UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/800,571	04/05/2022	11295564	115628.0000058	6616

23838 7590 03/16/2022

Hunton Andrews Kurth LLP/HAK
2200 Pennsylvania Avenue NW
Washington, DC 20037

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 2 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 Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PAIR WEB site http://pair.uspto.gov for additional inventors):

Masato ENDO, Nagakute-shi, JAPAN;
Yuichiro HARUNA, Oyama-shi, JAPAN;
Masaki OSHIMA, Kitanagoya-shi, JAPAN;

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

TOYOTA JIDOSHA KABUSHIKI KAISHA, Toyota-shi, JAPAN;

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.

IPR2024-00981
Emerging Auto EX2010

Doc Code: IFEE PTOL/85B-EFS

Document Description: Issue Fee Payment (PTO-85B)

Issue Fee Transmittal Form

Application Number	Filing Date	First Named Inventor	Atty. Docket No.	Confirmation No.
16800571	25-Feb-2020	Masato ENDO	115628.0000058	6616

TITLE OF INVENTION :

KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM

Entity Status	Application Type	Art Unit	Class - Subclass	EXAMINER
Regular Undiscounted	Utility under 35 USC 111(a)	2687	005610	

Issue Fee Due	Publication Due	Total Fee(s) Due	Date Due	Prev. Paid Fee
$1200	$0	$1200	03-Mar-2022	$0

1.Change of Correspondence Address and/or Indication Of Fee Address (37 CFR 1.33 & 1.363)

Current Correspondence Address:	Current Indicated Fee Address :
23838 Hunton Andrews Kurth LLP/HAK 2200 Pennsylvania Avenue NW Washington DC 20037 UNITED STATES 202-419-2055 uuspto@hunton.com	
☐ Change of correspondence address requested, system generated AIA/122-EFS form attached	☐ Fee Address indication requested, system generated SB/47-EFS form attached

2.Entity Status

Change in Entity Status

○ Applicant certifying micro entity status; system generated Micro Entity certification form attached. See 37 CFR 1.29.
Note: Absent a valid certification of micro entity status, issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. If this box is checked, you will be prompted to choose a micro entity status on the gross income basis (37 CFR 1.29(a)) or the institution of higher education basis (37 CFR 1.29(d)), and make the applicable certification online.

○ Applicant asserting small entity status. See 37 CFR 1.27.
Note: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

◉ Applicant changing to regular undiscounted fee status.
Note: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

IPR2024-00981
Emerging Auto EX2010

Doc Code: IFEE PTOL/85B-EFS

Document Description: Issue Fee Payment (PTO-85B)

3.The Following Fee(s) Are Submitted:

☒ Issue Fee

☐ I authorize USPTO to apply my previously paid issue fee to the current fees due

☐ Publication Fee

☐ The Director is hereby authorized to apply my previously paid issue fee to the current fee due and to charge deficient fees to Deposit Account Number _____

☐ Advance Order - # of copies _____

☒ If i**n addition to** the payment of the issue fee amount submitted with this form, there are any discrepancies in any amount(s) due, the Director is authorized to charge any deficiency, or credit any overpayment, to Deposit Account Number 500206 . The **issue fee must be submitted** with this form. **If payment of the issue fee does not accompany this form, checking this box and providing a deposit account number will NOT be effective to satisfy full payment of the fee(s) due.**

4.Firm and/or Attorney Names To Be Printed

NOTE: If no name is listed, no name will be printed
For printing on the patent front page, list to be displayed as entered

1. Hunton Andrews Kurth LLP
2.
3.

5.Assignee Name(s) and Residence Data To Be Printed

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.

Name	City	State	Country	Category
TOYOTA JIDOSHA KABUSHIKI KAISHA	Toyota-shi		JAPAN	corporation

6.Signature

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application. I also certify that this Fee(s) Transmittal form is being transmitted to the USPTO via EFS-WEB on the date indicated below.

Signature	/Daniel G. Shanley/	**Date**	03-01-2022
Name	Daniel Gregory Shanley	**Registration Number**	54863

WEB IFEE 1.0

Electronic Patent Application Fee Transmittal

Application Number:	16800571
Filing Date:	25-Feb-2020
Title of Invention:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
First Named Inventor/Applicant Name:	Masato ENDO
Filer:	Daniel Gregory Shanley/Michelle Humphreys
Attorney Docket Number:	115628.0000058

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPL ISSUE FEE	1501	1	1200	1200
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1200**

Electronic Acknowledgement Receipt

EFS ID:	45121264
Application Number:	16800571
International Application Number:	
Confirmation Number:	6616
Title of Invention:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
First Named Inventor/Applicant Name:	Masato ENDO
Customer Number:	23838
Filer:	Daniel Gregory Shanley/Michelle Humphreys
Filer Authorized By:	Daniel Gregory Shanley
Attorney Docket Number:	115628.0000058
Receipt Date:	01-MAR-2022
Filing Date:	25-FEB-2020
Time Stamp:	22:21:09
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1200
RAM confirmation Number	E202231M21064187
Deposit Account	500206
Authorized User	Michelle Humphreys
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.20 (Post Issuance fees) 37 CFR 1.21 (Miscellaneous fees and charges)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Web85b.pdf	62796 fa4e125bb28c09db0b8966636b7c9dd73085567a	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	40349 4df8749c62687a18f5b84627bc62b02b8980ec8f	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	103145		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

23838 7590 12/03/2021

Hunton Andrews Kurth LLP/HAK
2200 Pennsylvania Avenue NW
Washington, DC 20037

EXAMINER
ALUNKAL, THOMAS D

ART UNIT	PAPER NUMBER
2687	

DATE MAILED: 12/03/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/800,571	02/25/2020	Masato ENDO	115628.0000058	6616

TITLE OF INVENTION: KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	03/03/2022

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PTOL-85 (Rev. 02/11)

IPR2024-00981
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PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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)

23838 7590 12/03/2021
Hunton Andrews Kurth LLP/HAK
2200 Pennsylvania Avenue NW
Washington, DC 20037

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/800,571	02/25/2020	Masato ENDO	115628.0000058	6616

TITLE OF INVENTION: KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	03/03/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
ALUNKAL, THOMAS D	2687	340-005610

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 03-09 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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ❑Issue Fee ❑Publication Fee (if required) ❑Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

IPR2024-00981
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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/800,571	02/25/2020	Masato ENDO	115628.0000058	6616

23838 7590 12/03/2021

Hunton Andrews Kurth LLP/HAK
2200 Pennsylvania Avenue NW
Washington, DC 20037

EXAMINER	
ALUNKAL, THOMAS D	
ART UNIT	PAPER NUMBER
2687	

DATE MAILED: 12/03/2021

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

IPR2024-00981
Emerging Auto EX2010

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

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

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

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

Notice of Allowability	**Application No.** 16/800,571	**Applicant(s)** ENDO et al.	
	Examiner THOMAS D ALUNKAL	**Art Unit** 2687	**AIA (FITF) Status** Yes

-- 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 amendment filed 11/8/2021.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1 and 3-8 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information , please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☑ All b) ☐ Some* c) ☐ None of the:

   1. ☑ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☑ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
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 _____.

/THOMAS D ALUNKAL/
Primary Examiner, Art Unit 2687

IPR2024-00981
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Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Response to Arguments

Applicant's arguments, see Remarks, filed 11/8/2021, with respect to the rejections of claims 1 and 3-8 under 35 U.S.C. 112(b) have been fully considered and are persuasive. The previous grounds of rejection have been withdrawn. After further search and consideration, the pending claims are in condition for allowance.

Allowable Subject Matter

Claims 1 and 3-8 are allowed.

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

Regarding claim 1, the prior art fails to disclose or fairly suggest a key information management device comprising: an information processing device configured to i) deliver key information to a first mobile terminal as the first mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle, and ii) register permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to cause the information processing device to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle, ***wherein the information processing device is configured to register the permission further in association with unique information corresponding to an owner user of the vehicle, and wherein the information processing device is configured to transmit information related to the predetermined service to a second mobile***

terminal having the unique information corresponding to the owner user in response to a request from the first mobile terminal.

Regarding claim 7, the prior art fails to disclose or fairly suggest a key information management method that is executed by a key information management device, the key information management method comprising: delivering key information to a first mobile terminal as the first mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle; registering permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle; ***registering the permission further in association with unique information corresponding to an owner user of the vehicle; and transmitting information related to the predetermined service to a second mobile terminal having the unique information corresponding to the owner user in response to a request from the first mobile terminal***.

Regarding claim 8, the prior art fails to disclose or fairly suggest a non-transitory computer-readable recording medium comprising: a key information management program recorded on the recording medium, the key information management program causing an information processing device to execute instructions for: delivering key information to a first mobile terminal as the first mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle; registering permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle; ***registering the permission further in association with unique information corresponding to an owner user of the***

vehicle; and transmitting information related to the predetermined service to a second mobile terminal having the unique information corresponding to the owner user in response to a request from the first mobile terminal.

Dependent claims 3-6 are allowed with their base claims.

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 THOMAS D ALUNKAL whose telephone number is (571)270-1127. The examiner can normally be reached **M-F 9am-5pm**.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Curtis Kuntz** can be reached on **571-272-7499**. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like

assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or

571-272-1000.

/THOMAS D ALUNKAL/
Primary Examiner, Art Unit 2687

Notice of References Cited	Application/Control No. 16/800,571	Applicant(s)/Patent Under Reexamination ENDO et al.	
	Examiner THOMAS D ALUNKAL	Art Unit 2687	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-10614644-B2	04-2020	Endo; Masato	H04L9/0891	1/1
*	B	US-20190005445-A1	01-2019	Bahrainwala; Shazaan	G06Q10/08	1/1
*	C	US-20160098870-A1	04-2016	Bergerhoff; Nikolas	B60R25/2018	340/5.61
*	D	US-20150310532-A1	10-2015	Gura; Ron	G06Q50/30	705/7.13
*	E	US-20160189098-A1	06-2016	BEAUREPAIRE; Jerome	H04W12/084	705/337
*	F	US-20160098871-A1	04-2016	Oz; Seval	H04L63/06	340/5.61
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC 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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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/800,571	ENDO et al.
	Examiner	**Art Unit**
	THOMAS D ALUNKAL	2687

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	11/20/2021								
1	1	=								
	2	-								
2	3	=								
3	4	=								
4	5	=								
5	6	=								
6	7	=								
7	8	=								

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/800,571	ENDO et al.
	Examiner	Art Unit
	THOMAS D ALUNKAL	2687

CPC - Searched*		
Symbol	Date	Examiner
h04w4/50,h04w4/40,b60r25/209,b60r25/24,b60r25/241,g07c9/00571 ,g07c2009/00452,g07c9/00309	11/20/2021	TDA

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

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

Search Notes		
Search Notes	Date	Examiner
CPC: Text limited search	11/20/2021	TDA
Inventor Name Search	11/20/2021	TDA
NPL: IP.com search of inventive concept	11/20/2021	TDA

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
Interference Search		11/20/2021	TDA

/THOMAS D ALUNKAL/ Primary Examiner, Art Unit 2687	

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/800,571	ENDO et al.
	Examiner	**Art Unit**
	THOMAS D ALUNKAL	2687

CPC						
Symbol					**Type**	**Version**
G07C	/	9	/	00309	F	2013-01-01
H04L	/	9	/	088	I	2013-01-01
H04L	/	9	/	0891	I	2013-01-01
G06Q	/	10	/	0832	I	2013-01-01
B60R	/	25	/	209	I	2013-01-01
B60R	/	25	/	241	I	2013-01-01
H04W	/	4	/	40	I	2018-02-01
H04W	/	4	/	50	I	2018-02-01
B60R	/	25	/	24	I	2013-01-01
H04W	/	12	/	06	I	2013-01-01
G07C	/	9	/	00571	I	2013-01-01
B60R	/	25	/	2018	I	2013-01-01
H04W	/	12	/	08	I	2013-01-01
G07C	/	2009	/	00547	A	2013-01-01
G07C	/	2009	/	00468	A	2013-01-01
G07C	/	2009	/	00452	A	2013-01-01
G07C	/	2009	/	00769	A	2013-01-01
H04L	/	67	/	12	A	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	7	
/THOMAS D ALUNKAL/ Primary Examiner, Art Unit 2687	20 November 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20211120

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/800,571	ENDO et al.
	Examiner	**Art Unit**
	THOMAS D ALUNKAL	2687

INTERNATIONAL CLASSIFICATION					
CLAIMED					
G07C	/	9	/	00	
H04L	/	9	/	08	

NON-CLAIMED					
	/		/		

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 7	
/THOMAS D ALUNKAL/ Primary Examiner, Art Unit 2687 (Primary Examiner)	20 November 2021 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

