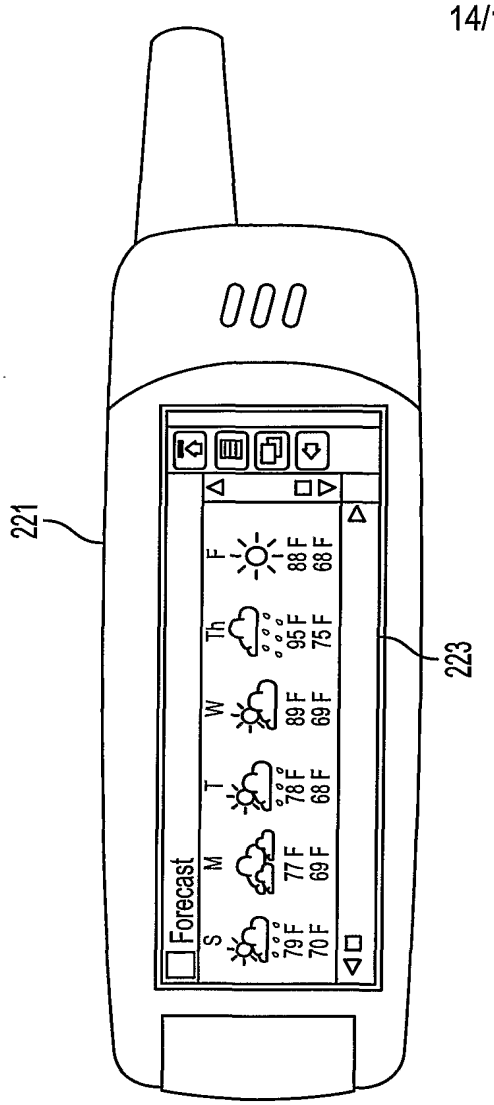

FIG. 14B

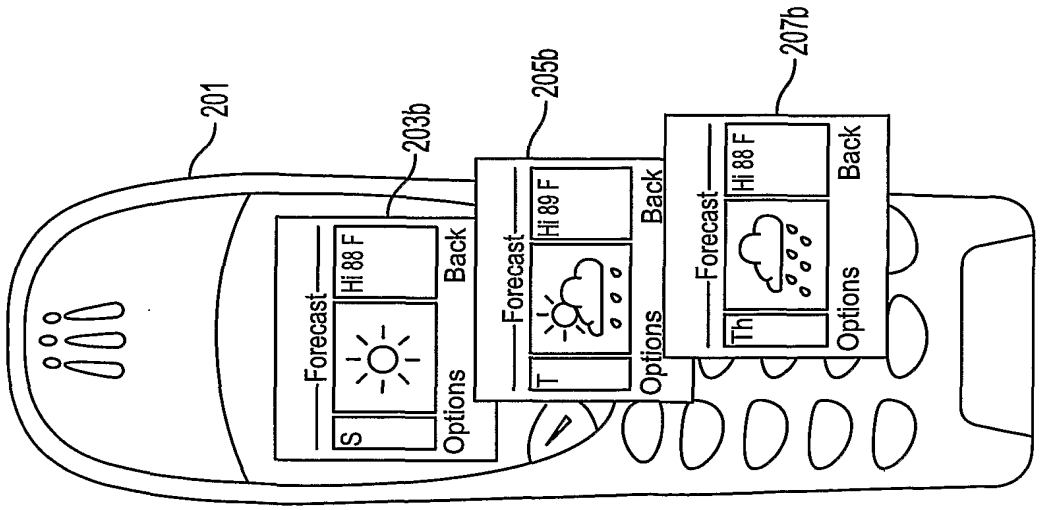

FIG. 14A

CONSIDER AN OBJECT WHICH HAS FOUR FEATURES.

FEATURES = α β χ δ

FIG. 15

EACH FEATURE MAY TAKE DIFFERENT VALUES, DENOTED BY A DIFFERENT 'FONT' HERE.

α	β	χ	δ
A	B	C	D
A	B	C	D
A	B	C	D
$\mathcal{A}$	$\mathcal{B}$	$\mathcal{C}$	$\mathcal{D}$
A	B	C	D
A	B	C	D

FIG. 16

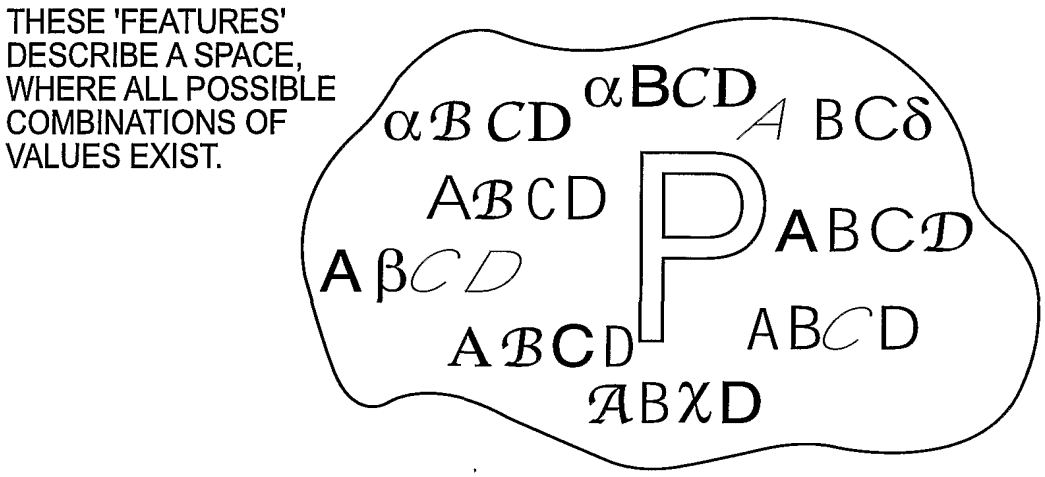
THESE 'FEATURES' DESCRIBE A SPACE, WHERE ALL POSSIBLE COMBINATIONS OF VALUES EXIST.
αBCD
αBCD
A BCδ
ABCD
P
ABCD
AβCD
ABCD
ABCD
ABχD

FIG. 17

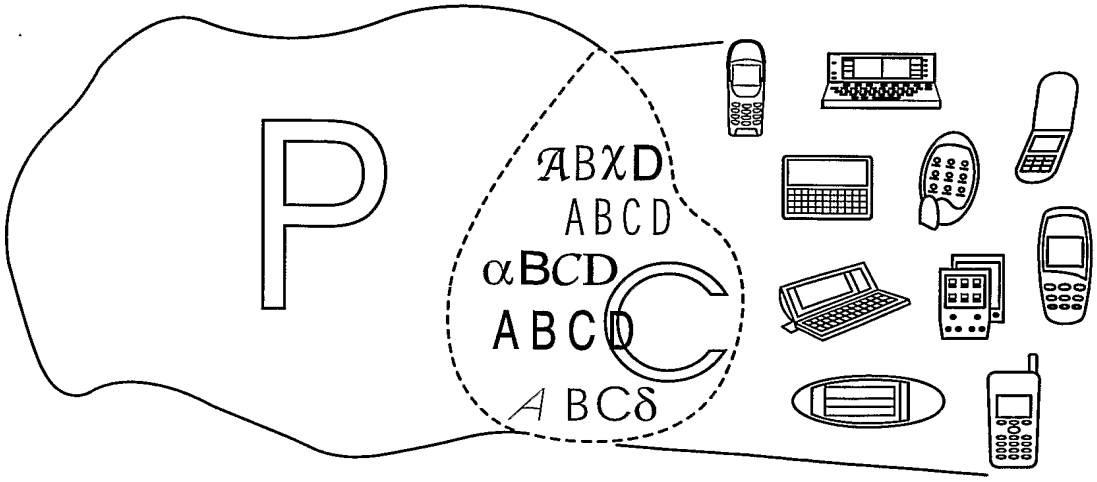
P
ABχD
ABCD
αBCD
ABCD
C
A BCδ

FIG. 18

NEW FEATURE, E

NEW FEATURES EXTEND THE 'SPACE'. UNTIL WE EXTEND OUR 'ALPHABET' WE DO NOT RECOGNIZE THIS SPACE.

ε α β χ δ
E A B C D
E A B C D
E A B C D
𝔈 𝔄 𝔅 ℂ 𝔇
E A B C D
E *A* *B* *C* *D*

FIG. 19

CONVERGED FEATURE, D

OLD FEATURES MAY CONVERGE TO A SINGLE VALUE, AND HENCE NO LONGER BE OF INTEREST.

ε α β χ d
E A B C 𝔻
E A B C 𝔻
E A B C 𝔻
𝔈 𝔄 𝔅 ℂ 𝔻
E A B C 𝔻
E *A* *B* *C* 𝔻

FIG. 20

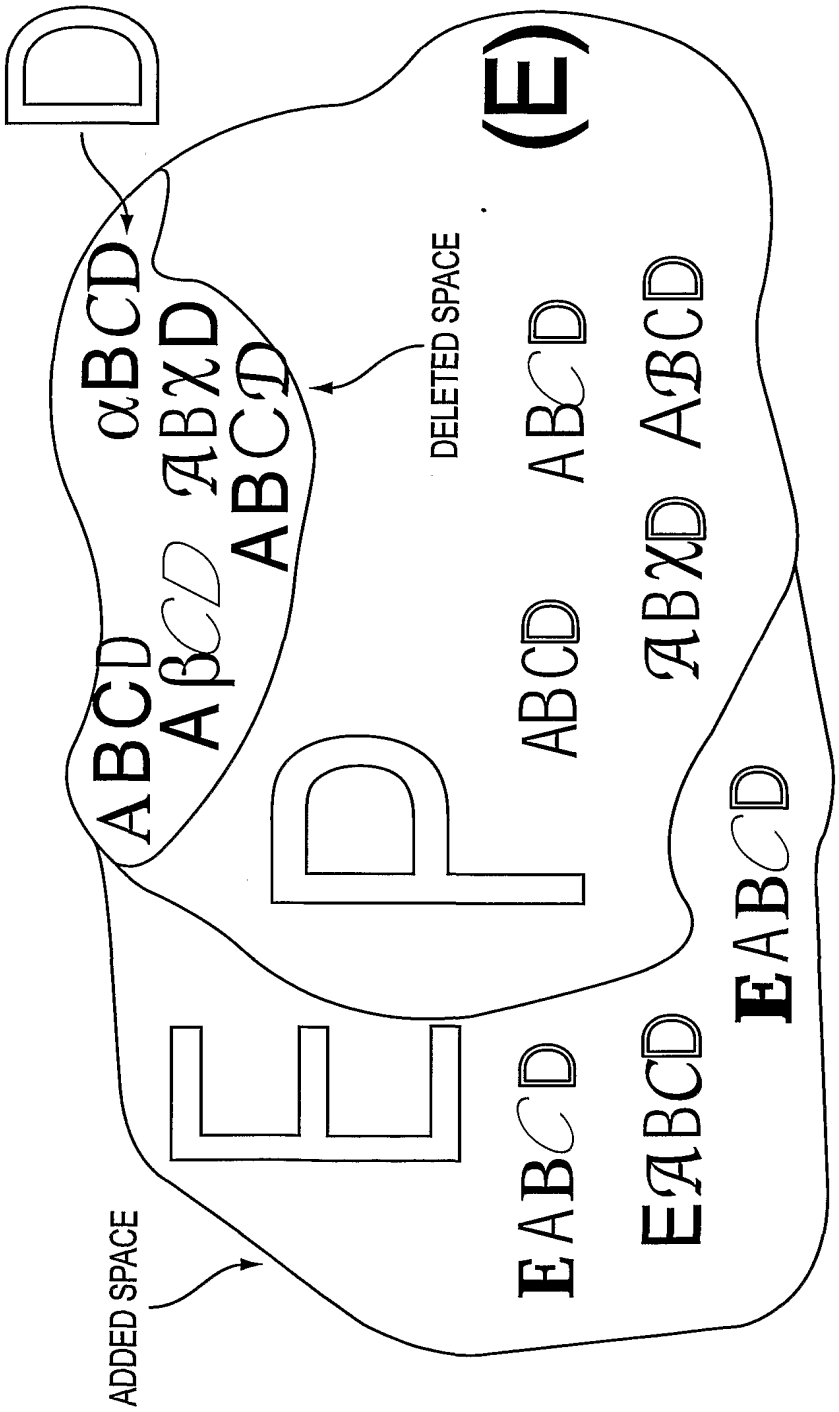
D
αBCD
ABχD
ABCD
ABCD
AβCD
E
DELETED SPACE
ABCD
ABCD
ABχD
ABCD
F
EABCD
EABCD
EABCD
EABCD
ADDED SPACE

FIG. 21

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB02/02098

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :H04L 12/46
US CL : 709/203, 220, 224, 227, 232; 370/85.13, 94.3, 60
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. : 709/203, 220, 224, 227, 232; 370/85.13, 94.3, 60

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Microsoft Computer Dictionary

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WEST, IEEE, EAST
search terms: network, content, mobile converting, terminal, web page, display characteristics, markup information, internet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,572,528 A (SHUEN) 05 November 1996, abstract, figs.1-3, col.11 line 33 to col.13 line 42, col.15 lines 7-63 and col.17 line 13 to col.18 line 65.	1-31
Y, E	US 6,412,000 B1 (RIDDLE et al) 25 June 2002, fig.2B, abstract, col.8 line 48 to col.11 line 46, col.13 line 30 to col.14 line 66.	1-31

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"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
"A"	document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier document published on or after the international filing date	"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
"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)	"&"	document member of the same patent family
"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		

Date of the actual completion of the international search 12 NOVEMBER 2002	Date of mailing of the international search report 03 DEC 2002
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer Peggy Harrod AYAZ R. SHEIKH Telephone No. (703) 305-9648

Electronic Acknowledgement Receipt

EFS ID:	5437757
Application Number:	11888803
International Application Number:	
Confirmation Number:	5085
Title of Invention:	Method and system for rendering content on a wireless device
First Named Inventor/Applicant Name:	Pierre Carion
Correspondence Address:	MURABITO HAO & BARNES LLP Third Floor Two North Market Street - San Jose CA 95113 US 4089389060 -
Filer:	Glenn D. Barnes/Missy Isaac
Filer Authorized By:	Glenn D. Barnes
Attorney Docket Number:	HOMI-P003
Receipt Date:	02-JUN-2009
Filing Date:	01-AUG-2007
Time Stamp:	15:27:21
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) Filed (SB/08)	HOMI-P003_IDStransmittal_06-02-09.pdf	609549 4f10f721519539d63c14b0a7ec747f729c20dd7d	no	4
Warnings:					
Information:					
2	Foreign Reference	WO02103963.pdf	2531266 6838618b7941e3b925087dad37510bdbd029e563	no	63
Warnings:					
Information:					
3	NPL Documents	GRUNDY.pdf	153487 66f5c4ac1ed3b20e314cc5c362da7a8a402d3f5d	no	6
Warnings:					
Information:					
4	NPL Documents	MULTIPLATFORM_UIML.pdf	611923 70f4ef4f2032ae3b79811817866aea325a840d06	no	12
Warnings:					
Information:					
5	NPL Documents	RAINIER.pdf	525450 bab127a1b4537ab2c6b4800db449d25f7db3020c	no	8
Warnings:					
Information:					
6	NPL Documents	VANDERDONCKT.pdf	326550 a3080851e701dc721252f3f876d6f4eb5c5b0320	no	8
Warnings:					
Information:					
7	NPL Documents	ZIEGERT.pdf	401363 b71b8383533e46e357395abd4a0abf2f1292847b	no	12
Warnings:					
Information:					
		Total Files Size (in bytes):	5159588		

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

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/888,803	08/01/2007	Pierre Carion	HOMI-P003

CONFIRMATION NO. 5085

MURABITO HAO & BARNES LLP
Third Floor
Two North Market Street
San Jose, CA 95113

PUBLICATION NOTICE

OC000000034406680

Title: Method and system for rendering content on a wireless device

Publication No.US-2009-0036105-A1
Publication Date:02/05/2009

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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UNITED STATES DEPARTMENT OF COMMERCE
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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/888,803	08/01/2007	Pierre Carion	HOMI-P003

CONFIRMATION NO. 5085

MURABITO HAO & BARNES LLP
Third Floor
Two North Market Street
San Jose, CA 95113

NONPUBLICATION RESCISSION LETTER

OC000000031611572

Date Mailed: 08/18/2008

Communication Regarding Rescission Of Nonpublication Request and/or Notice of Foreign Filing

Applicant's rescission of the previously-filed nonpublication request and/or notice of foreign filing is acknowledged. The paper has been reflected in the Patent and Trademark Office's (USPTO's) computer records so that the earliest possible projected publication date can be assigned.