U.S. Patent and Trademark Office — Part of Paper No.: 20211120

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/800,571	ENDO et al.
	Examiner	**Art Unit**
	THOMAS D ALUNKAL	2687

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1														
	2														
2	3														
3	4														
4	5														
5	6														
6	7														
7	8														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	7	
/THOMAS D ALUNKAL/ Primary Examiner, Art Unit 2687	20 November 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20211120

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	3	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/20 10:29
S1	1	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 13:22
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S3	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/02 13:26
S4	1	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 12:03
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S7	424,412	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:52
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S10	38,835	S8 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:53
S11	511	S10 same (permission$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:54
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S16	44	S15 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 14:21
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S32	38,950	S31 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S33	513	S32 same (permission$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
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S36	967	S30 same S35	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S37	124	S36 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S38	47	S37 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
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S60	12,073	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
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S63	28	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S64	53,942	S56 S57 S58 S59 S60 S61 S62 S63	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/05/22 10:35

			DERWENT; IBM_TDB			
S65	144	S36 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:36
S66	58	S37 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:36
S67	58	S42 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S68	38	S44 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S69	21	S38 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S70	28	S45 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S71	10	S48 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/05/22 10:37

			DERWENT; IBM_TDB			
S72	18	S50 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S73	51	S52 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S74	45	S53 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S75	89	S54 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S76	438,480	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S77	85,487	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S78	1,051	S76 same S77	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S79	18,368	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S80	15,892	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S81	10,016	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S82	956	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S83	12,039	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S84	1,476	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S85	5,452	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S86	33	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S87	55,568	S79 S80 S81 S82 S83 S84 S85 S86	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S88	183	S78 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S89	159	S78 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S90	79	S89 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S91	438,480	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S92	85,487	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S93	1,051	S91 same S92	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S94	159	S93 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S95	79	S94 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S96	201	S93 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S97	55	S96 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S98	58	S89 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S99	29	S98 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S100	124	S96 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S101	45	S100 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S102	19	S93 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S103	15	S102 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S104	15,532	S92 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S105	87	S104 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S106	42	S105 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S107	1,776	S76 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S108	211	S77 and S107	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S109	80	S108 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S110	196	S108 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S111	73	S110 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S112	335	S107 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S113	104	S112 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:23

			DERWENT; IBM_TDB			
S114	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/11/12 09:53
S115	1	("20130321178").PN.	US-PGPUB; USPAT	OR	OFF	2019/11/12 10:07
S116	1	("9499129").PN.	US-PGPUB; USPAT	OR	OFF	2019/11/12 10:08
S117	444,916	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S118	87,326	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S119	1,088	S117 same S118	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S120	18,729	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S121	16,296	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S122	10,861	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR;	OR	OFF	2019/11/12 10:11

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S123	984	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S124	12,291	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S125	1,539	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S126	5,660	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S127	35	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S128	57,422	S120 S121 S122 S123 S124 S125 S126 S127	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S129	196	S119 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	OFF	2019/11/12 10:11

			JPO; DERWENT; IBM_TDB			
S130	167	S119 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S131	84	S130 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S132	444,916	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S133	87,326	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S134	1,088	S132 same S133	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S135	167	S134 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S136	84	S135 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S137	207	S134 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S138	58	S137 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S139	61	S130 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S140	30	S139 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S141	128	S137 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S142	47	S141 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S143	19	S134 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S144	15	S143 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S145	1,798	S117 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S146	219	S118 and S145	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S147	82	S146 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S148	202	S146 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S149	75	S148 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S150	338	S145 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S151	105	S150 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S152	444,916	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S153	87,326	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S154	1,088	S152 same S153	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S155	18,729	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S156	16,296	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S157	10,861	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S158	984	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S159	12,291	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S160	1,539	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S161	5,660	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S162	35	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S163	57,422	S155 S156 S157 S158 S159 S160 S161 S162	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S164	196	S154 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S165	167	S154 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S166	84	S165 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S167	444,916	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S168	87,326	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S169	1,088	S167 same S168	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S170	167	S169 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S171	84	S170 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S172	207	S169 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S173	58	S172 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S174	61	S165 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S175	30	S174 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S176	128	S172 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S177	47	S176 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S178	19	S169 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:12

			DERWENT; IBM_TDB			
S179	15	S178 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S180	16,124	S168 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S181	88	S180 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S182	42	S181 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S183	1,798	S152 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S184	219	S153 and S183	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S185	82	S184 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:12

			DERWENT; IBM_TDB			
S186	202	S184 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S187	75	S186 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S188	338	S183 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S189	105	S188 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S190	119,293	(vehicl$4 or automobil$4 or car$3) same S117	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:24
S191	8,675	(register$4) near7 (permission$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:28
S192	241,090	(register$4) with (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:28

			DERWENT; IBM_TDB			
S193	25,899	S192 same server$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:29
S194	1,374	S190 and S193	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:29
S195	8,899	(register$4) with (permission$3 or allow$3 or permit$4) with (user$3) with (server$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:32
S196	17,184	S190 same (trunk$3 or servic$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:35
S197	135	S195 and S196	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:37
S198	2	((key$3) and (manag$5) and (mobil$3 or handheld or smart$5) and (vehicl$3 or car or automobil$4) and (permission$3) and (server$3) and (request$4) and (third adj party)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/18 10:36
S200	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/11/21 10:06

S201	461,906	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S202	92,164	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S203	1,178	S201 same S202	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S204	21,433	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S205	20,440	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S206	14,678	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S207	1,182	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S208	13,938	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S209	1,756	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S210	6,974	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S211	42	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S212	69,564	S204 S205 S206 S207 S208 S209 S210 S211	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S213	242	S203 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S214	194	S203 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S215	102	S214 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S216	461,906	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S217	92,164	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S218	1,178	S216 same S217	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S219	194	S218 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S220	102	S219 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S221	226	S218 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S222	68	S221 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S223	70	S214 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S224	36	S223 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S225	139	S221 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S226	55	S225 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S227	21	S218 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S228	17	S227 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S229	17,549	S217 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S230	103	S229 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S231	51	S230 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S232	1,868	S201 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S233	248	S202 and S232	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S234	92	S233 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S235	228	S233 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S236	85	S235 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S237	348	S232 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S238	117	S237 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S239	461,906	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S240	124,540	(vehicl$4 or automobil$4 or car$3) same S239	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S241	9,145	(register$4) with (permission$3 or allow$3 or permit$4) with (user$3) with (server$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S242	18,035	S240 same (trunk$3 or servic$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S243	144	S241 and S242	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S244	2	((key$3) and (manag$5) and (mobil$3 or handheld or smart$5) and (vehicl$3 or car or automobil$4) and (permission$3) and (server$3) and (request$4) and (third adj party)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S245	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/04/02 10:44
S246	1	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:44
S247	178,032	((vehicl$4 or automobil$4 or car$3) near4 shar$3) or C2C or (deliver$4 with trunk$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 11:10
S248	507,212	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S249	105,679	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S250	1,378	S248 same S249	US-PGPUB; USPAT; USOCR;	OR	OFF	2021/04/16 11:40

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S251	24,356	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S252	23,697	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S253	23,991	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S254	1,439	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S255	15,701	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S256	2,156	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S257	8,549	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	OFF	2021/04/16 11:40

			JPO; DERWENT; IBM_TDB			
S258	50	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S259	86,659	S251 S252 S253 S254 S255 S256 S257 S258	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S260	316	S250 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S261	257	S250 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S262	134	S261 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S263	507,212	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S264	105,679	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:40

			DERWENT; IBM_TDB			
S265	1,378	S263 same S264	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S266	257	S265 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S267	134	S266 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S268	287	S265 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S269	100	S268 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S270	89	S261 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S271	53	S270 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:41

			DERWENT; IBM_TDB			
S272	189	S268 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S273	79	S272 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S274	31	S265 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S275	27	S274 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S276	21,291	S264 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S277	143	S276 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S278	80	S277 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:41

			DERWENT; IBM_TDB			
S279	2,038	S248 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S280	312	S249 and S279	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S281	125	S280 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S282	289	S280 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S283	116	S282 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S284	382	S279 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S285	143	S284 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:41

			DERWENT; IBM_TDB			
S286	507,212	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S287	138,724	(vehicl$4 or automobil$4 or car$3) same S286	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S288	9,729	(register$4) with (permission$3 or allow$3 or permit$4) with (user$3) with (server$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S289	20,253	S287 same (trunk$3 or servic$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S290	163	S288 and S289	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S291	3	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S292	407	S249 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:49

			DERWENT; IBM_TDB			
S293	31	S248 same S292	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:49
S294	1,973	(register$4 or grant$4) with (permission$3 or allow$3 or permit$4) with (user$3 or third) with (vehicl$4 or car or automobil$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:57
S295	88	S248 same S294	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:58
S296	7	S295 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:59
S297	3,313	trunk$3 near5 deliver$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:59
S298	41	S248 same S297	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:59
S299	112	S249 and S297	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 12:00

			DERWENT; IBM_TDB			
S300	28	(owner or driver$3) with (vehicl$4 or car or automobil$4) with (grant$4 or permission$3) with (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 12:11
S301	720	(key$3 or token$3) near5 (mobil$3 or handheld or phone or smart$3 or wireless$3) near5 (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 12:14
S302	14	S301 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 12:15
S307	32	("2019/0005445").URPN.	USPAT	OR	OFF	2021/04/22 11:13
S308	1	("20160098871").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/04/22 11:17
S309	99	(package with deliver$4 with trunk)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/22 11:52
S310	10	("2016/0098876").URPN.	USPAT	OR	OFF	2021/04/22 11:55
S311	3	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/22 12:09
S312	13	("20150343993" | "9189900" | "20140232524" | "20110191126" | "20130321178" | "20140222298" | "20150310532" | "20160055699" | "20170178035" | "20170334395" |	US-PGPUB; USPAT	OR	OFF	2021/04/22 14:01

		"20190001925" | "9365188" | "9499129").PN.				
S313	3	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/23 08:28
S314	519,078	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S315	109,491	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S316	1,440	S314 same S315	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S317	24,974	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S318	24,284	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S319	25,914	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/08/06 13:31

			DERWENT; IBM_TDB			
S320	1,485	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S321	15,977	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S322	2,222	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S323	8,996	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S324	52	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S325	90,135	S317 S318 S319 S320 S321 S322 S323 S324	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S326	344	S316 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/08/06 13:31

			DERWENT; IBM_TDB			
S327	273	S316 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S328	146	S327 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S329	519,078	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S330	109,491	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S331	1,440	S329 same S330	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S332	273	S331 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S333	146	S332 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/08/06 13:31

			DERWENT; IBM_TDB			
S334	299	S331 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S335	108	S334 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S336	94	S327 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S337	56	S336 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S338	198	S334 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S339	86	S338 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S340	2,079	S314 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/08/06 13:32

			DERWENT; IBM_TDB			
S341	329	S315 and S340	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S342	136	S341 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S343	393	S340 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S344	152	S343 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S345	430	S315 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S346	31	S314 same S345	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S347	2,055	(register$4 or grant$4) with (permission$3 or allow$3 or permit$4) with (user$3 or third) with (vehicl$4 or car or automobil$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/08/06 13:32

			DERWENT; IBM_TDB			
S348	92	S314 same S347	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S349	3,362	trunk$3 near5 deliver$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S350	43	S314 same S349	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S351	30	(owner or driver$3) with (vehicl$4 or car or automobil$4) with (grant$4 or permission$3) with (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S352	746	(key$3 or token$3) near5 (mobil$3 or handheld or phone or smart$3 or wireless$3) near5 (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S353	15	S352 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S354	3	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/08/06 14:29

			DERWENT; IBM_TDB			
S355	4,415	(register$4 or registration$3) with (owner$3) with (vehicl$4 or car or automobil$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 14:44
S356	430	S315 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 14:45
S357	39	S355 and S356	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 14:45
S358	523,778	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
S359	111,034	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
S360	1,463	S358 same S359	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
S361	25,619	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/09/05 08:57

			DERWENT; IBM_TDB			
S362	25,014	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
S363	28,518	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
S364	1,540	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
S365	16,383	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
S366	2,308	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
S367	9,315	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
S368	53	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/09/05 08:57

			DERWENT; IBM_TDB			
S369	94,437	S361 S362 S363 S364 S365 S366 S367 S368	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
S370	352	S360 and S369	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
S371	271	S360 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:00
S372	145	S371 and S369	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:00
S373	523,778	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:00
S374	111,034	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:00
S375	1,463	S373 same S374	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/09/05 09:00

			DERWENT; IBM_TDB			
S376	271	S375 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:00
S377	145	S376 and S369	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:00
S378	304	S375 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S379	108	S378 and S369	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S380	94	S371 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S381	56	S380 and S369	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S382	201	S378 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/09/05 09:01