The projected publication date is 02/05/2009.

If applicant rescinded the nonpublication request before or on the date of "foreign filing,"[1] then no notice of foreign filing is required.

If applicant foreign filed the application after filing the above application and before filing the rescission, and the rescission did not also include a notice of foreign filing, then a notice of foreign filing (not merely a rescission) is required to be filed within 45 days of the date of foreign filing. See 35 U.S.C. § 122(b)(2)(B)(iii), and Clarification of the United States Patent and Trademark Office's Interpretation of the Provisions of 35 U.S.C. § 122(b)(2)(B)(ii)-(iv), 1272 Off. Gaz. Pat. Office 22 (July 1, 2003).

If a notice of foreign filing is required and is not filed within 45 days of the date of foreign filing, then the application becomes abandoned pursuant to 35 U.S.C. § 122(b)(2)(B)(iii). In this situation, applicant should either file a petition to revive or notify the Office that the application is abandoned. See 37 CFR 1.137(f). Any such petition to revive will be forwarded to the Office of Petitions for a decision. Note that the filing of the petition will not operate to stay any period of reply that may be running against the application.

Questions regarding petitions to revive should be directed to the Office of Petitions at (571) 272-3282.

[1] Note, for purpose of this notice, that "foreign filing" means "filing an application directed to the same invention in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing".

/thailemariam/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

OIPE
JUL 3 1 2008
PATENT & TRADEMARK OFFICE

08-04-08

Attorney Docket No.: HOMI-P003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop PG Pub. Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or facsimile (703) 305-8568 transmitted to the U.S. Patent and Trademark Office on the date shown below.

Express Mail Label No.:	EM 098334266 US	Name of Person Making the Deposit:	Anthony Chou
Date of Deposit:	July 31, 2008	Signature of the Person Making the Deposit:	Anthony Chou

In re Application of: Pierre Carion et al.

Confirmation No.: 5085

Serial No: 11/888,803

Examiner: Unassigned

Filed: August 1, 2007

Art Unit: Unassigned

For: A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

MAIL STOP PG Pub
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
FAX: (703) 305-8568

Sir:

RESCISSION OF PREVIOUS NONPUBLICATION REQUEST (35 U.S.C 122(b)(2)(B)(ii)) AND, IF APPLICABLE, NOTICE OF FOREIGN FILING (35 U.S.C. 122(b)(2)(B)(iii))

A request that the above-identified application not be published under 35 U.S.C. 122(b) (nonpublication request) was included with the above-identified application on filing pursuant to 35 U.S.C. 122(b)(2)(B)(i). I hereby rescind the previous nonpublication request.

If a notice of foreign or international filing is or will be required by 35 U.S.C. 122(b)(2)(B)(iii) and 37 CFR 1.213(c), I hereby provide such notice. This notice is being provided no later than forty-five (45) days after the date of such foreign or international filing.

If a notice of subsequent foreign or international filing required by 35 U.S.C. 122(b)(2)(B)(iii) and 37 CFR 1.213(c) was not filed within forty-five(45) days after the date of filing of the foreign or international application, the application is ABANDONED, and a petition to revive under 37 CFR 1.137(b) is required See 37 CFR 1.37(f).

Please direct all correspondence concerning the above-identified application to the following address

MURABITO, HAO AND BARNES LLP
Two North Market Street, Third Floor
San Jose, California 95113
(408) 938-9060

Respectfully submitted,

Date: 7-31-2008

By: Amir A. Tabarrok
Reg. No. 57,137

This request must be signed in compliance with 37 CFR 1.33(b).

OIPE IAP6
AUG 27 2007
PATENT & TRADEMARK OFFICE

Attorney Docket No.: HOMI-P003

I hereby certify that this transmittal of the below described document is being deposited with the United States Postal Service in an envelope bearing First Class Postage and addressed to the Commissioner of Patents and Trademarks, P.O. Box 1450, Alexandria, VA 22313-1450, on the below date of deposit.					
Date of Deposit:	8/22/07	Name of Person Making the Deposit:	Mina Oliveri	Signature of the Person Making the Deposit:	Mina Oliveri

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Carion, et al.	Confirmation No.:	Not yet assigned.
Serial No.:	11/888,803	Art Unit:	Not yet assigned.
Filed:	8/01/07	Examiner:	Not yet assigned.
For:	A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE		

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure provisions of 37 C.F.R. §1.56, there is hereby provided certain information which the Examiner may consider material to the examination of the subject U.S. patent application. It is requested that the Examiner make this information of record if it is deemed material to the examination of the application.

1. ☒ Enclosures accompanying this Information Disclosure Statement are:

1a. ☒ A list of all patents, publications, applications, or other information submitted for consideration by the office.

1b. ☐ A legible copy of :

☐ Each foreign patent;

☐ Each publication or that portion which caused it to be listed on the PTO-1449;

☐ For each cited pending U.S. application, the application specification including the claims, and any drawing of the application, or portion of the application which caused it to be listed on the PTO-1449 including any claims directed to that portion;

☐ all other information or portion which caused it to be listed on the PTO-1449.

1c. ☐ An English language copy of search report(s) from a counterpart foreign application or PCT International Search Report.

1d. ☐ Explanations of relevancy (ATTACHMENT 1(d), hereto) or English language abstracts of the non-English language publications.

2. ☒ This Information Disclosure Statement is filed under 37 C.F.R. §1.97(b):

2a. ☐ Within three months of the filing date of a national application other than a continued prosecution application under §1.53(d);

2b. ☐ Within three months of the date of entry of the national stage as set forth in §1.491 in an international application;

2c. ☒ Before the mailing of the first Office action on the merits;

2d. ☐ Before the mailing of a first Office action after the filing of a request for continued examination under §1.114.

3. ☐ This Information Disclosure Statement is filed under 37 C.F.R. §1.97(c) after the period specified in 37 C.F.R §1.97(b), but before the mailing date of any of a final action under 37 C.F.R. §1.113, a notice of allowance under 37 C.F.R. §1.311 or an action that otherwise closes prosecution in the application.

(Check either Item 3a or 3b)

3a. ☐ The Certification Statement in Item 5 below is applicable. Accordingly, no fee is required.

3b. ☐ The $180.00 fee set forth in 37 C.F.R. §1.17(p) in accordance with 37 C.F.R. §1.97(c) is:

☐ enclosed
☐ to be charged to Murabito, Hao & Barnes Deposit Account No. 50-4160 (order no.).

(Item 3b to be checked if any reference known for more than 3 months)

4. ☐ This Information Disclosure Statement is filed under 37 C.F.R. §1.97(d) after the period specified in 37 C.F.R. §1.97(c), but on or before the date of payment of the issue fee.

(Check either Item 4a or 4b)

4a. ☐ The Certification Statement in Item 5 below is applicable.

4.b ☐ The $180.00 fee set forth in 37 C.F.R. §1.17(p) is:
enclosed.to be charged to Murabito, Hao & Barnes Deposit Account No. 50-4160 (order no.).

5. ☐ Certification Statement (applicable if Item 3a or Item 4a is checked)

(Check either Item 5a, 5b or 5c)

5a. ☐ In accordance with 37 C.F.R. §1.97(e)(1), it is certified that each item of information contained in this Information Disclosure Statement was first cited

in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

5b. ☐ Each item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart application, and the communication was not **received** by any individual designated in 37 C.F.R. §1.56(c) more than thirty days prior to the filing of this information disclosure statement.

5c. ☐ Pursuant to 37 C.F.R. §1.704(d), each item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart application, and the communication was not **received** by any individual designated in 37 C.F.R. §1.56(c) more than thirty days prior to the filing of this information disclosure statement.

6. ☐ Copies of each cited U.S. patent and each U.S. patent application publication are not enclosed pursuant to the USPTO OG Notice dated 05 August 2003 waiving the requirement under 37 C.F.R. 1.98(a)(2)(i) for U.S. patent applications filed after June 30, 2003.

7. ☐ This application is a continuation application under 37 C.F.R. §1.53(b) or (d).

(Check appropriate Items 7a, 7b and/or 7c)

7a. ☐ A Petition to Withdraw from issue under 37 C.F.R. §1.313(b)(5) is concurrently filed herewith.

7b. ☐ Copies of publications listed on Form PTO-1449 from prior application Serial No. **XXXX**, filed on **XXXX** , of which this application claims priority under 35 U.S.C. §120, are not being submitted pursuant to 37 C.F.R. §1.98(d).

7c. ☐ Copies of the publications listed on Form PTO-1449 were not previously cited in prior application Serial No. , filed on , and are provided herewith.

8. ☐ This is a Supplemental Information Disclosure Statement. (Check Item 8a)

8a. ☐ This Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(f) supplements the Information Disclosure Statement filed on ******. A bona fide attempt was made to comply with 37 C.F.R. §1.98, but inadvertent omissions were made. These omissions have been corrected herein. Accordingly, additional time is requested so that this Supplemental Information Disclosure Statement can be considered as if properly filed on *********.

9. ☐ In accordance with 37 C.F.R. §1.98, a concise explanation of what is presently understood to be the relevance of each non-English language publication is:

(Check Item 9a, 9b, or 9c)

9a. ☐ satisfied because all non-English language publications were cited on the

enclosed English language copy of the PCT International Search Report or the search report from a counterpart foreign application indicating the degree of relevance found by the foreign office.

9b. ☐ set forth in the application.

9c. ☐ enclosed as an attachment hereto.

10. ☒ The Commissioner is authorized to charge any additional fee required or credit any overpayment for this Information Disclosure Statement and/or Petition to Murabito, Hao & Barnes Deposit Account No. 50-4160.

11. ☒ No admission is made that the information cited in this Statement is, or is considered to be, material to patentability nor a representation that a search has been made (other than a search report of a foreign counterpart application or PCT International Search Report if submitted herewith). 37 C.F.R. §§1.97(g) and (h).

Respectfully submitted,

Date: August 22, 2007

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OIPE IAP6
AUG 27 2007
PATENT & TRADEMARK OFFICE

Attorney Docket No.: HOMI-P003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Inventor(s): Carion, et al.

Group Art Unit: Not yet assigned.

Filed: 08/01/2007

Examiner: Not yet assigned.

Application No.: 11/888,803

Title: A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

Form 1449

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A	6,884,172	04/26/2005	Lloyd, et al.	463	42	10/25/2001
	B						
	C						
	D						
	E						
	F						
	G						
	H						
	I						
	J						
	K						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
							Yes	No
	L							
	M							
	N							
	O							
	P							
	Q							

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	R	
	S	
	T	

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
11/888,803	08/01/2007		1800	HOMI-P003	36	3

CONFIRMATION NO. 5085

MURABITO HAO & BARNES LLP
Third Floor
Two North Market Street
San Jose, CA95113

FILING RECEIPT

Date Mailed: 08/16/2007

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Pierre Carion, La Jolla, CA;
Kevin Smith, San Diego, CA;

Power of Attorney: The patent practitioners associated with Customer Number 41066

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 08/15/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US11/888,803**

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

Title

Method and system for rendering content on a wireless device

Preliminary Class

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

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PATENT APPLICATION SERIAL NO._____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

08/06/2007 HMARZI1 00000023 11888803

01 FC:1011	300.00 OP
02 FC:1111	500.00 OP
03 FC:1311	200.00 OP
04 FC:1202	800.00 OP

PTO-1556
(5/87)

*U.S. Government Printing Office: 2002- 489-267/69033

PTO/SB/06 (02-07)
Approved for use through 02/28/2007. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 11888803

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	$150		N/A	$300
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	$250		N/A	$500
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	$100		N/A	$200
TOTAL CLAIMS (37 CFR 1.16(i))	36 minus 20 =	* 16	x $25 =		OR	x $50 =	800
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	* —	x $100 =			x $200 =	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 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).		$125			$250	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			+180 =			+360 =	
			TOTAL			TOTAL	1800

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDI-TIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDI-TIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x $25 =		OR	x $50 =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x $100 =		OR	x $200 =	
Application Size Fee (37 CFR 1.16(s))					$125			$250	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					+180 =		OR	+360 =	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDI-TIONAL FEE ($)	OR	RATE ($)	ADDI-TIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x $25 =		OR	x $50 =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x $100 =		OR	x $200 =	
Application Size Fee (37 CFR 1.16(s))					$125			$250	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					+180 =		OR	+360 =	
					TOTAL ADD'L FEE		OR	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.

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17224 U.S. PTO
080107

U.S. PTO
11/888803
08/01/2007

Attorney Docket No.: HOMI-P003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

I hereby certify that this transmittal of the below described documents is being deposited with the United States Postal Service in an envelope bearing Express Mail Postage and an Express Mail label, with the below serial number, addressed to the Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450, on the below date of deposit.			
Express Mail Label No.:	EM023309869US	Name of Person Making the Deposit:	Anthony Chou
Date of Deposit:	08/01/07	Signature of the Person Making the Deposit:	Anthony Chou

Inventor(s): Pierre Carion and Kevin Smith

Title: A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

Mail Stop Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
Sir:

Transmittal of a Patent Application
(Under 37 CFR §1.53)

Transmitted herewith is the above identified patent application, including:

X Specification, claims and abstract, totaling 64 pages.
___ Formal drawings, totaling ___ pages.
X Informal drawings, totaling 9 pages.
X Declaration and Power of Attorney.
___ Information Disclosure statement.
___ Form 1449
X Assignment(s)
X Assignment Recordation Form (duplicate)
X Request and Certification under 35 U.S.C. 122(b)(2)(B)(i)

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	Filing Fees		Search Fees		Examination Fees		
		Small Entity		Small Entity		Small Entity	
Application Type	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	$1,000.00
Design	200	100	100	50	130	65	$
Plant	200	100	300	150	160	80	$
Reissue	300	150	500	250	600	300	$
Provisional	200	100					$

2. EXCESS CLAIM FEES

Fee Description	Small Entity Fee ($)	Fee ($)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims		**Extra Claims**	**Fee ($)**	**Fee Paid ($)**	**Multiple Dependent Claims**	
36	minus 20	16	x $50.00	$800.00		
HP = highest number of Independent Claims Paid for, if greater than 3						
Indep. Claims		**Extra Claims**	**Fee ($)**	**Fee Paid ($)**		
3	minus 3	0	x $200.00	$0.00		
HP = highest number of Independent Claims Paid for, if greater than 3						

3. APPLICATION SIZE FEE

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Total Sheets

Total Sheets		Extra Sheets		Number of each additional 50 or fraction thereof	Fee $		Fee Paid $
73	-100	0	/50			=	$0.00

4. OTHER FEE(S)

	Total Fees Due ($)
Non-English specification, $130 fee (no small entity discount)	$1,840.00
Other: Assignment Recordation Fee: $40.00	

5. PAYMENT OF FEES

The full fee due in connection with this communication is provided as follows:

1. Not enclosed

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2. Enclosed

   [X] Filing fee

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This application is filed pursuant to 37 C.F.R. § 1.53 in the name of the above-identified Inventor(s).