			DERWENT; IBM_TDB			
S383	85	S382 and S369	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S384	2,100	S358 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S385	334	S359 and S384	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S386	139	S385 and S369	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S387	394	S384 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S388	155	S387 and S369	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S389	437	S359 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/09/05 09:01

			DERWENT; IBM_TDB			
S390	32	S358 same S389	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S391	2,092	(register$4 or grant$4) with (permission$3 or allow$3 or permit$4) with (user$3 or third) with (vehicl$4 or car or automobil$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S392	92	S358 same S391	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S393	3,379	trunk$3 near5 deliver$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S394	44	S358 same S393	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S395	31	(owner or driver$3) with (vehicl$4 or car or automobil$4) with (grant$4 or permission$3) with (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S396	754	(key$3 or token$3) near5 (mobil$3 or handheld or phone or smart$3 or wireless$3) near5 (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/09/05 09:01

			DERWENT; IBM_TDB			
S397	15	S396 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S398	4,462	(register$4 or registration$3) with (owner$3) with (vehicl$4 or car or automobil$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S399	437	S359 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S400	40	S398 and S399	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
S401	532,204	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S402	113,888	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S403	1,515	S401 same S402	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/11/19 19:25

			DERWENT; IBM_TDB			
S404	26,208	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S405	25,585	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S406	30,515	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S407	1,572	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S408	16,646	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S409	2,379	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S410	9,667	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/11/19 19:25

			DERWENT; IBM_TDB			
S411	57	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S412	97,842	S404 S405 S406 S407 S408 S409 S410 S411	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S413	367	S403 and S412	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S414	297	S403 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S415	152	S414 and S412	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S416	532,204	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S417	113,888	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/11/19 19:25

			DERWENT; IBM_TDB			
S418	1,515	S416 same S417	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S419	297	S418 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S420	152	S419 and S412	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S421	324	S418 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S422	114	S421 and S412	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S423	152	S419 and S412	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:25
S424	114	S421 and S412	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/11/19 19:25

			DERWENT; IBM_TDB			
S425	98	S414 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S426	57	S425 and S412	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S427	221	S421 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S428	91	S427 and S412	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S429	2,114	S401 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S430	337	S402 and S429	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S431	141	S430 and S412	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/11/19 19:26

			DERWENT; IBM_TDB			
S432	397	S429 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S433	158	S432 and S412	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S434	158	S432 and S412	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S435	451	S402 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S436	33	S401 same S435	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S437	2,181	(register$4 or grant$4) with (permission$3 or allow$3 or permit$4) with (user$3 or third) with (vehicl$4 or car or automobil$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S438	96	S401 same S437	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/11/19 19:26

			DERWENT; IBM_TDB			
S439	3,416	trunk$3 near5 deliver$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S440	45	S401 same S439	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S441	31	(owner or driver$3) with (vehicl$4 or car or automobil$4) with (grant$4 or permission$3) with (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S442	777	(key$3 or token$3) near5 (mobil$3 or handheld or phone or smart$3 or wireless$3) near5 (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S443	16	S442 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S444	4,561	(register$4 or registration$3) with (owner$3) with (vehicl$4 or car or automobil$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26
S445	451	S402 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/11/19 19:26

			DERWENT; IBM_TDB			
S446	41	S444 and S445	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/11/19 19:26

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	5	((key$3) and (manag$5) and (mobil$3 or handheld or smart$5) and (vehicl$3 or car or automobil$4) and (permission$3) and (register$4 or registration) and (request$4) and (third adj party)).clm.	US-PGPUB; USPAT	OR	OFF	2021/11/20 10:25
S199	2	((key$3) and (manag$5) and (mobil$3 or handheld or smart$5) and (vehicl$3 or car or automobil$4) and (permission$3) and (server$3) and (request$4) and (third adj party)).clm.	US-PGPUB; USPAT	OR	OFF	2019/11/18 10:37

11/20/2021 11:12:18 AM
C:\Users\talunkal\Documents\EAST\Workspaces\16-139519.wsp

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of	:	TOYOTA JIDOSHA KABUSHIKI KAISHA
Application No.	:	16/800,571
Filed	:	February 25, 2020
For	:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
Examiner	:	Thomas D. ALUNKAL
Group Art Unit	:	2687
Confirmation No.	:	6616

MAIL STOP AMENDMENT
Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313-1450

RESPONSE TO SEPTEMBER 10, 2021 OFFICE ACTION

SIR:

The following amendments and remarks are respectfully submitted in response to the final Office Action mailed September 10, 2021.

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 5 of this paper.

IPR2024-00981
Emerging Auto EX2010

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	16800571
Filing Date	2020-02-25
First Named Inventor	Masato ENDO
Art Unit	2687
Examiner Name	ALUNKAL, THOMAS D
Attorney Docket Number	115628.0000058

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2011044112	JP	A	2011-03-03	Tokai Rika Co Ltd	(Cited in JP OA issued 2021-08-31) English abstract & machine translation provided	X

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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]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.D.A/

IPR2024-00981
Emerging Auto EX2010

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16800571
	Filing Date	2020-02-25
	First Named Inventor	Masato ENDO
	Art Unit	2687
	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

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EXAMINER SIGNATURE

Examiner Signature	/THOMAS D ALUNKAL/	Date Considered	11/20/2021

*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. /T.D.A/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16800571
	Filing Date	2020-02-25
	First Named Inventor	Masato ENDO
	Art Unit	2687
	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

X That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

X The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Daniel G. Shanley/	Date (YYYY-MM-DD)	2021-09-27
Name/Print	Daniel G. Shanley	Registration Number	54,863

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Privacy Act Statement

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.D.A/

IPR2024-00981
Emerging Auto EX2010

Electronic Acknowledgement Receipt

EFS ID:	44231336
Application Number:	16800571
International Application Number:	
Confirmation Number:	6616
Title of Invention:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
First Named Inventor/Applicant Name:	Masato ENDO
Customer Number:	23838
Filer:	Daniel Gregory Shanley/Sandra Salmeron
Filer Authorized By:	Daniel Gregory Shanley
Attorney Docket Number:	115628.0000058
Receipt Date:	08-NOV-2021
Filing Date:	25-FEB-2020
Time Stamp:	17:55:54
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	Response After Final Action	115628-0000058_Response.pdf	106779 fb83c70eda34e2b86375b359b5129e355c9640ec	no	6

Warnings:

Information:	
Total Files Size (in bytes):	106779

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of	:	TOYOTA JIDOSHA KABUSHIKI KAISHA
Application No.	:	16/800,571
Filed	:	February 25, 2020
For	:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
Examiner	:	Thomas D. ALUNKAL
Group Art Unit	:	2687
Confirmation No.	:	6616

MAIL STOP AMENDMENT
Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313-1450

RESPONSE TO SEPTEMBER 10, 2021 OFFICE ACTION

SIR:

The following amendments and remarks are respectfully submitted in response to the final Office Action mailed September 10, 2021.

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 5 of this paper.

IPR2024-00981
Emerging Auto EX2010

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

1. (Currently Amended) A key information management device comprising:

an information processing device configured to

i) deliver key information to a first mobile terminal as the first mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle, and

ii) register permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to cause the information processing device to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle,

wherein the information processing device is configured to register the permission further in association with unique information corresponding to an owner user of the vehicle, and

wherein the information processing device is configured to transmit information related to the predetermined service to [[the]] a second mobile terminal having the unique information corresponding to the owner user in response to a request from the first mobile terminal.

2. (Canceled).

3. (Previously Presented) The key information management device according to claim 1, wherein:

the predetermined service corresponds to the permission associated with the unique information corresponding to the owner user.

4. (Original) The key information management device according to claim 3, wherein:

the information processing device is configured to store the permission for each user of the vehicle in association with the unique information corresponding to the owner user;

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Emerging Auto EX2010

the information processing device is configured to transmit information related to a user of the vehicle, other than the owner user, to the second mobile terminal having the unique information corresponding to the owner user in response to a request from the second mobile terminal having the unique information corresponding to the owner user; and

the user of the vehicle, other than the owner user, corresponds to the permission associated with the unique information corresponding to the owner user.

5. (Original) The key information management device according to claim 1, further comprising a communication device configured to bidirectionally carry out communication with each of the vehicles, the mobile terminals, and the external server device through a predetermined communication network.

6. (Original) The key information management device according to claim 1, wherein the key information further includes information for locking the vehicle.

7. (Currently Amended) A key information management method that is executed by a key information management device, the key information management method comprising:

delivering key information to a first mobile terminal as the first mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle;

registering permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle;

registering the permission further in association with unique information corresponding to an owner user of the vehicle; and

transmitting information related to the predetermined service to [[the]] a second mobile terminal having the unique information corresponding to the owner user in response to a request from the first mobile terminal.

8. (Currently Amended) A non-transitory computer-readable recording medium comprising

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Emerging Auto EX2010

a key information management program recorded on the recording medium, the key information management program causing an information processing device to execute instructions for:

delivering key information to a first mobile terminal as the first mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle;

registering permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle;

registering the permission further in association with unique information corresponding to an owner user of the vehicle; and

transmitting information related to the predetermined service to [[the]] a second mobile terminal having the unique information corresponding to the owner user in response to a request from the first mobile terminal.

REMARKS

I. Status of Claims

Claims 1, and 3-8 are currently pending in the present application, with claims 1, 7, and 8 being the independent claims and being currently amended. Claim 2 was previously canceled. Support for these amendments can at least be found in paragraphs [0103]-[0105] of the application as published. No new matter has been added.

Claims 1 and 3-8 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C.112, the applicant), regards as the invention.

The Applicant respectfully requests reconsideration of these rejections in view of the foregoing amendments and the following remarks.

II. Remarks Regarding 35 USC §112 (b) Rejections

Claims 1 and 3-8 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C.112, the applicant), regards as the invention.

In view of the foregoing amendments, which should obviate any perceived ambiguity, the Applicant respectfully requests withdrawal of these rejections.

IPR2024-00981
Emerging Auto EX2010

III. Conclusion

In light of the above discussion, the Applicant respectfully submits that the present application is in all aspects in allowable condition, and earnestly solicits favorable reconsideration and early issuance of a Notice of Allowance.

The Examiner is invited to contact the undersigned at (202) 662-3047 to discuss any matter concerning this application. The Office is authorized to charge any fees related to this communication to Deposit Account No. 500206.

Respectfully submitted,

Dated: November 8, 2021

By: /Daniel G. Shanley/
Daniel G. Shanley
(Reg. No. 54,863)

HUNTON ANDREWS KURTH LLP
2200 Pennsylvania Avenue, N.W.
Washington, D.C. 20037
Tel: (202) 662-2700
Fax: (202) 662-2739
Customer No. 23838

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. 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	16800571
	Filing Date	2020-02-25
	First Named Inventor	Masato ENDO
	Art Unit	2687
	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

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
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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
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2011044112	JP	A	2011-03-03	Tokai Rika Co Ltd	(Cited in JP OA issued 2021-08-31) English abstract & machine translation provided	X

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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]

IPR2024-00981
Emerging Auto EX2010

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16800571
	Filing Date	2020-02-25
	First Named Inventor	Masato ENDO
	Art Unit	2687
	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[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.