[X] Customer No: 41066

Please direct all correspondence concerning the above-identified application to the following address:

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[X] This transmittal ends with this page.

Respectfully submitted,

Date: 8-1-2007

By: Amir A. Tabarrok
Reg. No. 57,137

HOMI-P003 Patent

UNITED STATES PATENT APPLICATION FOR

A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

Inventors:

Pierre Carion
Kevin Smith

Prepared by:

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(408) 938-9060

A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

RELATED U.S. PATENT APPLICATION

This Application is related to US Patent Application _____ filed on August 1, 2007, by Carion et al., and entitled "A SERVER METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE" with the Attorney Docket No. HOMI-P004 and assigned to the assignee of the present invention.

TECHNICAL FIELD

Embodiments of the present invention relate to the field of wireless communication systems. More particularly, embodiments of the present invention relate to a method and system for rendering applications on a wireless device.

BACKGROUND ART

The widespread and increase in popularity of wireless devices have led to an increase in the number of wireless device types in the world. For example, the use of cellular phones, personal digital assistants (PDAs), PalmPilots, BlackBerrys, laptops, IPods, etc., have become prevalent in the market. The

increase in the number of wireless devices has also increased the demand for various applications to run on various wireless devices.

The market is fractured among many manufacturers with different types of wireless devices including brands, models, generations, etc. For example, each year new manufacturers enter the market and existing manufacturers provide new models and new versions for existing wireless devices. Each wireless device is unique based on its brand, model, rendering capability, battery life, processing power, display resolution, color capability, display size, etc., collectively known as wireless device attributes.

Unfortunately, since each wireless device is unique, each application must be tailored in accordance with the wireless device attributes to fully utilize the capabilities of the wireless device. For example, to utilize the entire display of the wireless device, the application must be tailored to render the application in accordance with the display size and resolution of the wireless device.

Unfortunately, the increase in the number of applications, the types of wireless devices and the need to tailor each application to a given wireless device type has increased the cost of developing applications. With ever increasing number of models and brands of wireless devices, the number of applications and application versions required to accommodate all of these different wireless devices has increased as well. Since each application must be

specific to a given wireless device type with a given brand and model, applications are substantially developed from the ground up for each wireless device type. Unfortunately, developing applications from the ground up for each wireless device has increased the cost of developing and customizing each application to accommodate each wireless device brand and model.

Moreover, the increase in cost of developing applications due to the need to tailor each application to all the specific brands and models of wireless devices has hindered and limited the number of titles that a software vendor can produce annually. Software developers simply do not have the time or the resources to take even a single application through a customized quality assurance and debugging process, much less each application for each type of wireless device, thereby limiting the number of titles that a software vendor can produce.

Also, the task of producing all the required versions of a title is not only time consuming and laborious but it also tends to limit upgrades and patches to existing titles. In general, a wireless device runs the application locally and renders the result. Thus, updating applications requires a patch/update to be specially developed for and provided to each wireless device individually. For example, updating/patching an application may require the wireless device user to access the application provider's website via the wireless device and to navigate through multiple pages in order to determine whether an update is ready. When an update is ready, the user actively initiates the update process.

As a result, many users may not update their applications due to this laborious process.

SUMMARY

Accordingly, a need has arisen to enable software vendors to provide generic applications regardless of the wireless device type, thereby relieving software vendors from having to tailor their applications for each given wireless device type. Moreover, a need has arisen to not only relieve software vendors from tailoring their applications for a given wireless device type but to provide an output that is device specific based on the wireless device attributes where the output is generated from a generic application. Furthermore, it is advantageous to update and patch various applications without a need to access each wireless device individually. It will become apparent to those skilled in the art after reading the detailed description of the present invention that the embodiments of the present invention satisfy the above mentioned needs.

Embodiments of the present invention relieve software vendors from tailoring their applications based on each wireless device type because the server tailors the output of a generic application based on the wireless device capability. Moreover, embodiments of the present invention execute the requested application on the server. Thus providing software updates and patches for a generic application can be done by patching/updating the generic application on the server, thereby eliminating the need to update/patch each application on each wireless device.

According to one embodiment of the present invention, a wireless device includes an engine/reader. The engine/reader is operable to communicate with a server and receive a series of low level basic commands that layout content, position, etc. for rendering application content on the wireless device. The engine/reader interprets commands of a generic syntax that are device specific in their parameters.

The wireless device may also include a graphical user interface including a plurality of rendering blocks. A custom configuration may be used to customize the appearance of content generated by a requested application rendered on the rendering blocks. In other words, a custom configuration may be a set of low level instructions for preprogramming the plurality of rendering blocks to operate and look a certain way. The graphical user interface is operable for rendering basic commands received from the engine/reader and for customizing the operation and appearance of the requested application based on the custom configuration. The wireless device has software stored therein to implement the embodiments of the present invention.

In one embodiment, generic applications are provided by software vendors and are stored on a remote server. It is appreciated that these applications are not device specific. Once a wireless device in communication with the server requests an application, a message is sent via the engine/reader of the wireless device to the server. The message may include a request for a

specific application as well as information identifying the wireless device type and its capability.

In response to the message from the wireless device, the server accesses the requested application by accessing a library of applications. The library of applications contains generic applications that on one level operate regardless of the device type. The requested application is executed on the server. Moreover, the server may identify a custom configuration to be used for the requested application and the device type. The custom configuration is the theme and determines certain graphical appearances of the requested application. In other words, the custom configuration provides the "look and feel" of the content of the requested application. The server may send a message to the wireless device identifying the custom configuration to be used. If the identified custom configuration is present on the wireless device it is used locally, otherwise the identified custom configuration is downloaded from the server to the wireless device. The custom configuration is specific to the display and audio capabilities of the wireless device and is also specific to the wireless device.

The server may determine the device capabilities (e.g., rendering capability of the wireless device) based on the received identification message and by accessing a library of device profiles. The library of device profiles includes information about the specific wireless device capabilities.

During the execution of an application, the server determines whether the executed application produces dynamic or static pages. If dynamic data is produced, a template engine of the server merges dynamic data provided by a business logic unit and template screens of the requested application provided by executing the application on the server. Business logic facilitates dynamic information exchange between the application executing and the templates. Thus, the template engine provides a high level template (e.g., extensible markup language (XML) format) that includes the merged screens of the requested application and dynamic data provided by the business logic. Accordingly, the resultant output is a high level generic template or page description.

Additionally, the template engine communicates with a device profile of the wireless device and may eliminate content of the requested application that is not supported by the wireless device based on the capabilities of the wireless device. For example, if the server determines that the wireless device has no audio capability, the content related to audio may be eliminated from the template. On the other hand, if a static page is produced, the template engine is bypassed and the static page is supplied to a layout solver directly.

The layout solver of the server then tailors the template based on the device profile and device capability. In one example, the layout solver also tailors static data based on the device profile and device capability. The layout solver

translates the template and/or static page into a series of basic commands based on the device profile and device capabilities. Basic commands are written in a device independent syntax but tailored based on the wireless device capability. Accordingly, the basic commands are low level compilation operable to render objects using the plurality of rendering blocks of the wireless device. For example, basic commands may be used to layout page content of the requested application. Accordingly, the layout solver receives a generic template and/or static data of the requested application and translates it to application specific commands based on the device's capability. Basic commands are then transmitted to the wireless device for rendering.

The engine/reader of the wireless device receives the basic commands that are tailored and are specific to the wireless device based on device's attributes and capabilities. The syntax of these commands is device generic. The graphical user interface of the wireless device uses the received basic commands and the custom configuration to render the received page. Each command is typically associated with an operation to be performed by a rendering block of the wireless device and carries parameters, content, etc., for operation of that rendering block. Basic commands are used to layout content, position and etc. of the application while the custom configuration is used to customize the "look and feel" of the requested application (e.g., background color). The engine/reader may receive messages and content from the server

without further interaction by the user or it may send/receive messages in response to user interaction.

As a result, software vendors do not need to tailor their application to each wireless device. In other words, software vendors can develop a generic application because the output of the generic application is tailored based on each wireless device type using the server. Moreover, since applications and basic commands for rendering applications are performed and generated on the server, providing patches and updates can be facilitated by updating the server, thereby eliminating the need to access each wireless device individually.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1A shows an exemplary communication system in accordance with one embodiment of the present invention including wireless clients and a remote server.

Figure 1B shows an exemplary wireless device protocol stack in accordance with one embodiment of the present invention.

Figures 2A and 2B show an exemplary communication sequence between a wireless device and a remote server in accordance with one embodiment of the present invention.

Figure 3 shows an exemplary wireless device block diagram in accordance with one embodiment of the present invention.

Figure 4 shows an exemplary received compiled page description in accordance with one embodiment of the present invention.

Figure 5 shows an exemplary remote server block diagram in accordance with one embodiment of the present invention.

Figure 6 shows an exemplary computer controlled flow diagram for rendering content on a wireless device in accordance with one embodiment of the present invention.

Figure 7 shows an exemplary computer controlled flow diagram of a server implemented method for processing data for a wireless device in accordance with one embodiment of the present invention.

DETAILED DESCRIPTION

Reference will now be made in detail to embodiments of the present invention, examples of which are illustrated in the accompanying drawings. While the invention will be described in conjunction with these embodiments, it will be understood that they are not intended to limit the invention to these embodiments. On the contrary, the invention is intended to cover alternative, modifications and equivalents, which may be included within the spirit and scope of the invention as defined by the appended claims. Furthermore, in the following detailed description of the present invention, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it will be evident to one ordinary skill in the art that the present invention may be practiced without these specific details. In other instances, well known methods, procedures, components, and circuits have not been described in detail as not to unnecessarily obscure aspects of the invention.

NOTATION AND NOMENCLATURE

Some portions of the detailed descriptions which follow are presented in terms of procedures, steps, logic blocks, processing, and other symbolic representations of operations on data bits that can be performed on computer memory. These descriptions and representations are the means used by those skilled in the art to most effectively convey the substance of their work to others

skilled in the art. A procedure, computer executed step, logic block, process, etc., is here, and generally, conceived to be a self-consistent sequence of steps or instructions 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 in a computer system. 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 following discussions, it is appreciated that throughout the present invention, discussions utilizing terms such as “processing” or “creating” or “transferring” or “executing” or “determining” or “instructing” or “issuing” or “halting” or “clearing” or “accessing” or “aggregating” or “obtaining” or “selecting” or “initiating” or “receiving” or “analyzing” or “generating” or “constructing” or “outputting” or “collecting” or “monitoring” or “outputting” or “storing” or “sending” or “receiving” or “identifying” or using” or “rendering” or “translating” or “providing” 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.

A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

The increase in the number of wireless devices has led to an increase in demand for different applications. However, each given application needs to be tailored to a given wireless device type based on the wireless device capability. Embodiments of the present invention relieve software vendors from tailoring their applications based on each wireless device type because the server tailors the output of a generic application based on the wireless device capability. Moreover, embodiments of the present invention execute the requested application on the server. Thus providing software updates and patches for a generic application can be done by patching/updating the generic application on the server, thereby eliminating the need to update/patch each application on each wireless device.

Referring now to Figure 1A, an exemplary communication system 100A in accordance with one embodiment of the present invention including wireless clients and a remote server is shown. In one embodiment, one or more wireless

devices 110 are coupled to a server 130 through a network 120. The wireless device 110 may be any mobile wireless electronic device, e.g., a cellular phone, a personal digital assistant (PDA), a pager, a smart phone, a BlackBerry, a laptop and the like. It is appreciated that the wireless device described herein is exemplary and is not intended to limit the scope of the present invention. Network 120 includes wireless communication capability.

According to an embodiment of the present invention, the remote server executes a generic application. It is generic in that it is not specific to any device or any set of device capabilities. The server will eventually translate the output of the application to a device specific set of commands for transmission to the device 110 for rendering. Likewise, the device 110 sends user input and other data to the remote server 130 for processing.

According to one embodiment of the present invention, a wireless device initiates a message requesting access to a given generic application stored on the server 130. It is appreciated that the wireless device in this embodiment has stored therein a software program or "client" that enables the wireless device to implement the embodiments of the present invention. This client may be downloaded to the wireless device 110 using well known conventional methods.

The server 130 in response to the received message may access the requested application that is generic regardless of the wireless device type.

However, the server 130 generates a device specific result from the generic application, thereby tailoring the output of the generic application based on the wireless device type. The result in one example is a series of basic commands, precompiled and ready for audio and video rendering by the wireless device. During application execution, page layout information is sent to the wireless device for display and audio rendering using the basic commands. Also, user input and other state information is sent from the wireless to the server in accordance with the pages of the application. As a result, software vendors no longer need to tailor their applications for each wireless device type because a generic application can be used by the server to generate a tailored result application for each wireless device type.

Moreover, since the generic application is being executed by the server 130 instead of the wireless device 110, the generic application may be patched and updated on the server 130 without a need to access each wireless device individually. Furthermore, since the application is generic, the update and patch software is likewise device generic, thereby limiting the number of versions needed.

Referring now to Figure 1B, an exemplary wireless device protocol or software stack 100B in accordance with one embodiment of the present invention is shown. In one embodiment, a wireless device may include a hardware component 102, a binary runtime for wireless device (BREW) and/or Java

platform (J2ME) J2ME/BREW 104 for instance, an abstraction layer 106, a graphical user interface 108, a configuration data 112 and a reader/engine 114. It is appreciated that in one embodiment, the graphical user interface 108, abstraction layer 106, J2ME/BREW 104 and the hardware layer 102 are device specific. In comparison, the engine/reader 114 and the configuration data 112 may be device generic in terms of the syntax they use to operate. Blocks 104 through 114 can be downloaded to the device from the server and are called "the client."

The hardware 102 may be the actual circuitry of the wireless device. For example, hardware 102 may be the processor, display components, user inputs, audio rendering devices, etc. BREW 104 is a software platform that may be used to download and run small programs for playing games, sending messages, sharing photos and the like. The main advantage of BREW platform is ease of portability of applications. J2ME 104 is a collection of JAVA application programming interfaces (APIs) for the development of software for resource constrained devices such as PDAs, cellular phones and other consumer appliances. Accordingly, BREW and/or J2ME 104 and the like are software platforms that may be used to enable download, portability of application, running small programs for various applications such as games, sending messages, sharing photos and the like. It is therefore appreciated that the use of J2ME/BREW 104 is exemplary and should not be construed as limiting the scope of the present invention.

The abstraction layer 106 may be a software component used to translate commands and enable the wireless device to implement different embodiments of the present invention. For example, the abstraction layer 106 may be used to facilitate communication between the graphical user interface 108 and the J2ME/BREW 104 layer in accordance with embodiments of the present invention.

A graphical user interface layer 108 includes a number of individual rendering blocks 108a that perform discrete rendering operations to render a received page description. The engine/reader 114 passes commands to these rendering blocks to perform the rendering of the application content. Also, the engine/reader 114 receives user input from these blocks 108a. While the rendering blocks operate in a way that is device specific, they communicate using a device generic syntax. These rendering blocks may be preconfigured to operate and store data (e.g., images, audio data, etc.) in a specific manner. This pre-configuration may set a "look and feel" for a particular application. Once preconfigured, the received page descriptions then include commands that utilize the functionality of the blocks 108a.