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	Application Number	16800571
	Filing Date	2020-02-25
	First Named Inventor	Masato ENDO
	Art Unit	2687
	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Daniel G. Shanley/	Date (YYYY-MM-DD)	2021-09-27
Name/Print	Daniel G. Shanley	Registration Number	54,863

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CAR SHARING SYSTEM

Inventor(s): FURUIKE TATSUYA; KOGA KENICHI; IWASHITA AKITOSHI; KISHIMOTO KOHEI ± (FURUIKE TATSUYA, ; KOGA KENICHI, ; IWASHITA AKITOSHI, ; KISHIMOTO KOHEI)

Applicant(s): TOKAI RIKA CO LTD ± (TOKAI RIKA CO LTD)

Classification: - international: ***B60R25/01; B60R25/10; B60R25/24; E05B49/00; G06Q30/06; G06Q50/00; G06Q50/10; G06Q50/30; H04M11/00; H04Q9/00***

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Application number: JP20090193503 20090824 Global Dossier

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Abstract of JP2011044112 (A)

PROBLEM TO BE SOLVED: To provide a car sharing system that properly locks or unlocks a door lock by use of a portable terminal. ;SOLUTION: In the car sharing system, when an operation button 11 of a portable terminal 1a is operated by a user, the value of a key-side rolling counter is updated, and a locking/unlocking signal containing the value of the rolling counter is transmitted to an in-vehicle device 20. In the in-vehicle device 20, the value of the key-side rolling counter contained in the locking/unlocking signal is compared with the value of a vehicle-side rolling counter stored therein, and the door lock is licked or unlocked based on the comparison result. When the user makes a reservation for rental of the vehicle, the value of the key-side rolling counter stored in a database 32 of a management server 3 is transmitted to the portable terminal 1a. When the user applies for return of the vehicle, the management server 3 acquires the value of the key-side rolling counter stored in the portable terminal 1a and stores it in the database 32. ;COPYRIGHT: (C)2011,JPO&INPIT

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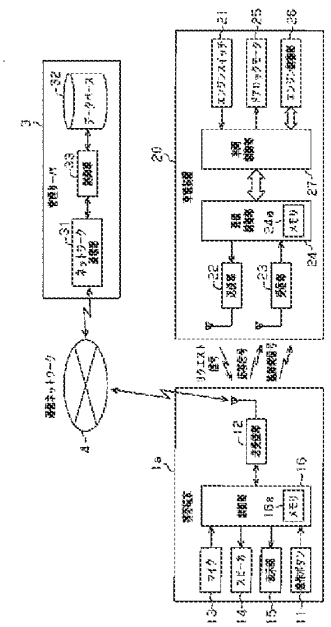
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(54)【発明の名称】カーシェアリングシステム

(57)【要約】
【課題】携帯端末を使用してドア錠の施解錠を適切に行うことのできるカーシェアリングシステムを提供する。
【解決手段】このカーシェアリングシステムでは、ユーザによって携帯端末１ａの操作ボタン１１が操作されるとキー側ローリングカウンタの値が更新されるとともに、このローリングカウンタを含む施解錠信号が車載装置２０に送信される。そして車載装置２０では、施解錠信号に含まれるキー側ローリングカウンタの値と、自身に記憶されている車両側ローリングカウンタの値とを比較して、その比較結果に基づいてドア錠の施解錠を行う。ここでは、ユーザが車両の貸し出しを予約したときに、管理サーバ３のデータベース３２に記憶されているキー側ローリングカウンタの値を携帯端末１ａに通知する。また、ユーザが車両の返却申請をしたときに、携帯端末１ａに記憶されているキー側ローリングカウンタの値を管理サーバ３が取得してデータベース３２に記憶する。
【選択図】図３



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【特許請求の範囲】
【請求項１】
車両のドア錠を施解錠する際に操作される操作ボタンを有して、該操作ボタンの操作に伴って自身に記憶されているキー側ローリングカウンタの値を更新するとともに、同キー側ローリングカウンタを含む施解錠信号を生成してこれを無線送信する携帯端末と、
前記車両に搭載されて、前記施解錠信号の受信に伴って該施解錠信号に含まれる前記キー側ローリングカウンタと自身に記憶されている車両側ローリングカウンタの値とを比較するとともに、その比較結果に基づいて前記車両側ローリングカウンタの値の更新、並びに前記ドア錠の施解錠を行う車載装置と、
前記車両の利用状況を管理するとともに、前記携帯端末と無線通信を行うことが可能であって、前記車両の利用が開始されるまでの期間に、自身に記憶されている前記キー側ローリングカウンタの値を前記無線通信を通じて前記携帯端末に通知するとともに、前記車両の利用が終了して以降、前記携帯端末に記憶されている前記キー側ローリングカウンタの値を前記無線通信を通じて取得して記憶する管理サーバと、
を備えるカーシェアリングシステム。
【請求項２】
前記管理サーバは、前記携帯端末に記憶されている前記キー側ローリングカウンタの値を取得したときに、前記キー側ローリングカウンタの値を消去する旨の指令を前記無線通信を通じて前記携帯端末に通知するとともに、前記携帯端末は、前記指令の通知に基づいて、自身に記憶されている前記キー側ローリングカウンタの値を消去する
請求項１に記載のカーシェアリングシステム。
【請求項３】
前記携帯端末は、インターネットに接続することが可能な機能を有するものであって、前記管理サーバは、前記携帯端末のインターネット接続機能を利用して、前記キー側ローリングカウンタの値を前記携帯端末に通知するものであるとともに、前記携帯端末に記憶されている前記キー側ローリングカウンタの値の取得を行うものである
請求項１又は２に記載のカーシェアリングシステム。
【発明の詳細な説明】
【技術分野】
【０００１】
本発明は、複数のユーザが車両を共同で利用するカーシェアリングシステムに関する。
【背景技術】
【０００２】
従来、この種のカーシェアリングシステムとしては、例えば特許文献１に記載のシステムがある。図１１に、この特許文献１に記載のカーシェアリングシステムの概要を示す。同図１１に示されるように、このカーシェアリングシステムでは、ユーザが、例えば携帯端末５のインターネット接続機能などを利用して管理サーバに接続し、車両６の貸し出しを予約したとすると、車両６の利用を可能とする鍵情報が管理サーバ７から通信ネットワークを介して携帯端末５に送信される。また、管理サーバ７は、携帯端末５に送信した鍵情報と同一の鍵情報を通信ネットワークを介して車両６に、より詳細には車両６に搭載されている車載装置６１に送信する。そして、管理サーバ７から送信される共通の鍵情報が携帯端末５及び車載装置６１にそれぞれ記憶されることで、ユーザによる各種車両操作が可能となる。すなわち、携帯端末５を所持したユーザが車両６に近づいたとすると、車載装置６１と携帯端末５との間で無線通信が行われるとともに、この無線通信を通じてそれぞれに記憶されている鍵情報が一致しているか否かが判断される。そして、それぞれに記憶されている鍵情報が一致している旨が判断されると、例えば車両６のドア錠を解錠させたり、あるいは車載エンジンの始動を許可するなど、各種車両制御が実行される。このように、車両６には、ユーザの手動操作を必要とすることなく、携帯端末５を所持しているだけで各種車両操作を実行することができる、いわゆるスマートエントリシステムが搭載されている。

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【０００３】
一方、携帯端末５と車両６との間の無線通信を通じて各種車両操作を実行するシステムとしては、上述したスマートエントリシステムの他、図１２に示すように、例えば携帯端末８に設けられている操作ボタン８１をユーザが押圧操作することにより車両９のドア錠の施解錠を行うことができる、いわゆるキーレスエントリシステムがある。そして、こうしたキーレスエントリシステムとしては、例えば特許文献２に記載のシステムがある。図１３は、この特許文献２に記載のキーレスエントリシステムを含めて、従来一般のキーレスエントリシステムの動作をシーケンスチャートとして示したものである。
【０００４】
図１３に示すように、キーレスエントリシステムでは、操作ボタン８１の押圧操作が携帯端末８によって検知されると（ステップＳ５０）、携帯端末８は、操作ボタン８１が押圧操作された回数に応じて定まるキー側ローリングカウンタＲＣｋの値をインクリメントする（ステップＳ５１）。また、携帯端末８は、こうしてキー側ローリングカウンタＲＣｋの値をインクリメントした後、ドア錠を施解錠する旨の指令、識別コード、及びローリングカウンタＲＣｋを含む施解錠信号を生成して（ステップＳ５２）、これを車載装置９１に送信する（ステップＳ５３）。一方、車両９に搭載されている車載装置９１では、この施解錠信号を受信すると（ステップＳ６０）、まず、パリティチェックなどを通じて伝送誤りが有るか否かを判断する（ステップＳ６１）。そして、このステップＳ６１を通じて伝送誤りが無い旨を判断した場合には（ステップＳ６１：ＹＥＳ）、内蔵するメモリに記憶されている識別コードと施解錠信号に含まれている識別信号とが互いに一致しているか否かを判断する（ステップＳ６２）。ここで、互いの識別コードが一致している旨を判断した場合には（ステップＳ６２：ＹＥＳ）、施解錠信号に含まれるキー側ローリングカウンタの値が、内蔵するメモリに記憶されている車両側ローリングカウンタの値よりも大きいか否かを判断する（ステップＳ６３）。そして、キー側ローリングカウンタの値が車両側ローリングカウンタの値よりも大きい旨を判断した場合には（ステップＳ６３：ＹＥＳ）、今回のキー側ローリングカウンタの値を車両側ローリングカウンタの値としてメモリに記憶するとともに（ステップＳ６４）、ドア錠の施解錠を行う（ステップＳ６５）。なお、伝送誤りが有った場合（ステップＳ６１：ＮＯ）、識別コードが互いに一致していない場合（ステップＳ６２：ＮＯ）、あるいはキー側ローリングカウンタの値が車両側ローリングカウンタの値以下の場合には（ステップＳ６３：ＮＯ）、車両側ローリングカウンタの値の更新や車両ドアの施解錠は行われない。
【０００５】
こうしたキーレスエントリシステムによれば、仮に携帯端末８から送信される施解錠信号を傍受して、この傍受した施解錠信号を用いて第三者が車両ドアを施解錠しようとしたとしても、携帯端末８によって一旦ドア錠が施解錠されると、傍受された施解錠信号に含まれるキー側ローリングカウンタの値は車両側ローリングカウンタの値以下となる。このため、施解錠信号の不正な傍受に基づくドア錠の施解錠を防止することができるため、高いセキュリティレベルを確保することができるようになる。
【先行技術文献】
【特許文献】
【０００６】
【特許文献１】特開２００８－２９３２３５号公報
【特許文献２】特開２００１－２７０６３号公報
【発明の概要】
【発明が解決しようとする課題】
【０００７】
ところで、キーレスエントリシステムが搭載された車両９を上述したカーシェアリングシステムの貸し出し車両として利用する場合、カーシェアリングシステムの鍵情報として上記識別コードやローリングカウンタを用いることが考えられる。しかしながら、このようにカーシェアリングシステムの鍵情報としてローリングカウンタを用いた場合には、以

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下のような問題が無視できないものとなる。

【０００８】

まず、図１４に示すように、初期状態として、１６進数で「ＡＡＡＡ」の値で示される車両側ローリングカウンタＲＣｃが車載装置に記憶されるとともに、同一の値からなるキー側ローリングカウンタＲＣｋが管理サーバ７に記憶されているとする。このとき、携帯端末５ａを所持したユーザＡが車両の貸し出しを予約したとすると、キー側ローリングカウンタＲＣｋが管理サーバ７から携帯端末５ａに通知されるとともに、このローリングカウンタが携帯端末５ａに記憶される。その後、車両の利用期間中にユーザＡが携帯端末５ａを用いてドア錠の施解錠を複数回行うことにより、車両側ローリングカウンタＲＣｃ及びキー側ローリングカウンタＲＣｋのそれぞれの値が「ＡＡＢＢ」まで変化してユーザＡの利用期間が終了したとすると、図中のユーザＡの利用終了時の状態となる。その後、次の利用者であるユーザＢが車両の貸し出しを予約したとすると、「ＡＡＡＡ」の値で示されるキー側ローリングカウンタＲＣｋが管理サーバ７からユーザＢの携帯端末５ｂに送信される。ところがこの場合、携帯端末５ｂに記憶されているキー側ローリングカウンタＲＣｋの値が車両側ローリングカウンタＲＣｃの値よりも小さいことから、ユーザＢが携帯端末５ｂを使用してドア錠を施解錠することができなくなってしまう。これは、ユーザが車両の施解錠を行うたびに車両側ローリングカウンタが更新されるにもかかわらず、車両側ローリングカウンタの値に対応したキー側ローリングカウンタの値を管理サーバ７が把握できていないことに起因する。

【０００９】

このように、カーシェアリングシステムでは、キーレスエントリシステムが搭載された車両を貸し出し車両として利用しようとすると、ドア錠の施解錠を行うことができなくなる状況が生じるおそれがあるといった点で、なお改良の余地を残すものとなっている。

【００１０】

本発明は、こうした実情に鑑みてなされたものであり、その目的は、キーレスエントリシステムが搭載された車両を利用する場合であれ、携帯端末を使用してドア錠の施解錠を適切に行うことのできるカーシェアリングシステムを提供することにある。

【課題を解決するための手段】

【００１１】

上記課題を解決するために、請求項１に記載の発明は、車両のドア錠を施解錠する際に操作される操作ボタンを有して、該操作ボタンの操作に伴って自身に記憶されているキー側ローリングカウンタの値を更新するとともに、同キー側ローリングカウンタを含む施解錠信号を生成してこれを無線送信する携帯端末と、前記車両に搭載されて、前記施解錠信号の受信に伴って該施解錠信号に含まれる前記キー側ローリングカウンタと自身に記憶されている車両側ローリングカウンタの値とを比較するとともに、その比較結果に基づいて前記車両側ローリングカウンタの値の更新、並びに前記ドア錠の施解錠を行う車載装置と、前記車両の利用状況を管理するとともに、前記携帯端末と無線通信を行うことが可能であって、前記車両の利用が開始されるまでの期間に、自身に記憶されている前記キー側ローリングカウンタの値を前記無線通信を通じて前記携帯端末に通知するとともに、前記車両の利用が終了して以降、前記携帯端末に記憶されている前記キー側ローリングカウンタの値を前記無線通信を通じて取得して記憶する管理サーバとを備えることを要旨としている。

【００１２】

同構成によれば、ユーザが車両の利用を終了したとすると、ユーザの携帯端末に記憶されているキー側ローリングカウンタの値が管理サーバによって取得されるため、車両側ローリングカウンタの値に対応したキー側ローリングカウンタの値を管理サーバが把握することができるようになる。そして、このユーザに続いて次のユーザが車両を利用するときには、管理サーバに記憶されているキー側ローリングカウンタの値が次のユーザの携帯端末に通知されるため、先のユーザの携帯端末に記憶されていたキー側ローリングカウンタの値を次のユーザの携帯端末に記憶させることができる。すなわち、車両を利用するユー

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ザが入れ替わったとしても、車両側ローリングカウンタの値に対応したキー側ローリングカウンタの値を各ユーザがそれぞれ所持する携帯端末の間で引き継ぐことができるため、各携帯端末を使用したドア錠の施解錠を適切に行うことができるようになる。

【００１３】

請求項２に記載の発明は、請求項１に記載のカーシェアリングシステムにおいて、前記管理サーバは、前記携帯端末に記憶されている前記キー側ローリングカウンタの値を取得したときに、前記キー側ローリングカウンタの値を消去する旨の指令を前記無線通信を通じて前記携帯端末に通知するとともに、前記携帯端末は、前記指令の通知に基づいて、自身に記憶されている前記キー側ローリングカウンタの値を消去することを要旨としている。

【００１４】

同構成によれば、キー側ローリングカウンタの値を消去する旨の指令が管理サーバから携帯端末に通知されたときに、携帯端末に記憶されているキー側ローリングカウンタの値が消去されるため、車両の利用が終了して以降、携帯端末に記憶されているキー側ローリングカウンタの値を傍受するなどの不正行為を防止することができるようになる。このため、傍受したキー側ローリングカウンタの値を用いてドア錠の施解錠を行うなどの第三者による不正行為を未然に防止することができるため、セキュリティレベルを高めることができるようになる。

【００１５】

請求項３に記載の発明は、請求項１又は２に記載のカーシェアリングシステムにおいて、前記携帯端末は、インターネットに接続することが可能な機能を有するものであって、前記管理サーバは、前記携帯端末のインターネット接続機能を利用して、前記キー側ローリングカウンタの値を前記携帯端末に通知するものであるとともに、前記携帯端末に記憶されている前記キー側ローリングカウンタの値の取得を行うものであることを要旨としている。

【００１６】

同構成によれば、携帯端末と管理サーバとの間で通信回線を新たに設けることなく、携帯端末のインターネット接続機能を利用して管理サーバが携帯端末にローリングカウンタの値を通知したり、あるいは携帯端末からローリングカウンタの値を取得することができるようになる。このため、請求項１及び２に記載のカーシェアリングシステムの設置が容易となる。

【発明の効果】

【００１７】

本発明にかかるカーシェアリングシステムによれば、キーレスエントリシステムが搭載された車両を利用する場合であれ、携帯端末を使用してドア錠の施解錠を適切に行うことができるようになる。

【図面の簡単な説明】

【００１８】

【図１】本発明にかかるカーシェアリングシステムの一実施形態についてその概要を模式的に示す図。

【図２】同実施形態のカーシェアリングシステムについて車両に搭載されるスマートエントリシステム及びキーレスエントリシステムの概要を模式的に示す平面図。

【図３】同実施形態のカーシェアリングシステムについてそのシステム構成を示すブロック図。

【図４】同実施形態のカーシェアリングシステムの携帯端末についてそのメモリに記憶される内容を模式的に示す図。

【図５】（ａ），（ｂ）は、同実施形態のカーシェアリングシステムについて管理装置のデータベースに記憶されている情報を模式的に示す図。

【図６】同実施形態のカーシェアリングシステムによる予約受付処理についてその処理手順を示すフローチャート。

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【図７】同実施形態のカーシェアリングシステムによる予約申請処理についてその処理手順を示すフローチャート。
【図８】同実施形態のカーシェアリングシステムによる返却受付処理についてその処理手順を示すフローチャート。
【図９】同実施形態のカーシェアリングシステムによる返却申請処理についてその処理手順を示すフローチャート。
【図１０】同実施形態のカーシェアリングシステムについてユーザＡ及びユーザＢが車両を利用したときの車両側ローリングカウンタ及びキー側ローリングカウンタの推移を模式的に示す図。
【図１１】従来のカーシェアリングシステムの概要を模式的に示す図。
【図１２】従来のキーレスエントリシステムの概要を模式的に示す平面図。
【図１３】同従来のキーレスエントリシステムについてその携帯端末及び車両の動作例を示すシーケンスチャート。
【図１４】従来のカーシェアリングシステムについてユーザＡ及びユーザＢが車両を利用したときの車両側ローリングカウンタ及びキー側ローリングカウンタの推移を模式的に示す図。
【発明を実施するための形態】
【００１９】
以下、本発明にかかるカーシェアリングシステムの一実施形態について図１～図９を参照して説明する。はじめに、図１及び図２を参照して、この実施形態にかかるカーシェアリングシステムの概要について説明する。
【００２０】
同図１に示されるように、このカーシェアリングシステムでは、複数のユーザＡ～Ｄによって一つのグループが形成されるとともに、これらのユーザＡ～Ｄによって共同で利用される車両２が駐車場に駐車されている。また、このシステムでは、ユーザＡ～Ｄが携帯端末１ａ～１ｄをそれぞれ所持しており、携帯端末１ａ～１ｄに搭載されたインターネット接続機能を利用して管理サーバ３に接続することで、車両２の貸し出しを予約することが可能となっている。そして、このシステムでは、例えばユーザＡが携帯端末１ａを通じて車両２の貸し出しを予約したとすると、車両２を利用するために必要な情報が管理サーバ３から通信ネットワーク４を介して携帯端末１ａに通知される。ちなみに、車両２を利用するために必要な情報には、車両２固有の車両識別コードＩＤｃや、携帯端末１ａを認証するために必要なキー識別コードＩＤｋ、通信アルゴリズムＡＬ、及び上記キー側ローリングカウンタＲＣｋなどが含まれている。ここで、通信アルゴリズムＡＬは、車載装置２０と無線通信を行うために必要な情報、例えば変復調方式やビットフォーマットなどを示すものである。そして、このようにして管理サーバ３から通知された情報が携帯端末１ａに記憶されることにより、ユーザＡによる車両２の利用が可能となる。
【００２１】
すなわち、図２に示されるように、携帯端末１ａを所持したユーザＡが車両２の周辺に位置した状態で携帯端末１ａに設けられた操作ボタン１１を所要に操作すると、携帯端末１ａから車載装置２０に施解錠信号が送信されて、車両のドア錠を施錠したり、あるいは解錠したりすることができる。一方、携帯端末１ａを所持したユーザＡが車両２の周辺に設定された車外通信エリアＡ１に進入したとすると、車両２に搭載された車載装置２０と携帯端末１ａとの間でリクエスト信号及び応答信号の授受が行われて、車載装置２０による携帯端末１ａの認証が行われる。そして、携帯端末１ａの認証が成立することを条件に、車両２のドア錠が解錠される。また、携帯端末１ａを所持したユーザＡが車室内に設定された車内通信エリアＡ２に進入したときにも、車載装置２０と携帯端末１ａとの間でリクエスト信号及び応答信号の授受が行われて、このときにも車載装置２０による携帯端末１ａの認証が行われる。そして、携帯端末１ａの認証が成立している状態で、ステアリング装置Ｔの付近に設置されたエンジンスイッチ２１をユーザが押圧操作すると、エンジンが始動する。このように、車両２には、上述したスマートエントリシステム及びキーレス

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エントリシステムの双方が搭載されている。

【００２２】

図３は、こうしたカーシェアリングシステムのシステム構成をブロック図として示したものであり、次に、この図３を参照して、同システムの構成、動作をより具体的に説明する。なお、上記携帯端末１ａ～１ｄはそれぞれ同一の構造を有しているため、図３では、便宜上、携帯端末１ａの構成のみを図示し、他の携帯端末１ｂ～１ｄの構成については携帯端末１ａの構成と同様のものとして図示を割愛している。

【００２３】

同図３に示されるように、車載装置２０には、上記通信エリアＡ１，Ａ２に上記リクエスト信号を送信するための送信部２２と共に、携帯端末１ａから送信される応答信号及び施解錠信号を受信するための受信部２３が設けられている。そして、送信部２２によるリクエスト信号の送信制御や、受信部２３を通じて受信される応答信号及び施解錠信号の処理が、同じく車載装置２０に設けられている通信制御部２４を通じて統括的に行われる。ちなみに、この通信制御部２４には不揮発性のメモリ２４ａが内蔵されており、このメモリ２４ａに、上記携帯端末１ａの認証に用いられる車両識別コードＩＤｃやキー識別コードＩＤｋが記憶されるとともに、上記車両側ローリングカウンタＲＣｃも記憶されている。また、この車載装置２０には、ドア錠の施解錠を行うためのドアロックモータ２５や、エンジンの各種制御を統括的に司るエンジン制御部２６も設けられている。そして、ドアロックモータ２５の駆動を通じてドア錠の施解錠を行ったり、あるいは上記エンジンスイッチ２１の押圧操作を検知したときにエンジン制御部２６を通じてエンジンを始動させるなど、各種車両制御の実行が車両制御部２７を通じて統括的に実行される。ちなみに、上記通信制御部２４と上記車両制御部２７との間の通信、及び上記車両制御部２７と上記エンジン制御部２６との間の通信は、ＣＡＮ（Ｃｏｎｔｒｏｌｌｅｒ Ａｒｅａ Ｎｅｔｗｏｒｋ）通信などを利用して行われている。

【００２４】

一方、携帯端末１ａには、上記車載装置２０から送信されるリクエスト信号を受信するとともに、このリクエスト信号の受信に基づいて応答信号を送信したり、あるいは上記操作ボタン１１の操作に基づいて施解錠信号を送信するための送受信部１２が設けられている。また、この携帯端末１ａには、電話機能やインターネット接続機能などに利用されるマイク１３、スピーカ１４、及び液晶ディスプレイなどの表示部１５が設けられている。また、この携帯端末１ａに設けられている上記操作ボタン１１は、電話番号の入力や、インターネットに接続するための各種操作、並びに上記車両ドアを施解錠する際にユーザによって押圧操作される部分として機能する。そして、マイク１３から入力される音声情報の処理、操作ボタン１１の押圧操作の検知が、同じく携帯端末１ａに設けられている制御部１６を通じて行われる。ちなみに、この制御部１６は、スピーカ１４や表示部１５を制御する部分でもある。また、制御部１６は、送受信部１２から上記通信ネットワーク４を介して管理サーバ３とインターネット通信することが可能となっている。さらに、この制御部１６には不揮発性のメモリ（ここではフラッシュＰＲＯＭ）１６ａが内蔵されており、上記管理サーバから通信される情報がメモリ１６ａに記憶される。具体的には、図４に示されるように、メモリ１６ａの読み書きが可能な第１の記憶領域Ｒ１には、キー側ローリングカウンタＲＣｋが記憶されるとともに、書き込みが可能であって、且つ携帯端末１ａのみがアクセスすることが可能な第２の記憶領域Ｒ２には、車両識別コードＩＤｃやキー識別コードＩＤｋ、通信アルゴリズムＡＬが記憶される。そして、制御部１６は、メモリ１６ａに記憶される通信アルゴリズムＡＬに従って上述したリクエスト信号の処理や、応答信号及び施解錠信号の送信制御などを行う。

【００２５】

また一方、図３に示されるように、上記管理サーバ３には、通信ネットワーク４を介して携帯端末１ａとインターネット通信を行うためのネットワーク通信部３１が設けられるとともに、データベース３２が設けられている。ちなみに、図５（ａ），（ｂ）に示すように、データベース３２には、車両２の利用日、利用時間、及び利用者などの利用状況が

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記憶されるとともに、上記車両識別コードＩＤｃ、キー識別コードＩＤｋ、キー側ローリングカウンタＲＣｋ、及び通信アルゴリズムＡＬが記憶されている。そして、ネットワーク通信部３１の通信制御、並びにデータベース３２へのデータの書き込みやその読み込みが、同じく管理サーバ３に設けられている制御部３３を通じて行われる。