The wireless device using the engine/reader 114 communicates with the server 130 via a device generic syntax to read the basic commands of a page description. The engine/reader also communicates to the server. For example,

the engine/reader 114 may send a message that includes a request to access a generic application as well as the identification of the wireless device type. The engine/reader also communicates user actions and other state information to the server. In return, the engine/reader 114 may receive a compiled content from the server 130 that includes a series of basic commands for rendering the requested application. It is appreciated that the series of basic commands are written in a device independent syntax but tailored based on the wireless device rendering capability.

The engine/reader 114 may also receive updates from the requested application based on changes of the server state. For example, if a program with a ticker (e.g., stock ticker) is originally selected, then the engine/reader 114 may receive an update for the ticker periodically. It is appreciated that the engine/reader 114 may receive additional data from the graphical user interface 108 in response to a user interaction (e.g., selecting an icon) and may transmit that data to the server as an event.

The wireless device includes the configuration data 112 component. As discussed above, the configuration data may be used to customize the appearance of the requested application and represents programming and stored content of the graphical user interface 108. In other words, configuration data may be a set of low level instructions for preprogramming a plurality of rendering blocks 108a of the graphical user interface to operate and render data (e.g.,

"look") a certain way. For example, configuration data 112 may be used to customize a "submit" icon to look like an airplane flying away when pressed. The wireless device may store multiple configuration data 112 and cache new configuration data as new applications are accessed. It is appreciated that the terms configuration data and custom configuration are used interchangeably throughout this application.

According to one embodiment, configuration data 112 may include text fonts, text colors, background colors, background images, border thickness, border colors, frame colors of menus, style of menus (e.g., rounded, rectangle and etc.), styles of check boxes (square, round and etc.), images of non-selected icons, images of selected icons, graph colors, information for drawing (e.g., particular text font at a particular location, particular color at a given location, shape of a given size, image at a given point and etc.), icons to use for representing hierarchical data, colors of the bar/animation representing the progress when downloading and an animation to use when download is in progress and the like. It is appreciated that the configuration data 112 discussed above are exemplary and are not intended to limit the scope of the present invention.

The configuration data is programmed into the rendering blocks 108a. The graphical user interface 108 rendering blocks (e.g., icons) 108a render content and enable a user to interact with the requested application. For example a

"submit" icon may be one of the rendering blocks of the graphical user interface (GUI) 108 that once selected submits a form.

In one example, the rendering blocks 108a may include an edit box for entering text, static text for displaying text, an image, a pop-up menu which may appear in response to a user interaction, a drop-down menu list, tabbed menu for displaying several pages where each tab may display a text and an optional icon, sound for controlling audio (e.g., pause, rewind, stop, play and the like), video to display a video with visual control panel (e.g., pause, rewind, stop, play and the like), ticker to display horizontal scrolling text, check box/radio button to enable selection/de-selection of items, rating control for rating content (e.g., movies), poll control for displaying the current poll result, canvas for drawing objects, a tree for displaying hierarchical data, scroll bar for scrolling up/down and/or left/right, a progress bar to display download progress, a table for displaying data in a tabular form, a calendar for displaying and enabling selection/de-selection of a date and the like. It is appreciated that the rendering blocks discussed above are exemplary and are not intended to limit the scope of the present invention.

In more detail a more comprehensive list of configuration data also known as "skinnable attributes" as well as the rendering blocks and their syntax is provided below. It is appreciated that some of the attributes have "x2" suffix for having two values. A first value is selected for default value and a second value is selected when a default value is not selected.

An edit box is a rendering block for entering text (e.g., a user name, a SSN, etc.). The text may appear in clear form, or as '*' to hide the text when the user uses this edit box to enter a password. Configuration data may include:

font of the text (x2)
color of the text (x2)
background color (x2)
background image (x2)

A static text is a rendering block used to display text. Configuration data may include:

font of the text
color of the text
background color
background image

An image is a rendering block to display an image. An action may be associated to the image, e.g., in response to a user selecting the image, a request may be sent to the server. Configuration data may include:

thickness of the border of the image (x2)
color border of the image (x2)

A pop-up menu is a rendering block which appears on a given user action (e.g., by pressing the right softkey button). Configuration data may include:

color of the frame of the menu
style of the menu (rounded, rectangle, etc.)
font of the text (x2)
color of the text (x2)
background color (x2)

background image (x2)

A list is a rendering block for displaying a list of items in a list. An optional icon may be associated to each item in the list. The user can scroll this list and select an item. Configuration data include:

font of the text (x2)
color of the text (x2)
background color (x2)
background image (x2)
thickness of the border for icons
color of the border for icons

A tabbed menu is a rendering block for a wireless device to display several pages due to a small screen size. Each tab may display a text and an optional icon. Configuration data may include:

font of the text (x2)
color of the text (x2)
background color (x2)
background image (x2)
thickness of the border for icons (x2)
color of the border for icons (x2)

Sound is a rendering block for a non visual control to play sound. This rendering block may optionally include a visual control panel for allowing the user to pause/rewind/stop the sound. The control may include the identification of the sound file to play.

Video is a rendering block to display a video clip. A visual control panel associated with the video may be displayed to allow the user to pause/rewind/stop the video. The control may include the URL that the wireless device should use to stream the video clip.

Ticker is a rendering block to display a horizontally scrolling text. Configuration data may include:

thickness of the border
color of the border
font of the text
color of the text
background color
background image

Check box / radio button is a rendering block allowing the user to select/deselect an option in a screen. Configuration data may include:

check box style: square, round, etc.
color of the border
font of the text
color of the text
background color

Rating control is a rendering block that allows the user to rate content (e.g., image, video, etc.). This control may display five icons (e.g., stars, thumps up, etc.) and allow the user to select of one the icons. Configuration data may include:

thickness of the border
color of the border
image for non selected icon

image for selected icon

Poll control is a rendering block for displaying a list of selectable propositions to the user. In response to a selection, the server may send the result to the client as a bar graph to show the current result of the poll. Configuration data may include:

thickness of the border
color of the border
background color
background image
font of the text (x2)
color of the text (x2)
colors of the graph bars

Canvas is a rendering block on the screen on which the server can draw elements. The server may send drawing instruction in this canvas such as draw this text with this font at this X/Y position, draw this line with this color between x1/y1 and x2/y2, draw this rectangle at x/y/width/height, draw this image at x/y, etc. It is appreciated that there is no equivalence to the canvas rendering block in a wap browser.

Tree is a rendering block for displaying hierarchical data. Configuration data may include:

font of the text (x2)
color of the text (x2)
icons to use for the nodes of the tree

Scroll bar is a rendering block that indicates that a page can be scrolled up and down or left and right.

Progress bar is a rendering block to provide the user with feedback about the advancement of the process in downloading content. This is a useful feature for lengthy downloads since "loading animation" does not always provide sufficient information as to the advancement of the content download. For example, a process bar may indicate a percentage of advancement. Configuration data may include:

thickness of the border
color of the border
background color
background image
font of the text (x2)
color of the text (x2)
colors of the bar which indicated the progress

Table is a rendering block that may be used to display data in rows/columns. Configuration data may include:

thickness of the border
color of the border
background color
background image
font of the text (x2)
color of the text (x2)

Calendar is a rendering block for allowing the user to pick a date and/or time without the risk of entering invalid data. Configuration data may include:

thickness of the border
color of the border

background color
background image
font of the text (x2)
color of the text (x2)

The GUI 108 uses the configuration data 112 to preprogram the plurality of rendering blocks 108a to operate and look a certain way. For example, the rendering block (e.g., scroll bar) may be customized by the GUI 108 based on the configuration data (e.g., an image of a shamrock leaf during St. Patrick's day) to customize the way the rendering block looks. Accordingly, the GUI 108 may receive compiled content for the requested application that includes a series of basic commands from the engine/reader 114 for rendering a page of the requested application. It is appreciated that the series of basic commands are written in a device independent syntax whose parameters are tailored based on the wireless device capability. The GUI 108 may then render the page of the application based on the received basic commands and the customized preprogrammed plurality of rendering blocks. As a result, the appearance of the received the page of the application and the plurality of rendering blocks are customized based on the configuration data.

Referring now to Figures 2A and 2B, an exemplary communication sequence 200A and 200B between a wireless device 210 and a remote server 230 in accordance with one embodiment of the present invention is shown. At step 212 the client 210 sends a message to the server 230 identifying the wireless device type and its capabilities along with a request to access an

application on the server. It is appreciated that the application is generic and independent of the wireless device type. The request from the client may also be a request to gain access to a specific resource (e.g., an image, sound, etc.). The response from the server may include the requested resource that may further include the version number which may be cached by the client.

In one embodiment, the wireless device type and its capabilities may include the brand, the model and the version number and may include some device capability information such as the screen size, the amount of memory, permanent storage capabilities, the color resolution, the image format, the list of java specification request (JSR) such as video, global positioning system (GPS) capabilities, access to address book, capability to initiate a call, short messaging system (SMS), multimedia messaging service (MMS) and the like. It is appreciated that the list of wireless device type provided herein is exemplary and should not be construed as limiting the scope of the present invention.

In one embodiment, the message from the client 210 may identify the version number of the "client." If the version number is too old or if the user requests a feature that is not available for the current version of the "client", the server may send an update "client" message to the user to notify the user of the user that a new version of the "client" is required. Moreover, the server may provide instructions on how to update the "client." The URL may be sent to the client 210 such that the browser could be launched by the user. Accordingly, the

user can download the new version of the "client" without having to navigate through multiple web pages.

The message 212 may include:

request for a desired "application"
the version number of the client
the screen size
the amount of memory on the wireless device
the client's storage capabilities (size of the available permanent storage)
the number of colors supported by the client
the supported image format
the list of supported JSR. A JSR may be an optional API, not required by the J2ME specification, that the client may support. JSR may include video, GPS capabilities, access to the address book, capability to initiate a phone call/send a SMS/ send a MMS from the application, etc.

In response to the message 212, the server 230 identifies the requested application and its corresponding custom configuration to be used by the client 210. At step 214, the server 230 sends a message to the client 210 identifying the corresponding custom configuration.

In one embodiment, the message identifying the custom configuration may indicate a version of the custom configuration selected for use with the requested application. The message communicated at step 214 may include:

the configuration data commonly known as skin version number for the requested application
the version number of the loading animation
the page identification and version number of the first page to display

The client may cache data in its permanent memory. As a result, the client may request for the resources it needs by checking the status of its cache. For example, if a given resource for the requested application is not available in its cache or is stored with a different version number, then the client may request the identified resource from the server. Therefore, in response to receiving the message identifying the custom configuration, the client 210 determines whether the custom configuration has been previously stored in its cache. If the client 210 determines that the custom configuration is already present, the client 210 may further determine whether the stored information is the latest version. According to one embodiment, if the client 210 is unable to locate the identified custom configuration or its latest version, then it may send a request 216 to download the identified information (e.g., custom configuration) from the server 230.

It is appreciated that the request 216 is not necessarily limited to the custom configuration and may be extended to any information. For example, the request from the client 210 may include a request for an image, an audio sound, a loading animation that is displayed on the wireless device during download showing the download progress (e.g., download 57% complete) and the like. Other requests may include a request for a loading animation or a request to download a first page of the application.

It is appreciated that the server 230 in response to a request from the client 210 may send the requested content to the client 210. For example, the

server 230 may send a custom configuration description, an application, a loading animation description that may be a static text, a static image, an animated image and the like. For static text, the content of the text may be provided, for a static image the identification of the image and its version number may be provided and for an animated image the identification of the image, the number of frames and the delay between frames may be provided. It is appreciated that the server in response to the request from the client sends the version number of the requested resource, which may be cached by the client.

It is appreciated that any image regardless of the context (e.g., configuration data, loading animation, etc.) may be identified by its identification number and its corresponding version number. In one embodiment, the client may store as many images as it can in a LRU (least recently used) cache to avoid wasting bandwidth in asking for images. Each time an image is sent from the server, the version number may be changed to clear the image in client's cache and ask the server for a new one.

It is further appreciated that similar caching mechanism may be used for other resources such as configuration data, the pages and the sound files. In one embodiment, the client may implement the optimal caching strategy (e.g., for low-end handsets, the cache will be very limited and the client will try to cache in order of priority such as the configuration data, the loading animation, images, etc.). It is also appreciated that a server may send a message to the client requesting the client to change or adopt a new caching strategy.

In this example, at step 218, the server 230 in response to the request from the client 210 sends the custom configuration to the client 210. The client 210 in one embodiment, caches the downloaded custom configuration such that it can be retrieved at a later time. The custom configuration may include a list of default values including default font, default color, default border color, default border thickness, default background color, default image, default menu style, default image for selected/non-selected icons and the like. The custom configuration may also include a list of optional values such as default font for edit zone, default font for ticker, default background color for static text (e.g., article) and the like where each optional value may be identified by an identification number. It is appreciated that the list provided herein regarding the custom configuration is exemplary and is not intended to limit the scope of the present invention.

At step 219, the device requests the first page of the application. At step 220, the server 230 sends the requested application content (e.g., the first page of the requested application). According to one embodiment, the requested application content is received as compiled content that includes a series of basic commands representing a page description. Basic commands are precompiled by the server 230 and ready for rendering by the client 210. It is appreciated that basic commands are written in a syntax that is device generic regardless of the device type but whose parameters are tailored based on the wireless device

capabilities. As such, precompiled basic commands are discrete low level rendering commands tailored based on the rendering capability of the client 210.

In one example, a page description contains basic commands that may include a description of the scrolling area (e.g., starting and ending vertical positions), the horizontal and vertical coordinates, the width, the height, the type of component to be displayed (e.g., text, image, video, audio and the like), the unique identification of the rendering block to be used to render the component, related parameters for the rendering block and for display components (e.g., version number of the image) and the like. As a result, the client 210 may draw the screen according to the description as specified by the received discrete low level basic commands and in accordance with the identified custom configuration.

The client 210 according to one embodiment caches the downloaded compiled content such that it can be retrieved at a later time. For example, when a client is surfing the Internet, it may cache the displayed page such that the client can browse back without having to download the page again.

According to one embodiment, when content is received by the client 210 from the server 230, the older version of the content may be cleared from the cached memory in order to save space. For example, when a new version of a custom configuration is downloaded the older version may be cleared to free up

memory space and the new one may be cached instead. In some embodiments, the client 210 may prioritize caching to achieve an optimal caching strategy, particularly for memory constraint wireless devices. According to one embodiment, the caching strategy of the client 210 may be modified by the server 230. It is appreciated that when enough memory space is available, the client 210 may store as much content as possible (e.g., custom configuration, animation download and the like) to avoid wasting bandwidth by repeatedly having to download them at a later time.

It is appreciated that steps 218 and 220 are shown as separate downloads, however, separate downloads for application content and the determined custom configuration are exemplary and should not be construed as limiting the scope of the present invention. Accordingly, the custom configuration and application content may be downloaded simultaneously. Moreover, it is appreciated that additional information (e.g., loading animation) may be downloaded separately or simultaneously with custom configuration and/or application. It is appreciated that the client 210 at step 222 may optionally send an acknowledgement message to the server 230 indicating successful receipt of the requested information.

At step 224, update (e.g., a new page) for the application may be pushed by the server 230 to the client 210 without user interaction. Pushed contents may be referred to as asynchronous messages that are sent by the server without

user interaction that are triggered by a specific on the server side. For example, if the requested application has a ticker for displaying scrolling text (e.g., stock update) then as soon as an update is available the new text may be pushed to the client 210 to update the ticker. These asynchronous messages are not possible for wap application in a browser because using wap browser the only possible solution is to cyclically poll the server to determine whether new material is ready. As a result, wap wastes bandwidth and is not suitable for real-time notification such as SMS messaging.