【００２６】

そして、このカーシェアリングシステムでは、ドア錠を施解錠するためにユーザが携帯端末１ａの操作ボタン１１を所要に操作したとすると、先の図１３に例示したシーケンスチャートと同様の態様にて携帯端末１ａ及び車載装置２０が動作する。すなわち、携帯端末１ａの制御部１６は、操作ボタン１１の操作を検知すると、キー側ローリングカウンタＲＣｋの値をインクリメントする。また、制御部１６は、キー識別コードＩＤｋ及びキー側ローリングカウンタＲＣｋを含む施解錠信号を生成するとともに、生成した施解錠信号を送受信部１２を介して車載装置２０に送信する。そして、車載装置２０の受信部２３では施解錠信号を受信すると、受信した施解錠信号を通信制御部２４に伝達する。これにより、通信制御部２４では、施解錠信号に含まれるキー識別コードＩＤｋと、メモリ２４ａに記憶されているキー識別コードＩＤｋとの照合を行い、この照合を通じて互いの識別コードＩＤｋが一致しているか否かを判断する。そして互いの識別コードが一致している旨を判断すると、キー側ローリングカウンタＲＣｋの値と、メモリ２４ａに記憶されている車両側ローリングカウンタＲＣｃの値とを比較して、キー側ローリングカウンタＲＣｋの値が車両側ローリングカウンタＲＣｃの値よりも大きい旨を判断すると、ドア錠を施解錠する旨の指令を車両制御部２７に通知する。そして、車両制御部２７は、ドア錠を施解錠する旨の指令が通知されると、ドアロックモータ２５の駆動を通じてドア錠の施解錠を行う。

【００２７】

ところで、ユーザＡは、携帯端末１ａのインターネット接続機能を利用して管理サーバ３の予約ページ、具体的には車両２を利用する日時や、利用者などを入力するページにアクセスすることで、車両２の貸し出し予約を行うことが可能となっている。また、ユーザＡは、携帯端末１ａから管理サーバ３の返却ページにアクセスすることで、車両２の返却手続を行うことも可能となっている。

【００２８】

次に、図６及び図７を参照して、ユーザＡが携帯端末１ａから管理サーバ３の予約ページにアクセスして車両２の貸し出し予約を行った際に、管理サーバ３の制御部３３を通じて実行される予約受付処理、及び携帯端末１ａの制御部１６を通じて実行される予約申請処理についてそれぞれ説明する。

【００２９】

ここで、図６は、管理サーバ３の制御部３３を通じて実行される予約受付処理の処理手順をフローチャートとして示したものであり、まず、この図６を参照して、同処理の具体的手順を説明する。なお、図６に示す処理は、携帯端末１ａから管理サーバ３の予約ページにアクセスがあったときに実行される。

【００３０】

同図６に示されるように、この予約受付処理では、はじめに、表示部１５に予約ページを表示するために必要な予約ページ情報を携帯端末１ａに通知するとともに（ステップＳ１０）、予約ページに入力された情報が携帯端末１ａから通知されたか否かが判断される（ステップＳ１１）。そして、予約ページに入力された情報が携帯端末１ａから通知された旨が判断された場合には（ステップＳ１１：ＹＥＳ）、その入力された情報に基づいて車両２を貸し出すことができるか否かが判断される（ステップＳ１２）。具体的には、入力された貸し出し日時に予約がない場合には、車両２を貸し出すことができる旨が判断される。そして、車両２を貸し出すことができない旨が判断された場合には（ステップＳ１２：ＮＯ）、予約ページ情報を携帯端末１ａに再度通知して（ステップＳ１０）、ユーザに貸し出し日時の変更を促す。

【００３１】

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一方、車両２を貸し出すことができる旨が判断された場合には（ステップＳ１２：ＹＥＳ）、予約ページに入力された情報をデータベース３２に記憶する（ステップＳ１３）。また、このステップＳ１３の処理に続いて、車両識別コードＩＤｃ、キー識別コードＩＤｋ、キー側ローリングカウンタＲＣｋ、及び通信アルゴリズムＡＬがデータベース３２から読み込まれるとともに（ステップＳ１４）、この読み込んだデータをキー情報として携帯端末１ａに通知して、制御部３３はこの一連の処理を終了する。

【００３２】

また、図７は、携帯端末１ａの制御部１６を通じて実行される予約申請処理の処理手順をフローチャートとして示したものであり、次に、この図７を参照して、同処理の具体的手順を説明する。なお、図７に示す処理は、予約ページ情報が管理サーバ３から送信されたときに実行される。また、この処理は、携帯端末１ｂ～１ｄでも同様に実行される。

【００３３】

同図７に示されるように、この予約申請処理では、はじめに、予約ページ情報に基づいて予約ページを表示部１５に表示するとともに（ステップＳ２０）、ユーザＡによる予約ページへの入力が完了したか否かが判断される（ステップＳ２１）。具体的には、例えばユーザＡが予約ページに利用者や利用時間などを入力した後、同予約ページにおいて「予約完了」と表示された部分がユーザによって操作されたとき、予約ページへの入力が完了した旨が判断される。そして、ユーザによる予約ページへの入力が完了した旨が判断されると（ステップＳ２１：ＹＥＳ）、入力された情報を管理サーバ３に通知する（ステップＳ２２）。その後、予約ページ情報が再度通知されたか否かが判断されて（ステップＳ２３）、予約ページ情報が再度通知された場合には（ステップＳ２３：ＹＥＳ）、予約ページを表示部１５に再度表示して（ステップＳ２０）、ユーザに貸し出し日時の変更を促す。一方、予約ページ情報が再度通知されることなく（ステップＳ２３：ＮＯ）、管理サーバ３からキー情報が通知された場合には（ステップＳ２４：ＹＥＳ）、通知されたキー情報をメモリ１６ａに記憶して（ステップＳ２５）、この一連の処理を一端終了する。

【００３４】

次に、図８及び図９を参照して、ユーザＡが携帯端末１ａから管理サーバ３の返却ページにアクセスして車両２の返却手続を行った際に、管理サーバ３を通じて実行される返却受付処理、及び携帯端末１ａの制御部１６を通じて実行される返却申請処理についてそれぞれ説明する。

【００３５】

ここで、図８は、管理サーバ３の制御部３３を通じて実行される返却受付処理の処理手順をフローチャートとして示したものであり、次に、この図８を参照して、同処理の具体的手順を説明する。なお、図８に示す処理は、携帯端末１ａから管理サーバ３の返却ページにアクセスがあったときに実行される。

【００３６】

同図８に示されるように、この返却受付処理では、はじめに、表示部１５に返却ページを表示するために必要な返却ページ情報を携帯端末１ａに通知するとともに（ステップＳ３０）、返却申請が行われた旨が携帯端末１ａから通知されたか否かが判断される（ステップＳ３１）。そして、返却申請が行われた旨が携帯端末１ａから通知された場合には（ステップＳ３１：ＹＥＳ）、携帯端末１ａのメモリ１６ａにアクセスしてキー側ローリングカウンタＲＣｋの値を取得するとともに（ステップＳ３２）、取得したキー側ローリングカウンタＲＣｋの値をデータベース３２に記憶する（ステップＳ３３）。そして、このステップＳ３３の処理に続いて、キー情報消去指令を携帯端末１ａに通知して（ステップＳ３４）、制御部３３はこの一連の処理を終了する。

【００３７】

また、図９は、携帯端末１ａの制御部１６を通じて実行される返却申請処理の処理手順をフローチャートとして示したものであり、次に、この図７を参照して、同処理の具体的手順を説明する。なお、図９に示す処理は、返却ページ情報が管理サーバ３から送信されたときに実行される。また、この処理は、携帯端末１ｂ～１ｄでも同様に実行される。

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【００３８】
同図９に示されるように、この返却申請処理では、はじめに、返却ページ情報に基づいて返却ページを表示部１５に表示するとともに（ステップＳ４０）、ユーザによる返却申請が行われたか否かが判断される（ステップＳ４１）。具体的には、例えば返却ページにおいて「返却申請」と表示された部分がユーザによって操作されたとき、ユーザによる返却申請が行われた旨が判断される。そして、ユーザによる返却申請が行われた旨が判断された場合には（ステップＳ４１：ＹＥＳ）、返却申請が行われた旨を管理サーバ３に通知するとともに（ステップＳ４２）、管理サーバ３からキー情報消去指令が通知されたか否かが判断される（ステップＳ４３）。続いて、管理サーバ３からキー情報消去指令が通知された旨が判断された場合には（ステップＳ４３：ＹＥＳ）、メモリ１６ａに記憶されているキー情報、すなわち車両識別コードＩＤｃ、キー識別コードＩＤｋ、キー側ローリングカウンタＲＣｋ、及び通信アルゴリズムＡＬを消去して（ステップＳ４４）、制御部１６はこの一連の処理を終了する。

【００３９】
図１０は、これらの処理に基づくカーシェアリングシステムの動作例として、ユーザＡが車両２を利用した後、ユーザＢが車両２を利用した状況での車両側ローリングカウンタＲＣｃ及びキー側ローリングカウンタＲＣｋの値の推移を示したものである。なおここでは、初期状態として、１６進数で「ＡＡＡＡ」の値で示される車両側ローリングカウンタＲＣｃが車載装置２０（より詳細にはメモリ２３ａ）に記憶されるとともに、同一の値からなるキー側ローリングカウンタＲＣｋが管理サーバ３（より詳細にはデータベース３２）に記憶されているとする。

【００４０】
同図１０に示されるように、携帯端末１ａを所持したユーザＡが車両の貸し出しを予約したとすると、キー側ローリングカウンタＲＣｋが管理サーバ３から携帯端末１ａに通知されるとともに、このローリングカウンタＲＣｋが携帯端末１ａに記憶される。その後、車両の利用期間中にユーザＡが携帯端末１ａを用いてドア錠の施解錠を複数回行うことにより、車両側ローリングカウンタＲＣｃ及びキー側ローリングカウンタＲＣｋのそれぞれの値が「ＡＡＢＢ」まで変化してユーザＡが返却申請を行ったとすると、図中のユーザＡの利用終了時の状態となる。すなわち、車両側ローリングカウンタＲＣｃの値に対応したキー側ローリングカウンタＲＣｋの値が管理サーバに記憶される。このため、次の利用者であるユーザＢが車両の貸し出しを予約したとすると、ユーザＢの携帯端末１ｂには、「ＡＡＢＢ」の値で示されるキー側ローリングカウンタＲＣｋが記憶されるため、車両側ローリングカウンタＲＣｃの値とキー側ローリングカウンタＲＣｋの値とを互いに一致させることができる。このように、本実施形態にかかるカーシェアリングシステムでは、車両を利用するユーザが入れ替わったとしても、車両側ローリングカウンタの値に対応したキー側ローリングカウンタの値を携帯端末１ａから携帯端末１ｂに引き継ぐことができるため、ユーザＢは携帯端末１ｂを使用してドア錠の施解錠を適切に行うことができるようになる。

【００４１】
また、本実施形態では、例えば車両２の返却申請が行われたときに、携帯端末１ａに記憶されている車両識別コードＩＤｃやキー側ローリングカウンタＲＣｋなどのキー情報が消去されるため、第三者によるキー情報の傍受を的確に防止することができる。このため、キー情報を第三者が不正に使用してドア錠の施解錠を行ったり、あるいは車載エンジンを始動させるなどの不正行為を未然に防止することができるため、セキュリティレベルを高めることができるようにもなる。

【００４２】
以上説明したように、本実施形態にかかるカーシェアリングシステムによれば、以下のような効果が得られるようになる。
（１）車両２の貸し出し予約が行われたときに、管理サーバ３のデータベース３２からキー側ローリングカウンタＲＣｋを読み込んでこれを携帯端末１ａ～１ｄに通知するとと

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もに、車両２の返却申請が行われたときに、携帯端末１ａ～１ｄに記憶されているキー側ローリングカウンタＲＣｋの値を管理サーバ３のデータベース３２に記憶させるようにした。これにより、車両側ローリングカウンタＲＣｃの値に対応したキー側ローリングカウンタＲＣｋの値を管理サーバ３が把握することができるようになるとともに、そのキー側ローリングカウンタＲＣｋの値を各携帯端末１ａ～１ｄの間で引き継ぐことができるようになる。このため、携帯端末１ａ～１ｄを使用したドア錠の施解錠を適切に行うことができるようになる。

【００４３】

（２）車両２の返却申請が行われたときに、管理サーバ３からキー情報消去指令を携帯端末１ａに通知するとともに、この通知に基づいて携帯端末１ａに記憶されているキー情報を消去するようにした。これにより、第三者によるキー情報の傍受を的確に防止することができるため、セキュリティレベルを高めることができるようになる。

【００４４】

（３）携帯端末１ａ～１ｄに搭載されているインターネット接続機能を利用して携帯端末１ａ～１ｄと管理サーバ３との間で通信を行うようにした。これにより、携帯端末１ａ～１ｄと管理サーバ３との間で通信回線を新たに設ける必要がないことから、カーシェアリングシステムの設置が容易となる。