In one example, at step 226 of Figure 2B, the client 210 may initiate an action/command. An action may include a command that controls an edit box, controlling buttons, selection/de-selection of a check box or controlling a menu that when activated triggers an action, etc. An action may be described by page identification and some parameters to reflect the action of the user (e.g., the identification of the triggering control, the content of the edit zones, the selected item, etc.). For example, the client 210 may be in the process of filling out a form and the initiated command may be selecting the "submit" button to submit the completed form. As a result of the user interaction, at step 228 the server may send a new page to the client 210. For example, the new page may be a confirmation number and an indication that the submitted form was properly received.

It is appreciated that user interaction 232 may result in new page to be displayed at step 234. It is also appreciated that at step 236, a new page (e.g., asynchronous message) may be sent from the server 230 without an action by the client 210. For example, the client 210 may be reading news on the Internet using the wireless device. When breaking news occurs, the update may be pushed to the client 210, updating the page. In another example, the client 210 may be involved in SMS messaging and once a new message is ready, the message may be pushed as a new page by the server 230. For example, pushing a message from the server 230 to the client 210 may include an error message that something has happened on the server (e.g., server will be in maintenance and the user should disconnect and check back in a few minutes).

In one embodiment, the server 230 may push a message to the client 210 to clear pages history. During the user navigation, the client may keep the path history of the user such that the user can press the "back" key to go to the previous screen without requesting for the page to be downloaded again. Storing the path history is convenient because it allows a smooth user experience but it may require a large amount of memory on a wireless device. Accordingly, the server message may be used to notify that some pages in history can be safely cleaned up. In one example, this mechanism may be activated during a quality assurance when "out of memory" issues are detected and a message to clear pages history to ensure that memory is always available.

Similarly, a message from the server 230 to the client 210 to clear cache may be used to cleanup some resources in the cache in order to free up space in the memory. Moreover, a message may be sent from the server 230 to the client 210 to obtain client's status information that may be used for debugging purpose and the like. Obtaining client's status may be used to collect dynamic information about the wireless device at any given time to detect potential problems. As a result of receiving the status information, the client 210 may send a message providing status information for its cache, the history of pages, the amount of available memory, etc.

Referring now to Figure 3, an exemplary wireless device block diagram 300 in accordance with one embodiment of the present invention is shown. The wireless device 300 may implement the process for facilitating communication between the wireless device and the server as shown in Figures 1A-2B and includes a bus 302 or other communication mechanism for communicating information, and a processor 360 coupled with bus 302 for processing information.

Wireless device 300 also includes a volatile memory 310, such as a random access memory (RAM) or other dynamic storage device, coupled to bus 302 for storing information and instructions to be executed by processor 360. Volatile memory 310 also may be used for storing temporary variables or other

intermediate information during execution of instructions to be executed by processor 360.

Wireless device 300 further includes a non-volatile memory 320 such as read only memory (ROM) or other static storage device coupled to bus 302 for storing static information and instructions for processor 360. A non-volatile storage device 320, such as a magnetic disk or flash memory, is provided and coupled to bus 302 for storing information and instructions and may store the persistent internal queue. According to one embodiment, the instructions for implementing the virtual device may be stored on any one of the memory components (e.g., RAM, ROM, non-volatile storage device and etc.). Wireless device 300 may be coupled via bus 302 to a display 350, such as liquid crystal display (LCD), for displaying information on the wireless device.

The term "computer-readable medium" as used herein refers to any medium that participates in providing instructions to processor 360 for execution. Such a medium may take many forms, including but not limited to, non-volatile media, volatile media, and transmission media. Non-volatile media includes, for example, optical or magnetic disks or the like. Volatile media includes dynamic memory and the like.

The wireless device 300 further includes a transceiver 330 for facilitating wireless communication with a remote server. The transceiver 330 may receive a

series of basic commands from a remote server that may be used to render application and/or content on the display 350.

In one embodiment, the wireless device 300 further includes button inputs 340 e.g., a keyboard, for facilitating user interaction. For example, button inputs 340 may be used to navigate a website, enter email addresses, enter telephone numbers and the like. It is appreciated that button inputs 340 may be soft key buttons, a plurality of mechanical buttons, a rotating input component, a sliding input component, a voice activation component and the like.

The wireless device 300 may further include a microphone 380 for facilitating voice and audio input. The wireless device 300 may also include a speaker 370 for outputting audio. For example, the speaker 370 may be used to output a sound file such as mp3 or output voice outputs.

Referring now to Figure 4, an exemplary received compiled page description 400 in accordance with one embodiment of the present invention is shown. The compiled page description includes a series of basic commands. Each basic command may describe a given component on the page of the requested application to be rendered and includes a rendering block to be used. For example, a basic command 410 may be a description for rendering an image whereas a basic command 430 may be the description for rendering a video clip.

Accordingly, a collection of basic commands 410, 430 and 490 forms a single unified page to be rendered by the wireless device.

Basic commands are received from a remote server. The plurality of basic commands may be used by the wireless device to render application content (e.g., pages of the requested application) on the wireless device. For example, basic command 410 may include descriptions for rendering an image by specifying the Cartesian coordinates 412 and 414 of a screen region. Moreover, basic command 410 may further include the width 416 and the height 418 of the screen region to include image.

It is appreciated that the Cartesian coordinates 412 and 414 fields and the width 416 and height 418 fields may be the absolute coordinates and size of the renderable component on a given page of a requested application. However, it is appreciated that these fields may also include relative size and location of a given component for a given page of the application to be rendered.

In one embodiment, the object or renderable component may be identified by an object identifier 420 field. For example, the renderable object may be identified as an image. The image in one example may include an identification number 422 to identify the unique image that reflects the most recent image. The command also identifies the render block that is used to render the object.

It is appreciated that the basic command 410 may further include an identification of a rendering block 424. As a result, the rendering block 424 for providing user interaction may be identified. It is appreciated that basic commands may further include other field components for additional information e.g., immediate data, such as text. Thus it is appreciated that the fields described herein are exemplary and are not intended to limit the scope of the present invention.

Referring now to Figure 5, an exemplary remote server block diagram 500 in accordance with one embodiment of the present invention is shown. A client 510 is in communication with a remote server 590. As discussed above, the client 510 may initially send a message to the remote server 590 to request an application as well as identify the client's 510 type and its capabilities. A decoding system 520 of the server 590 receives the message from the client 510.

The decoding system 520 in response to the received message may access a library of applications 530 in order to locate and execute the requested application (e.g., Texas Holdem Poker, Internet and the like). It is appreciated that applications stored in the library of applications 530 are generic regardless of the device type. The requested application is then executed on the server 590. An application is defined by an application description file and a set of static resources, e.g., images, sounds, URLs, etc. The application description file

describes all the screens of the application and the custom configuration of the application.

The decoding system 520 may also access a library of custom configuration data 540, where each application may have a corresponding custom configuration data to customize the appearance of the application. In response to the received message and after identifying the proper custom configuration, the decoding system 520 sends a message to the client 510 identifying the custom configuration data. In one embodiment, if the client 510 does not have the identified custom configuration, it may request it and the decoding system 520 may send the identified custom configuration to the client 510.

During application execution, pages are generated for display on the wireless device. During a page generation, the server determines whether the requested application generates static or dynamic data. For static applications such as viewing pictures or for pure text, the decoding system 520 may send a static page to a layout solver 580 described below. On the other hand for dynamic pages such as real-time data, the server 590 inserts the dynamic data into a generic template and alters the resultant template based on the client profile.

More specifically, for dynamic data, the decoding system 520 communicates a page of the application to a template engine 550. The page is generic template describing the screen in a high level language, e.g., XML. The template engine 550 generates a dynamic page template by merging dynamic data with the generic template. The template engine 550 may be coupled to business logic 570 that computes dynamic data according to application execution. The business logic 570 may use model-view-controller architecture such that the user interface does not affect data handling and such that the data can be re-organized without changing the user interface. The request through the user interface of the wireless device results in an action in the business logic unit 570.

The business logic 570 may supply dynamic data to the template engine 550 for incorporation into a generic template. The template engine 550 according to one embodiment merges dynamic data provided by business logic 570 and generates screens of the requested application executed by the server to form a generic template. Thus, the template engine 550 provides a high level template (e.g., extensible markup language (XML) format) that includes the merged screens of application and dynamic data provided by the business logic 570.

According to one embodiment, the template engine 550 is also coupled to a library of device profiles 560. The library of device profiles 560 may include information on device capabilities. For example, the library of device profiles 560

may include information on the screen size, screen resolution, color resolution and the like. The server determines the client's 510 capabilities by accessing the library of device profiles 560 and based on the received message from the client 510 identifying itself (e.g., brand, model, memory size and the like).

As a result, the template engine 550 may eliminate content from its dynamic template output that is not supported by the client 510. For example, if the application includes an audio component but the client 510 does not have audio capability, then the template engine 550 may eliminate audio component from the generic template output. In another example, when the client 510 is short in memory, the template engine 550 may eliminate big images. Thus, a dynamic and high level template that includes data supported by the client 510 is generated. The dynamic template output from the template engine 550 may be in a high level language, e.g., XML.

The generic template supplied from 530 and the dynamic template supplied from 550 do not contain any specific or actual screen dimensions but rather only contain relative screen locations. At this stage, the templates are not very device specific regarding screen sizes, dimensions, etc.

The template engine 550 sends the high level and dynamic template to the layout solver 580. The layout solver 580 may also receive static page descriptions from the decoding system 520. In response to receiving the high

level and dynamic template and/or static pages, the layout solver 580 translates the received information into a series of basic commands based on the client's capabilities.

The layout solver 580 may access the library of device profiles 560 to determine client's capabilities. The layout solver 580 may use the client's capabilities to tailor the received information (e.g., static application and/or dynamic application) based on the requesting client's 510 capability.

It is appreciated that basic commands may be low level compilation operable to render application content on the client 510 using the rendering blocks of the wireless device. For example, basic commands may layout page content for the requested application. Accordingly, the layout solver 580 receives a dynamic template from the template engine 550 and/or receives a static page from the decoding system 520 and translates it to device specific commands based on the client's capability.

It is appreciated that the specific commands based on the client's capability are written in a syntax that is device generic regardless of the wireless device type. However, the parameters of the basic commands are tailored based on the wireless device capabilities. The basic commands are then transmitted to the client 510 for rendering. In one embodiment, the basic commands are the compiled page description 400 as described in Figure 4.

In one embodiment, the client 510 may initiate a further action by making a selection (e.g., selecting a selectable icon, sending SMS message and the like). The server 590 may receive the initiation of a command from the client 510 and cause an application (e.g., a new application or the requested application) to execute accordingly or provide an update. In one embodiment, the server 590 may automatically provide an update and push content to the client 510 without user involvement (e.g., when SMS message is ready for the client 510, when a stock update is ready in a ticker and the like).

Different blocks have been described as separate units. However, it is appreciated that each functional unit described herein may be integrated as a single working unit. As such, depiction of functional units as separate units is exemplary and should not be construed as limiting the scope of the present invention.

Referring now to Figure 6, an exemplary computer controlled flow diagram 600 for rendering content on a wireless device in accordance with one embodiment of the present invention is shown. At step 610, the wireless device may send a message to a remote server requesting an application as well as identifying itself and its capability (e.g., screen size, screen resolution and the like). At step 620, the wireless device receives a message from the server identifying a custom configuration to be used to pre-configure a plurality of

rendering blocks of the wireless device. The custom configuration customizes the look and feel of the content displayed on the wireless device from execution of the requested application.

According to one embodiment, the wireless device may store multiple custom configurations. As a result, when the custom configuration to be used is identified by the server, the wireless device may determine whether the custom configuration is present on the wireless device. If the custom configuration is not present, the wireless device at step 630 requests a download of the custom configuration from the server. According to one embodiment, the downloaded custom configuration may be cached by the wireless device for later use to conserve bandwidth. It is appreciated that steps 610-630 are for setup purposes and may not be necessary upon subsequent action by the user or the server when an application is being executed.

At step 640, the wireless device receives compiled content generated in part from execution of the requested application by the server. It is appreciated that the compiled content may include basic commands that are expressed in a syntax that is generic to the wireless device but where the parameters of the basic commands are based on the wireless device capability.

At step 650, the wireless device uses a graphical user interface to generate renderable content based on the received compiled content and the

custom configuration. In one embodiment, content is rendered by processing the compiled content using the reader and by issuing commands from the reader to rendering blocks of the graphical user interface based on the rendering commands of the compiled content. Accordingly, at step 660, the content is rendered by the wireless device.

It is appreciated that in response to rendering content, a user of the wireless device may initiate an action (e.g., by selecting an icon) that may further cause a message to be sent to the server. The server in response to a user interaction may compile additional content and send the additional compiled content to the wireless device. It is appreciated that since the setup for the requested application has been completed, steps 610-630 may be eliminated during user interaction with the rendered application. It is further appreciated that the server may automatically and without initiation of an action by the user push additional e.g., updated compiled content to the wireless device. For example, in an SMS application, a message may be ready for the wireless device. The server may send the message to the wireless device without initiation by the user.

Referring now to Figure 7, an exemplary computer controlled flow diagram 700 of a server implemented method for processing data for a wireless device in accordance with one embodiment of the present invention is shown. At step 710, the server may receive a message from a client requesting execution of an application and identifying the client and the client's capability. In response to

receiving the message, at step 720 the server may locate the requested application as well as the corresponding custom configuration for the requested application by accessing a library of applications and a library of configuration data respectively. It is appreciated that applications in the library of applications are device generic.

At step 730, the server may send a message to the client identifying the corresponding custom configuration to use for the requested application. If the client requests a download of the custom configuration, at step 740 the server may send the custom configuration to the client. At this stage, the setup for executing an application is complete.

At step 750, the server may execute the requested application. The server may then determine whether the executed application produces dynamic or static content. If the content produced is dynamic, at step 760 the server uses a template engine to generate a generic template that contains dynamic data. In one embodiment, the template generated may be in compliance with extensible markup language (XML) and the like.

According to one embodiment, the template engine eliminates content produced that are not supported by the wireless device. For example, the template engine may use a library of device profiles and the identified device capability from the wireless device to determine the capability of the wireless

device. As a result, content that is not supported by the wireless device may be eliminated.

At step 770, the layout solver receives either static data or dynamic data. In either case, the layout solver uses the device profile to tailor and translate or compile the received data into commands of a generic syntax whose parameters are tailored based on the capability of the wireless device. For example, the layout solver may determine the content layout on a given page of the requested application by providing the coordinates, size, object identifier, object identification and the like. The generated basic commands are discrete low level commands operable to render content on the wireless device. Thus, basic commands are generated in a syntax that is generic to the wireless device but are application specific based on the wireless device capability.

At step 780, the discrete low level basic commands may be transmitted to the client for rendering. It is appreciated that in response to a user interaction received, the server may produce and compile additional content. According to one example, the server may produce additional content without involvement by the wireless device user (e.g., when a message in SMS messaging is ready for the wireless device). It is appreciated that since the setup for the requested application and its corresponding custom configuration is complete, execution of additional content may be performed without execution of steps 710-740.

Accordingly, applications can be developed in a generic manner regardless of the device type. Developing generic applications regardless of the wireless device type is in part possible because the server may be used to operate on a generic application and tailor the result of executing a generic application based on a wireless device capability. As a result, software vendors are relieved from tailoring their application to each wireless device. In other words, software vendors can develop a generic application because the output of the generic application can be tailored based on each wireless device type by the server. Moreover, since applications and basic commands for rendering applications are performed on the server, providing patches and updates can be facilitated by updating the server, thereby eliminating the need to access each wireless device individually.

In the foregoing specification, embodiments of the invention have been described with reference to numerous specific details that may vary from implementation to implementation. Thus, the sole and exclusive indicator of what is, and is intended by the applicants to be, the invention is the set of claims that issue from this application, in the specific form in which such claims issue, including any subsequent correction. Hence, no limitation, element, property, feature, advantage or attribute that is not expressly recited in a claim should limit the scope of such claim in any way. The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense.

CLAIMS

What is claimed is:

1. A method of rendering content on a wireless device, said method comprising:

receiving an identification of a custom configuration of a plurality of rendering blocks of said wireless device, wherein said custom configuration is associated with an application and configures said plurality of rendering blocks to render content in a manner customized to said application;

receiving compiled content generated in part from execution of said application wherein said compiled content comprises render commands expressed in a syntax that is generic to said wireless device;

using a graphical user interface comprising said plurality of rendering blocks to generate renderable content based on said compiled content and said custom configuration; and

rendering said renderable content on said wireless device.

2. A method as described in Claim 1 wherein said using a graphical user interface comprising said plurality of rendering blocks to generate renderable content comprises:

processing said compiled content using a reader of said wireless device; and

issuing commands from said reader to individual rendering blocks of said graphical user interface based on said rendering commands of said compiled content.

3. A method as described in Claim 1 wherein said renderable content comprises audio content and display content.

4. A method as described in Claim 1 wherein said compiled content is partially resultant from said application operating on a remote server.

5. A method as described in Claim 1 wherein said compiled content is specific to the rendering capabilities of said wireless device.

6. A method as described in Claim 1 wherein each of said plurality of rendering blocks operates specific to a wireless device type of said wireless device and each is instructed using a syntax that is generic to said wireless device type.

7. A method as described in Claim 6 wherein said custom configuration comprises a syntax that is generic regarding said wireless device type.

8. A method as described in Claim 1 wherein said custom configuration comprises configuration information and content specific to said application.

9. A method as described in Claim 1 wherein said receiving compiled content comprises:

receiving first compiled content specific to a first page of said application; and

receiving second compiled content specific to a second page of said application, wherein said custom configuration is applicable to both said first and second compiled content.

10. A method as described in Claim 1 wherein said custom configuration is one of a plurality of memory-stored custom configurations stored by said wireless device and wherein further said identifying said custom configuration comprises receiving an identifier that identifies said custom configuration.

11. A method as described in Claim 1 further comprising receiving and storing said custom configuration.

12. A method as described in Claim 1 wherein said plurality of rendering blocks of said graphical user interface comprises:

a first block that controls the rendering of ticker information across a display screen of said wireless device;

a second block that controls the rendering of button images on said display screen; and

a third block that controls the rendering of audio on a speaker of said wireless device.

13. A computer readable media comprising instructions therein that when executed by a processor implement a method of rendering content on a wireless device, said method comprising:

receiving an identification of a custom configuration of a plurality of rendering blocks of said wireless device, wherein said custom configuration is associated with an application and configures said plurality of rendering blocks to render content in a manner customized to said application;

receiving compiled content generated in part from execution of said application wherein said compiled content comprises render commands expressed in a syntax that is generic to said wireless device;

using a graphical user interface comprising said plurality of rendering blocks to generate renderable content based on said compiled content and said custom configuration; and

rendering said renderable content on said wireless device.

14. A computer readable media as described in Claim 13 wherein said using a graphical user interface comprising said plurality of rendering blocks to generate renderable content comprises:

processing said compiled content using a reader of said wireless device; and

issuing commands from said reader to individual rendering blocks of said graphical user interface based on said rendering commands of said compiled content.

15. A computer readable media as described in Claim 13 wherein said renderable content comprises audio content and display content.

16. A computer readable media as described in Claim 13 wherein said compiled content is partially resultant from said application operating on a remote server.

17. A computer readable media as described in Claim 13 wherein said compiled content is specific to the rendering capabilities of said wireless device.

18. A computer readable media as described in Claim 13 wherein each of said plurality of rendering blocks operates specific to a wireless device type of

said wireless device and each is instructed using a syntax that is generic to said wireless device type.

19. A computer readable media as described in Claim 18 wherein said custom configuration comprises a syntax that is generic regarding said wireless device type.

20. A computer readable media as described in Claim 13 wherein said custom configuration comprises configuration information and content specific to said application.

21. A computer readable media as described in Claim 13 wherein said receiving compiled content comprises:

receiving first compiled content specific to a first page of said application; and

receiving second compiled content specific to a second page of said application, wherein said custom configuration is applicable to both said first and second compiled content.

22. A computer readable media as described in Claim 13 wherein said custom configuration is one of a plurality of memory-stored custom configurations stored by said wireless device and wherein further said identifying said custom

configuration comprises receiving an identifier that identifies said custom configuration.

23. A computer readable media as described in Claim 13 wherein said method further comprises receiving and storing said custom configuration.

24. A computer readable media as described in Claim 13 wherein said plurality of rendering blocks of said graphical user interface comprises:

a first block that controls the rendering of ticker information across a display screen of said wireless device;

a second block that controls the rendering of button images on said display screen; and

a third block that controls the rendering of audio on a speaker of said wireless device.

25. A wireless device operable to communicate with a remote server, said wireless device comprising:

a transceiver coupled to said bus and operable to receive a custom configuration that is associated with an application, said transceiver also operable to receive compiled content generated in part from execution of said application and comprising a plurality of rendering commands expressed in a syntax that is generic to said wireless device;

a memory coupled to said bus and operable to store said compiled content and said custom configuration;

a processor coupled to said bus and operable to implement the following:

a graphical user interface comprising a plurality of rendering blocks and operable to generate renderable content based on said compiled content and said custom configuration wherein said custom configuration is operable to configure said plurality of rendering blocks to render content in a manner customized to said application; and

an engine for reading said compiled content and responsive thereto for causing said graphical user interface to generate said renderable content based on said render commands; and

a display device coupled to said bus and operable to render a portion of said renderable content.

26. The wireless device as described in Claim 25 wherein said engine is further operable to issue commands to individual rendering blocks of said graphical user interface based on said plurality of rendering commands of said compiled content.

27. The wireless device as described in Claim 25 further comprising an audio rendering device coupled to said bus and wherein said renderable content comprises audio content and display content.

28. The wireless device as described in Claim 25 wherein said compiled content is partially resultant from said application operating on a remote server.

29. The wireless device as described in Claim 25 wherein said compiled content is specific to the rendering capabilities of said wireless device.

30. The wireless device as described in Claim 25 wherein each of said plurality of rendering blocks operates specific to a wireless device type of said wireless device and each is instructed using a syntax that is generic to said wireless device type.

31. The wireless device as described in Claim 30 wherein said custom configuration is expressed in a syntax that is generic to said wireless device type.

32. The wireless device as described in Claim 25 wherein said custom configuration comprises configuration information and content specific to said application.

33. The wireless device as described in Claim 25 wherein said compiled content comprises:

a first compiled content specific to a first page of said application; and

a second compiled content specific to a second page of said application, wherein said custom configuration is applicable to both said first and second compiled content.

34. The wireless device as described in Claim 25 wherein said custom configuration is one of a plurality of memory-stored custom configurations stored in said memory.

35. The wireless device as described in Claim 25 wherein said plurality of rendering blocks of said graphical user interface comprises:

a first block that controls the rendering of ticker information across said display screen of said wireless device;

a second block that controls the rendering of button images on said display screen; and

a third block that controls the rendering of audio on a speaker of said wireless device.

36. The wireless device as described in Claim 25 wherein said plurality of rendering blocks of said graphical user interface comprises:

a first block that controls the rendering of a scroll bar on said display screen of said wireless device;

a second block that controls the rendering of an input box on said display screen of said wireless device; and

a third block that control the rendering of a text display region on said display screen of said wireless device.

A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

ABSTRACT

A method of rendering content on a wireless device. The wireless device sends a message to a server requesting an application and identifies itself with its rendering capabilities. The wireless receives an identification of a custom configuration of a plurality of rendering blocks of the wireless device associated with the application. The custom configuration configures the plurality of rendering blocks of the device. The wireless device receives compiled content from the application executing on the server that includes render commands expressed in a syntax that is device generic but has parameters specific to the rendering capabilities of the wireless device. A reader of the wireless device processes the compiled content and issues commands to individual rendering blocks of a graphical user interface based on the rendering commands of the compiled content and based on the custom configuration.