【００４５】

（４）ユーザＡ～Ｄによる車両の貸し出し予約が完了した時点で、携帯端末１ａ～１ｄにキー情報を通知するようにした。これにより、貸し出し予約を終えた直後からユーザＡ～Ｄは車両を利用することができるため、ユーザＡ～Ｄの利便性が向上するようになる。

【００４６】

なお、上記実施形態は、これを適宜変更した以下の形態にて実施することもできる。

・上記実施形態では、ユーザＡ～Ｄによる車両２の貸し出し予約が完了した時点で、キー情報を携帯端末１ａに通知するようにしたが、キー情報を携帯端末１ａ～１ｄに通知する時期については、ユーザＡ～Ｄが実際に車両２の利用を開始するまでの期間であれば、適宜変更することが可能である。

【００４７】

・上記実施形態では、ユーザＡ～Ｄによって返却申請が行われた時点で携帯端末１ａ～１ｄに記憶されているキー情報を消去するようにしたが、携帯端末１ａ～１ｄに記憶されているキー情報を消去する時期については、ユーザＡ～Ｄが返却申請を行った時点よりも後であれば、適宜変更することが可能である。ただし、セキュリティの観点からすると、ユーザＡ～Ｄによって返却申請が行われた時点で携帯端末１ａ～１ｄに記憶されているキー情報を消去することが望ましい。

【００４８】

・上記実施形態では、携帯端末１ａ～１ｄが、電話機能などを有する汎用性のあるものであったが、これに代えて、例えば車両の各種操作を行うためだけに使用される専用のものであっても良い。また、こうした専用の携帯端末を用いる場合には、インターネット接続機能が携帯端末に搭載されていない可能性もある。その場合には、携帯端末と管理サーバ３との間で通信回線を新たに設けることが有効である。

【００４９】

・上記実施形態では、本発明にかかるカーシェアリングシステムを、キーレスエントリシステム及びスマートエントリシステムの双方を搭載する車両２に適用するようにしたが、これに代えて、例えばキーレスエントリシステムのみを搭載する車両に適用することも可能である。ちなみに、キーレスエントリシステムのみを搭載する車両に本発明にかかるカーシェアリングシステムを適用する場合には、上記キー情報の内容を適宜変更する必要がある。

【００５０】

・上記実施形態では、キー側ローリングカウンタの値が車両側ローリングカウンタの値よりも大きいことを条件にドア錠の施解錠を実行するようにしたが、これに代えて、例え

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ばキー側ローリングカウンタの値と車両側ローリングカウンタの値とが互いに一致することを条件にドア錠の施解錠を実行するようにしてもよい。要は、車両側ローリングカウンタの値とキー側ローリングカウンタの値との比較に基づいてドア錠の施解錠を行うものであればよい。

（付記）

次に、上記実施形態及びその変形例から把握できる技術的思想について追記する。

【００５１】

（イ）請求項２に記載のカーシェアリングシステムにおいて、前記管理サーバは、前記携帯端末からの前記キー側ローリングカウンタの取得、並びに前記キー側ローリングカウンタの値を消去する旨の指令の前記携帯端末への通知を、前記車両の利用が終了したときに行うものであることを特徴とするカーシェアリングシステム。同構成によれば、ユーザが車両の利用を終了した時点で、携帯端末に記憶されているキー側ローリングカウンタの値を消去することができるため、第三者によるキー側ローリングカウンタの傍受を的確に防止することができるようになる。このため、セキュリティレベルを更に高めることができるようになる。

【００５２】

（ロ）請求項１～３、及び付記イのいずれか一項に記載のカーシェアリングシステムにおいて、前記管理サーバは、前記車両の利用の予約が行われることを条件に、前記自身に記憶されている前記キー側ローリングカウンタを前記携帯端末に通知するものであることを特徴とするカーシェアリングシステム。同構成によれば、ユーザが車両の利用を予約した時点で、ユーザの携帯端末にローリングカウンタの値が通知されるため、予約を終えた直後からユーザは車両を利用することができるようになる。このため、ユーザの利便性が向上するようになる。

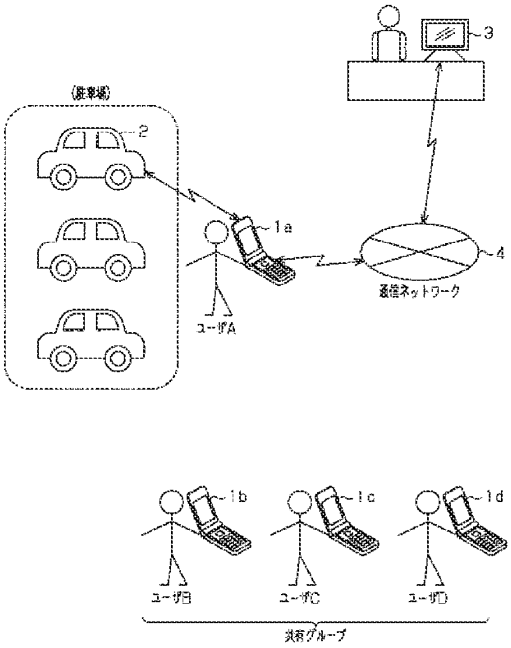
【符号の説明】

【００５３】

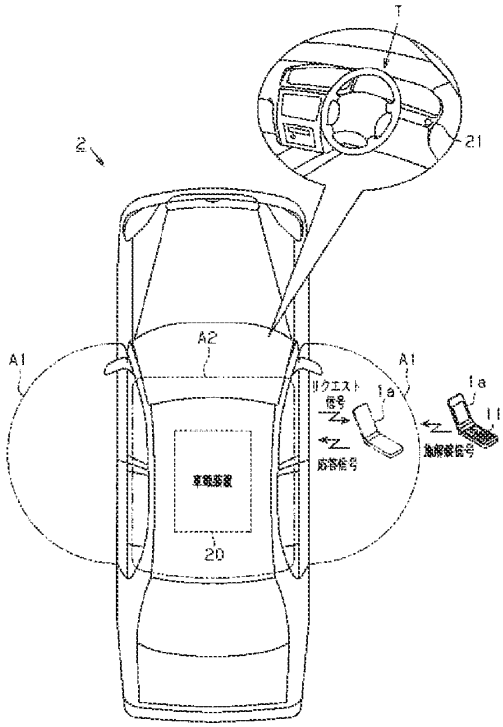
ＲＣｃ…車両側ローリングカウンタ、ＲＣｋ…キー側ローリングカウンタ、１ａ～１ｄ，５，５ａ，５ｂ，８…携帯端末、２，６，９…車両、３，７…管理サーバ、４…通信ネットワーク、１１，８１…操作ボタン、１２…送受信部、１３…マイク、１４…スピーカ、１５…表示部、１６，３３…制御部、１６ａ…メモリ、２０，６１，９１…車載装置、２１…エンジンスイッチ、２２…送信部、２３…受信部、２４…通信制御部、２４ａ…メモリ、２５…ドアロックモータ、２６…エンジン制御部、２７…車両制御部、３１…ネットワーク通信部、３２…データベース。

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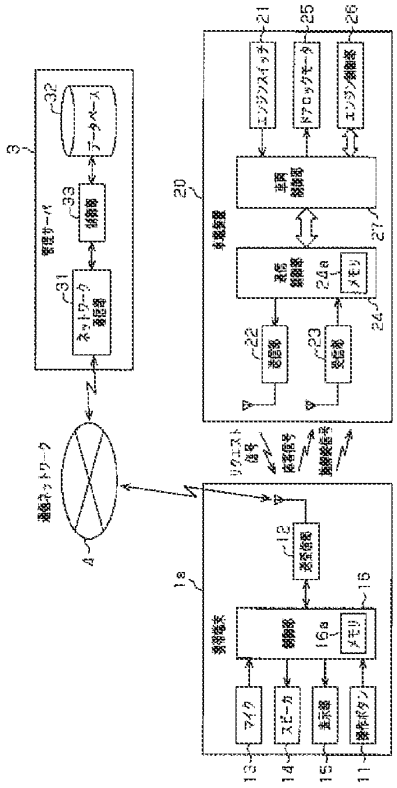
【図１】



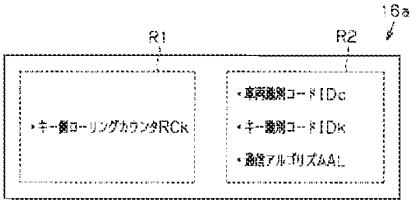
【図２】



【図３】



【図４】



【図５】

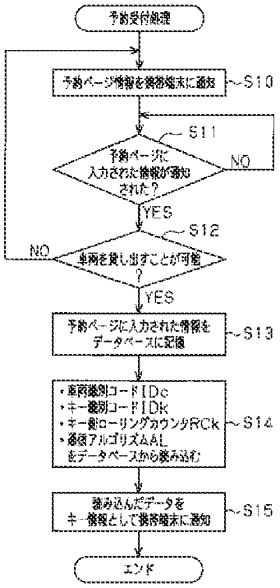
(a)

利用日	利用時間	利用者
2009/01/01	8:00~11:00	A
2009/01/01	13:00~20:00	B
2009/01/02	9:00~10:00	C
2009/01/02	12:00~15:00	D

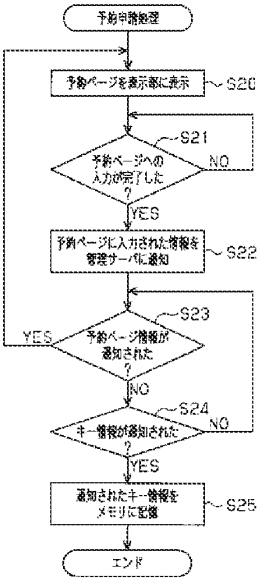
(b)

車両識別コード	キー識別コード	キー識別ローリングカウンタ	通信アルゴリズム
IDc	IDk	RCk	AL

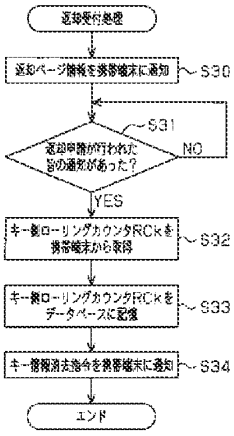
【図６】


予約受付処理
予約ページ情報を携帯端末に通知
S10
予約ページに入力された情報が通知された？
S11
NO
YES
車両を貸し出すことが可能？
S12
NO
YES
予約ページに入力された情報をデータベースに記憶
S13
・車両識別コードIDc
・キー識別コードIDk
・キー側ローリングカウンタRCk
・暗号アルゴリズムAL
をデータベースから読み込む
S14
読み込んだデータをキー情報として携帯端末に通知
S15
エンド

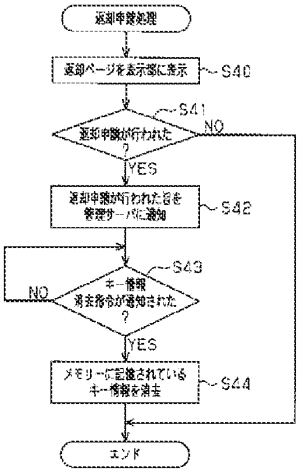
【図７】


予約申請処理
予約ページを表示部に表示
S20
予約ページへの入力が完了した？
S21
NO
YES
予約ページに入力された情報を管理サーバに通知
S22
予約ページ情報が通知された？
S23
YES
NO
キー情報が通知された？
S24
NO
YES
通知されたキー情報をメモリに記憶
S25
エンド

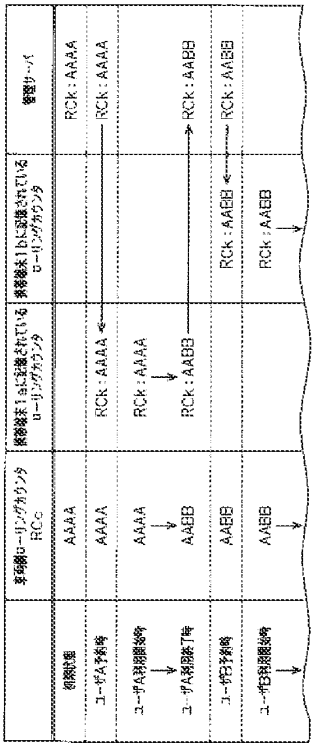
【図８】


返却受付処理
返却ページ情報を携帯端末に通知
S30
返却申請が行われた旨の通知があった？
S31
NO
YES
キー側ローリングカウンタRCkを携帯端末から取得
S32
キー側ローリングカウンタRCkをデータベースに記憶
S33
キー情報消去指令を携帯端末に通知
S34
エンド