100A

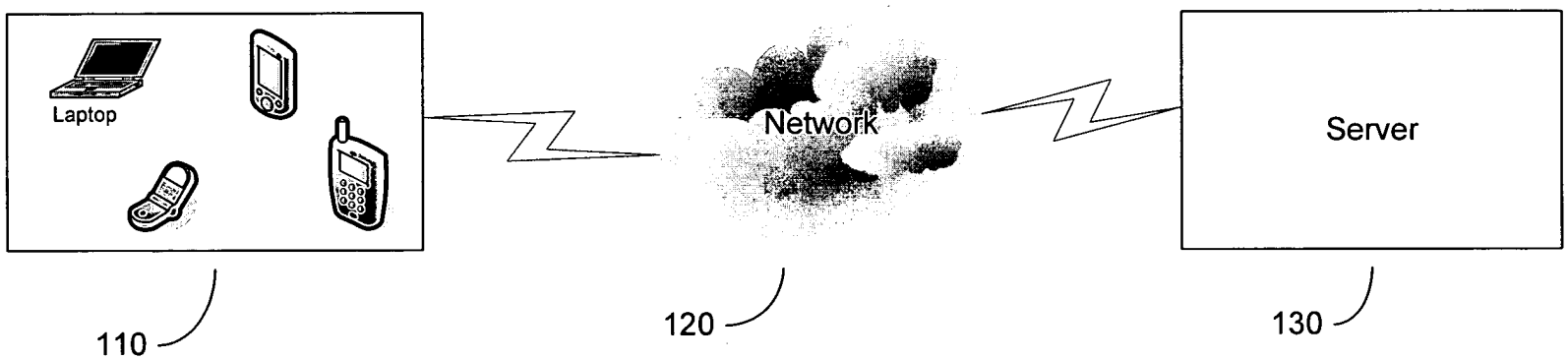

FIGURE 1A

100B

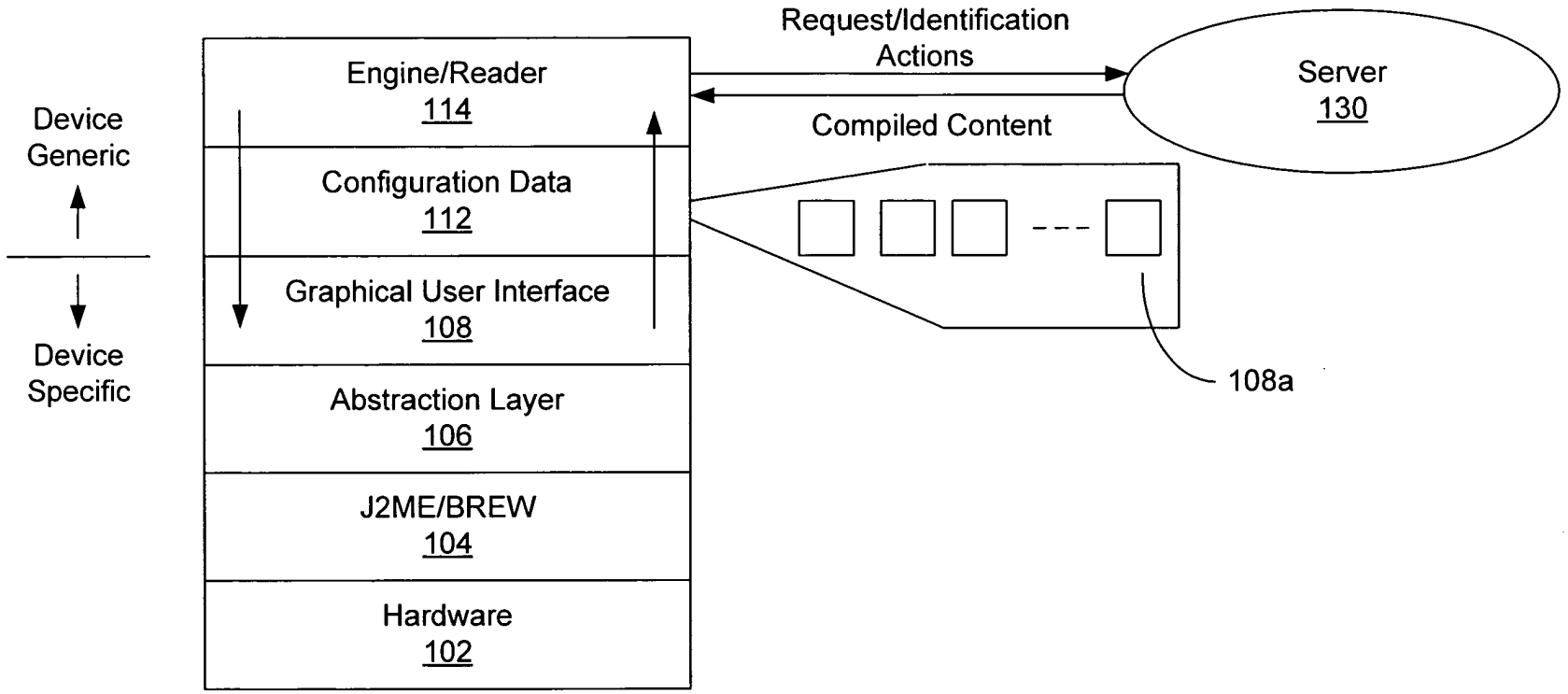

FIGURE 1B

200A

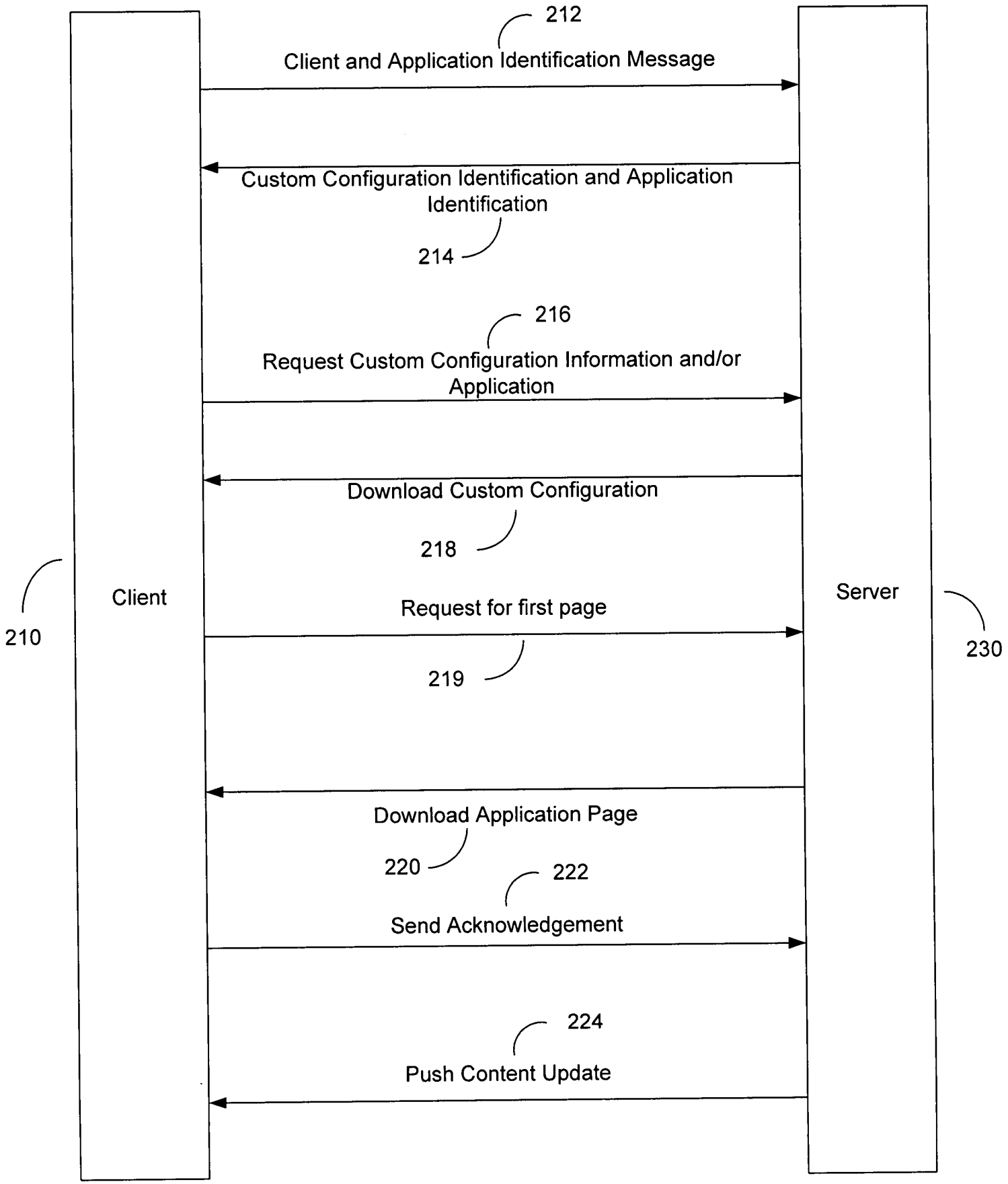

FIGURE 2A

200B

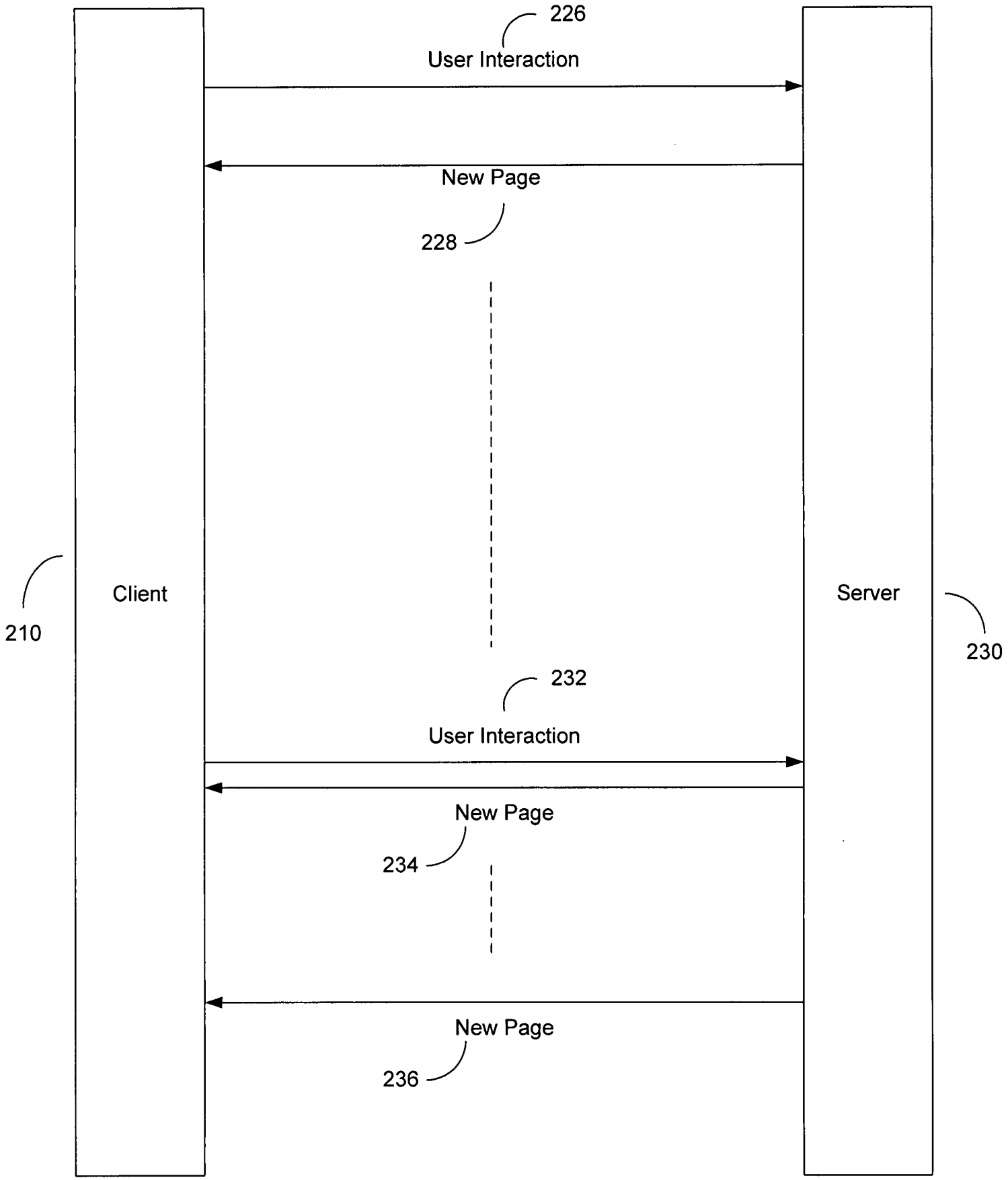

FIGURE 2B

300

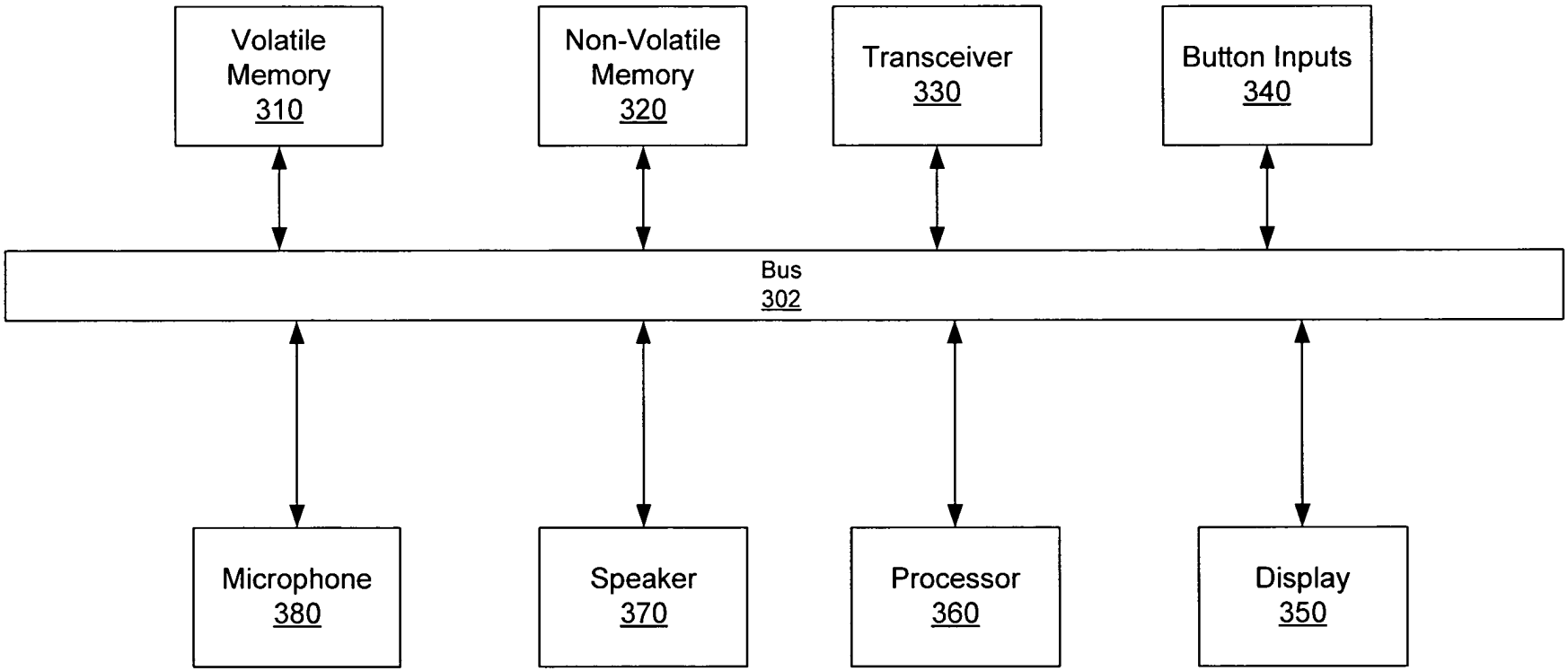
Volatile Memory 310
Non-Volatile Memory 320
Transceiver 330
Button Inputs 340
Bus 302
Microphone 380
Speaker 370
Processor 360
Display 350

FIGURE 3

400

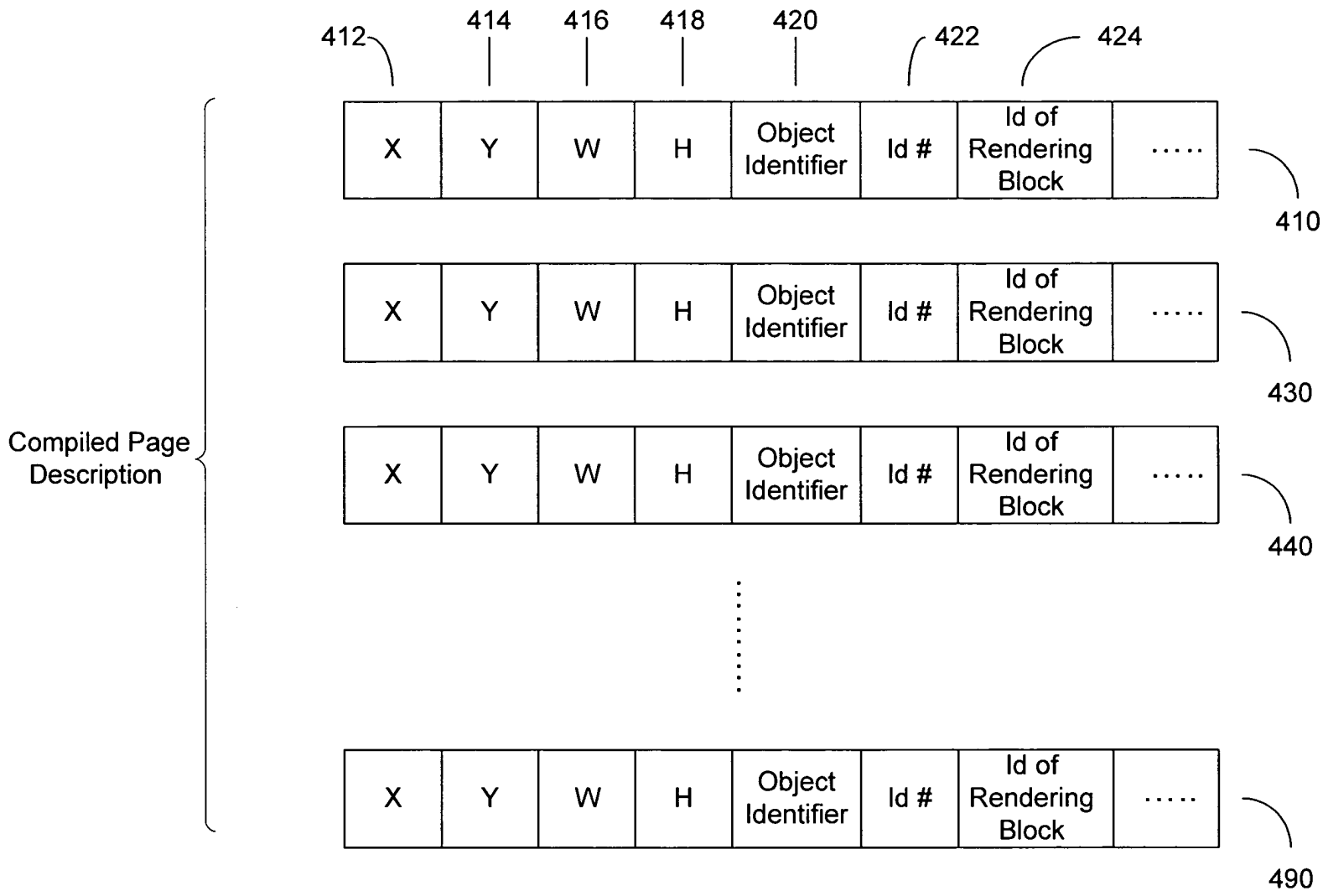
412
414
416
418
420
422
424
X
Y
W
H
Object Identifier
Id #
Id of Rendering Block
.....
410
430
440
490
Compiled Page Description

FIGURE 4

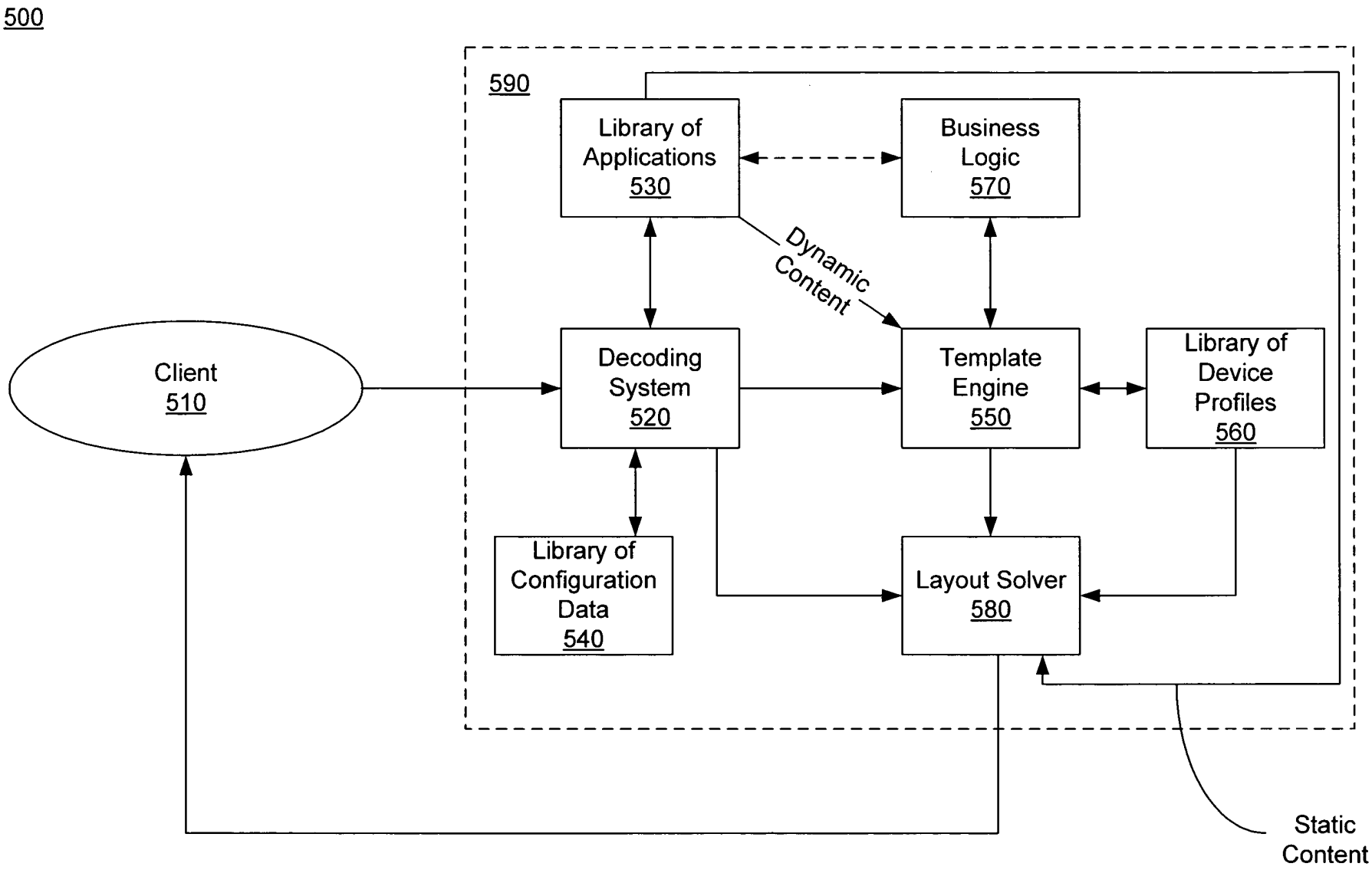
500
590
Library of Applications 530
Business Logic 570
Dynamic Content
Client 510
Decoding System 520
Template Engine 550
Library of Device Profiles 560
Library of Configuration Data 540
Layout Solver 580
Static Content

FIGURE 5

600

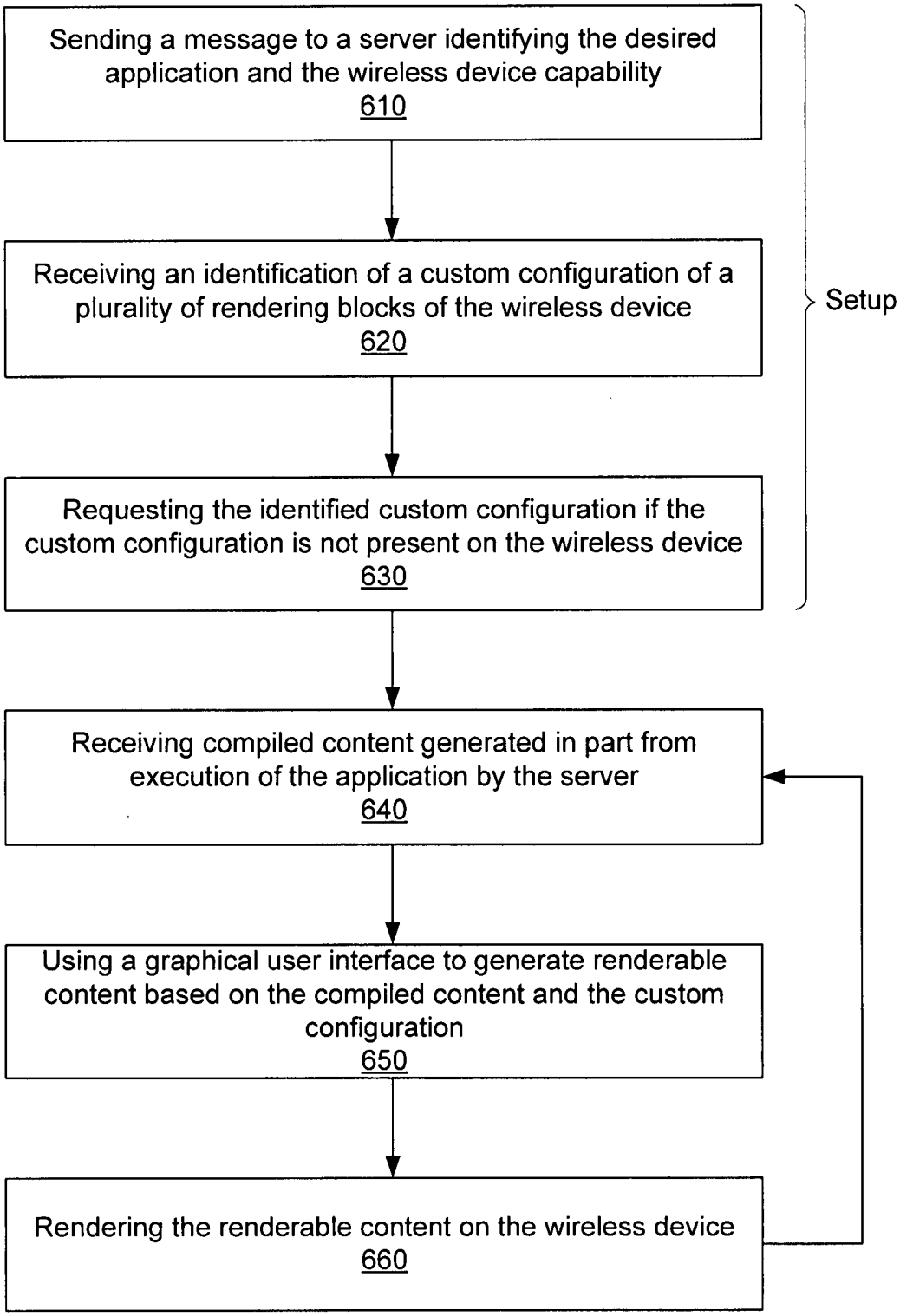
Sending a message to a server identifying the desired application and the wireless device capability
610
Receiving an identification of a custom configuration of a plurality of rendering blocks of the wireless device
620
Requesting the identified custom configuration if the custom configuration is not present on the wireless device
630
Setup
Receiving compiled content generated in part from execution of the application by the server
640
Using a graphical user interface to generate renderable content based on the compiled content and the custom configuration
650
Rendering the renderable content on the wireless device
660

FIGURE 6

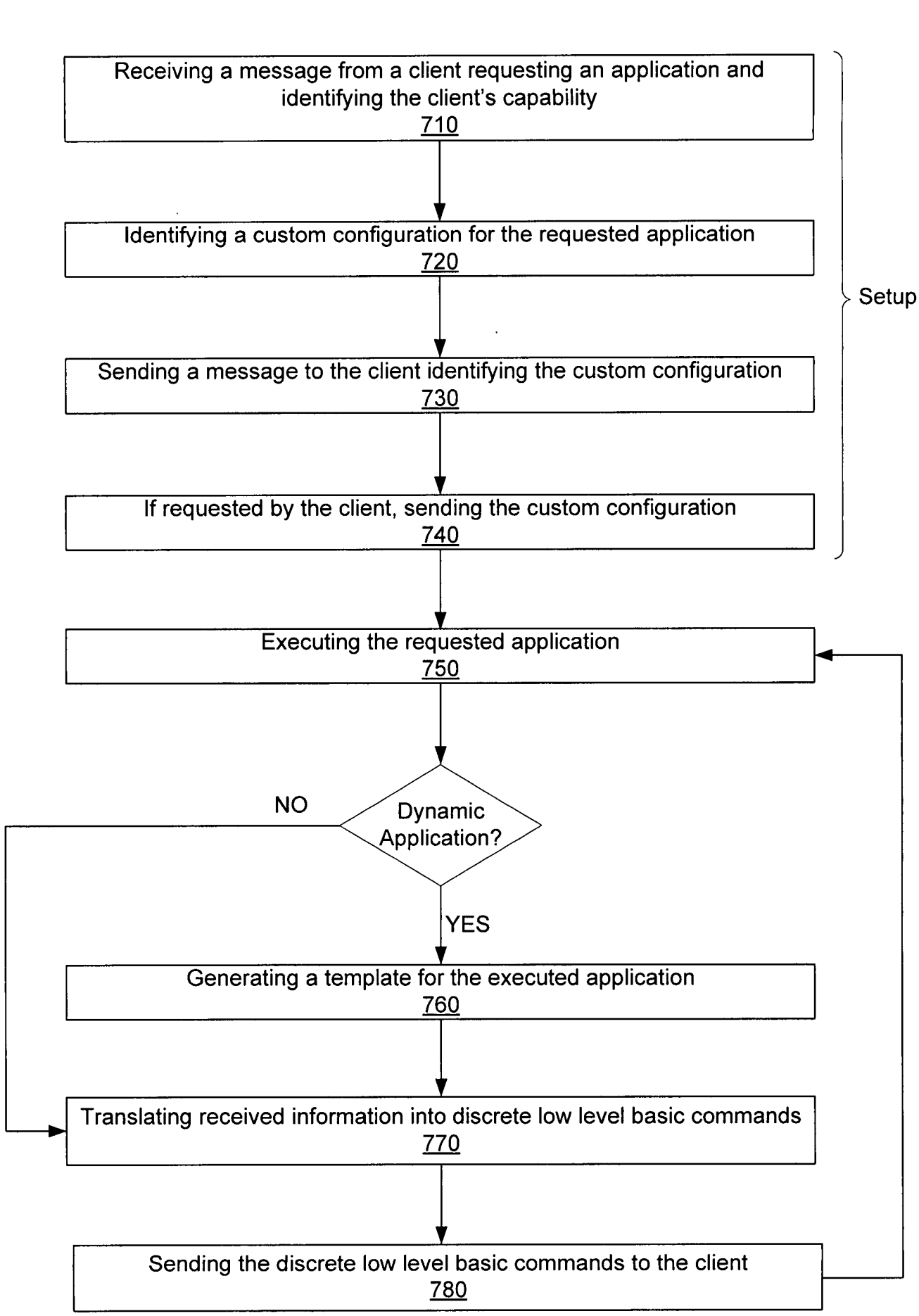
700
Receiving a message from a client requesting an application and identifying the client's capability
710
Identifying a custom configuration for the requested application
720
Sending a message to the client identifying the custom configuration
730
If requested by the client, sending the custom configuration
740
Setup
Executing the requested application
750
Dynamic Application?
NO
YES
Generating a template for the executed application
760
Translating received information into discrete low level basic commands
770
Sending the discrete low level basic commands to the client
780

FIGURE 7

Declaration and Power of Attorney for a Patent Application

Declaration

As below named inventor, I hereby declare that my residence post office address, and citizenship are as stated below my name. Further, I hereby declare that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

the specification of which:

X is attached hereto, or
____ was filed on ____ as application serial no. ____ : and
____ was amended on ____

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above; and

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56.

Foreign Priority Claim

I hereby claim foreign priority benefits under Title 35, United States Code Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Number	Country	Date Filed	Priority Claimed	
			____ yes	____ no
			____ yes	____ no

U.S. Priority Claim

I hereby claim the benefit under Title 35, United States Code, Section 120 and 119(e) of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Serial Number	Filing Date	Status (patented/pending/abandoned)

Power of Attorney

As a named inventor, I hereby appoint practitioners associated with this Customer Number:

41066

as attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Send Correspondence to:

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Two North Market Street
Third Floor
San Jose, California 95113
(408) 938-9060

Signatures

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.

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Inventor's Signature ..... Date 07/25/07
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(City State)
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Attorney Docket No.: **HOMI-P003**

Inventor(s): Pierre Carion and Kevin Smith

Title: A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

REQUEST AND CERTIFICATION UNDER 35 U.S.C. 122(b)(2)(B)(i)

I hereby certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing. I hereby request that the attached application not be published under 35 U.S.C. 122(b).

Date: 8-1-2007

By: Amir A. Tabarrok
Reg. No. 57,137

This request must be signed in compliance with 37 CFR 1.33(b) and submitted with the application **upon filing**.

Applicant may rescind this nonpublication request at any time. If applicant rescinds a request that an application not be published under U.S.C. 122(b), the application will be scheduled for publication at eighteen months from the earliest claimed filing date for which a benefit is claimed.

If applicant subsequently files an application directed to the invention disclosed in the attached application in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the applicant must notify the United States Patent and Trademark Office of such filing within forty-five (45) days after the date of the filing of such foreign or international application. **Failure to do so will result in abandonment of this application (35 U.S.C. 122(b)(2)(B)(iii)).**

17224 U.S. PTO
080107

U.S. PTO
11/888803
08/01/2007

Attorney Docket No.: HOMI-P003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

I hereby certify that this transmittal of the below described documents is being deposited with the United States Postal Service in an envelope bearing Express Mail Postage and an Express Mail label, with the below serial number, addressed to the Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450, on the below date of deposit.			
Express Mail Label No.:	EM023309869US	Name of Person Making the Deposit:	Anthony Chou
Date of Deposit:	08/01/07	Signature of the Person Making the Deposit:	Anthony Chou

Inventor(s): Pierre Carion and Kevin Smith

Title: A METHOD AND SYSTEM FOR RENDERING CONTENT ON A WIRELESS DEVICE

Mail Stop Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
Sir:

Transmittal of a Patent Application
(Under 37 CFR §1.53)

Transmitted herewith is the above identified patent application, including:

X Specification, claims and abstract, totaling 64 pages.
___ Formal drawings, totaling ___ pages.
X Informal drawings, totaling 9 pages.
X Declaration and Power of Attorney.
___ Information Disclosure statement.
___ Form 1449
X Assignment(s)
X Assignment Recordation Form (duplicate)
X Request and Certification under 35 U.S.C. 122(b)(2)(B)(i)

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	Filing Fees		Search Fees		Examination Fees		
		Small Entity		Small Entity		Small Entity	
Application Type	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	$1,000.00
Design	200	100	100	50	130	65	$
Plant	200	100	300	150	160	80	$
Reissue	300	150	500	250	600	300	$
Provisional	200	100					$

2. EXCESS CLAIM FEES

Fee Description	Small Entity Fee ($)	Fee ($)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims		**Extra Claims**	**Fee ($)**	**Fee Paid ($)**	**Multiple Dependent Claims**	
36	minus 20	16	x $50.00	$800.00		
HP = highest number of Independent Claims Paid for, if greater than 3						
Indep. Claims		**Extra Claims**	**Fee ($)**	**Fee Paid ($)**		
3	minus 3	0	x $200.00	$0.00		
HP = highest number of Independent Claims Paid for, if greater than 3						

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets

Total Sheets		Extra Sheets		Number of each additional 50 or fraction thereof	Fee $		Fee Paid $
73	-100	0	/50			=	$0.00

4. OTHER FEE(S)

	Total Fees Due ($)
Non-English specification, $130 fee (no small entity discount)	$1,840.00
Other: Assignment Recordation Fee: $40.00	

5. PAYMENT OF FEES

The full fee due in connection with this communication is provided as follows:

1. Not enclosed

   [ ] No filing fee is to be paid at this time.

2. Enclosed

   [X] Filing fee

   [X] Recording assignment

   [X] The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No.: 50-4160 . A duplicate copy of this authorization is enclosed.

   [X] A check in the amount of $1,840.00

   [ ] Charge any fees required or credit any overpayments associated with this filing to Deposit Account No.: 50-4160.

This application is filed pursuant to 37 C.F.R. § 1.53 in the name of the above-identified Inventor(s).

[X] Customer No: 41066

Please direct all correspondence concerning the above-identified application to the following address:

MURABITO HAO & BARNES LLP
Two North Market Street, Third Floor
San Jose, California 95113
(408) 938-9060

[X] This transmittal ends with this page.

Respectfully submitted,

Date: 8-1-2007

By: Amir A. Tabarrok
Reg. No. 57,137