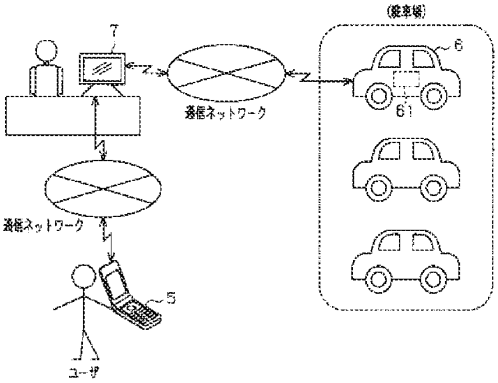
【図９】


返却申請処理
返却ページを表示部に表示
S40
返却申請が行われた？
S41
NO
YES
返却申請が行われた旨を管理サーバに通知
S42
キー情報消去指令が通知された？
S43
NO
YES
メモリーに記憶されているキー情報を消去
S44
エンド

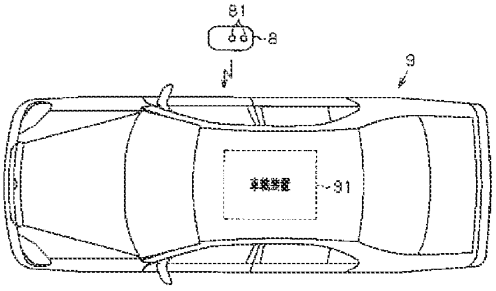
【図１０】



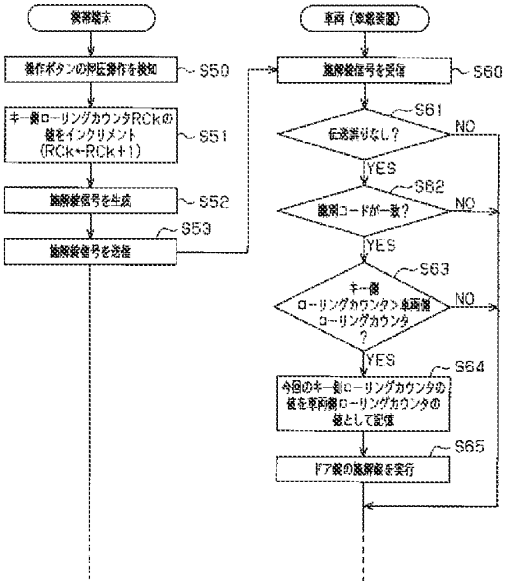
【図１１】



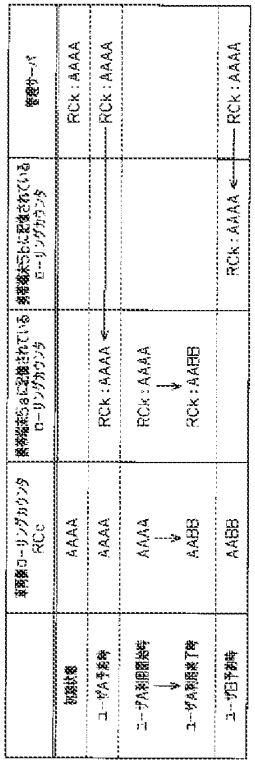
【図１２】



【図１３】



【図１４】



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SS09 TT00
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ED08 EF02

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Bibliography Open +

Overview Open +

Scope of Claims Close —

[Patent Claims]

[Claim 1]

A portable terminal having an operation button which is operated when locking and unlocking a door lock of a vehicle, updates a value of a key side rolling counter stored in itself according to an operation of the operation button, and generates a lock / unlock signal including the key side rolling counter and wirelessly transmits the same ;

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The on-vehicle device is mounted on the vehicle, compares the key side rolling counter included in the unlocking signal with the value of the vehicle side rolling counter stored in itself according to the reception of the locking and unlocking signal, and updates the value of the vehicle side rolling counter and the locking and unlocking of the door lock based on the comparison result.

It is possible to manage the use state of the vehicle and to perform wireless communication with the portable terminal, and to notify the portable terminal of the value of the key side rolling counter stored therein through the wireless communication during a period until the use of the vehicle is started. A management server which acquires and stores the value of the key side rolling counter stored in the portable terminal through the wireless communication after the use of the vehicle is finished ;

A car sharing system comprising :.

[Claim 2]

When a value of the key side rolling counter stored in the portable terminal is acquired, the management server notifies the portable terminal of a command to erase the value of the key side rolling counter through the wireless communication, and at the same time, notifies the portable terminal of the value through the wireless communication. The portable terminal erases the value of the key side rolling counter stored in itself based on the notification of the command.

A car sharing system according to claim 1.

[Claim 3]

The mobile terminal has a function capable of being connected to the Internet, and the management server has a function of being connectable to the Internet. An Internet connection function of the portable terminal is used to notify the portable terminal of a value of the key side rolling counter and to acquire a value of the key side rolling counter stored in the portable terminal.

A car sharing system according to claim 1 or 2.

Detailed Description Close —

[Detailed description of the invention]

[Technical field]

[0001]

The present invention relates to a car sharing system in which a plurality of users jointly utilize a vehicle.

[Background of the Invention]

[0002]

Conventionally, as a car sharing system of this type, there is a system described in, for ex

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ample, Patent Document 1. FIG. 11 shows an outline of a car sharing system described in Patent Document 1. As shown in FIG. 11, in this car sharing system, if a user connects to a management server using, for example, an Internet connection function of the mobile te rminal 5 and reserves lending of the vehicle 6, key information that enables the use of the vehicle 6 is transmitted from the management server 7 to the mobile terminal 5 via the co mmunication network. Further, the management server 7 transmits the same key informat ion as the key information transmitted to the portable terminal 5 to the vehicle 6 via the c ommunication network, more specifically, to the in-vehicle device 61 mounted on the vehic le 6. Then, the common key information transmitted from the management server 7 is stor ed in the portable terminal 5 and the in-vehicle device 61, respectively, so that various veh icle operations by the user can be performed. That is, if the user who owns the portable te rminal 5 approaches the vehicle 6, wireless communication is performed between the in-ve hicle device 61 and the portable terminal 5, and it is determined whether or not the key inf ormation stored in each of the portable terminal 1 and the portable terminal 2 matches ea ch other through the wireless communication. When it is determined that the key informati on stored in each of the vehicle 6 and the vehicle matches each other, for example, a door lock of the vehicle 1 is unlocked or a vehicle engine is permitted to be started, so that vari ous vehicle control is executed. As described above, the vehicle 6 is equipped with a so-cal led smart entry system which can execute various vehicle operations only by carrying the portable terminal 5 without requiring manual operation of the user.

[0003]

On the other hand, a system for performing various vehicle operations through wireless co mmunication between the portable terminal 5 and the vehicle 6 is provided. As shown in FI G. 12, in addition to the above-described smart entry system, there is a so-called keyless entry system in which, for example, a user presses an operation button 81 provided on a p ortable terminal 8 to unlock and unlock a door lock of a vehicle 9. As such a keyless entry system, there is a system described in, for example, Patent Document 2. FIG. 13 is a sequ ence chart showing the operation of a conventional keyless entry system including the keyl ess entry system described in Patent Document 2.

[0004]

As shown in FIG. 13, in the keyless entry system, when the pressing operation of the oper ation button 81 is detected by the portable terminal 8 (Step S 50), the portable terminal 8 increments the value of the key side rolling counter RCk determined according to the num ber of times the operation button 81 is pressed (Step S 51). Further, after incrementing th e value of the key side rolling counter RCk in this way, the portable terminal 8 generates a locking / unlocking signal including a command for locking / unlocking the door lock, an id entification code, and a rolling counter RCk (Step S 52), and transmits this signal to the in -vehicle device 91 (Step S 53). On the other hand, when the in-vehicle device 91 mounted on the vehicle 9 receives the lock / unlock signal (Step S 60), it is first determined whethe r there is a transmission error through a parity check or the like (Step S 61). If it is determ

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ined that there is no transmission error in Step S 61 (Step S 61 : YES), it is determined wh ether the identification code stored in the built-in memory and the identification signal incl uded in the locking / unlocking signal coincide with each other (Step S 62). If it is determi ned that the identification codes coincide with each other (Step S 62 : YES), it is determin ed whether or not the value of the key side rolling counter included in the locking and unlo cking signal is larger than the value of the vehicle side rolling counter stored in the built-in memory (Step S 63). When it is determined that the value of the key side rolling counter i s larger than the value of the vehicle side rolling counter (Step S 63 : YES), the value of th e current key side rolling counter is stored in the memory as the value of the vehicle side r olling counter (Step S 64), and the door lock is locked and unlocked (Step S 65). If there i s a transmission error (Step S 61 : NO), the identification codes do not match each other (Step S 62 : NO). Or when the value of the key side rolling counter is below the value of th e vehicles side rolling counter, neither updating of the value of the (Step S63: NO) vehicles side rolling counter nor lock/unlock of a vehicle door is performed.

[0005]

According to such a keyless entry system, it is possible to intercept the locking / unlocking signal transmitted from the portable terminal 8 and, even if the intercepted locking / unloc king signal is used, the third person attempts to unlock the vehicle door. Once the door loc k is locked and unlocked by the portable terminal 8, the value of the key side rolling count er included in the intercepted locking / unlocking signal becomes equal to or less than the value of the vehicle side rolling counter. Therefore, it is possible to prevent the locking and unlocking of the door lock based on an illegal interception of the locking and unlocking sign al, thereby ensuring a high security level.

[Prior art reference]

[Patent document]

[0006]

[Patent document 1]JP 2008-293235A

[Patent document 2]JP 2001-27063A

[Summary of the invention]

[Problem to be solved by the invention]

[0007]

When the vehicle 9 equipped with the keyless entry system is used as a rental vehicle of t he car sharing system described above, it is conceivable to use the identification code and the rolling counter as key information of the car sharing system. However, when a rolling c ounter is used as key information of a car-sharing system in this way with

Problems such as below cannot be ignored.

[0008]

First, as shown in Fig.14, while the vehicles side rolling counter RCc shown with the value of "AAAA" in hexadecimal numbers is memorized by the mobile device as an initial state, it is assumed that the key side rolling counter RCk which consists of the same value is memo

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rized by the managing server 7. At this time, if the user A who owns the portable terminal 5 a reserves lending of the vehicle, the key side rolling counter RCk is notified from the management server 7 to the portable terminal 5 a, and the rolling counter is stored in the portable terminal 5 a. After that, when the user A uses the portable terminal 5 a to lock and unlock the door lock a plurality of times and thereby the vehicle side rolling counter RCc and the key side rolling counter RCk change to "AABB" and the use period of the user A ends, the user a state in which the user A is in use. Thereafter, if the user B who is the next user has reserved for lending of the vehicle, the key side rolling counter RCk indicated by the value of "AAAA" is transmitted from the management server 7 to the portable terminal 5 b of the user B. In this case, however, since the value of the key side rolling counter RCk stored in the portable terminal 5 b is smaller than the value of the vehicle side rolling counter RCc, the user B cannot lock and unlock the door lock using the portable terminal 5 b. This is due to the fact that the control server 7 cannot grasp the value of the key side rolling counter corresponding to the value of the vehicle side rolling counter even though the vehicle side rolling counter is updated every time the user locks and unlocks the vehicle.

[0009]

As described above, in the car sharing system, when the vehicle equipped with the keyless entry system is intended to be used as a rental vehicle, there is a possibility that the door lock cannot be locked and unlocked, and thus, there is a possibility that the door lock cannot be unlocked.

[0010]

It is an object of the present invention to provide a car sharing system capable of appropriately locking and unlocking a door lock using a portable terminal even when a vehicle equipped with a keyless entry system is used.

[Means for solving the problem]

[0011]

To solve the above problem, according to the 1 aspect of the present invention, an operation button which is operated when the door lock of the vehicle is locked and unlocked is provided, and the value of the key side rolling counter which is stored in itself in accordance with the operation of the operation button is updated. A portable terminal which generates a locking / unlocking signal including a key side rolling counter and wirelessly transmits the same and a value of a vehicle side rolling counter which is mounted on the vehicle and is included in the unlocking signal when receiving the locking / unlocking signal and which is stored in the key side rolling counter and the vehicle side rolling counter are compared with each other and which is stored in the portable terminal. On the basis of the comparison result, an on-vehicle device for updating the value of the vehicle side rolling counter and for locking and unlocking the door lock and the use state of the vehicle are managed. It is possible to perform wireless communication with the portable terminal and to notify the portable terminal of the value of the key side rolling counter stored in itself through the wireless communication during a period until the use of the vehicle is started. It is further provided with a management server which acquires and stores the value of the key side rolling coun

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ter stored in the portable terminal through the wireless communication after the use of the vehicle is finished.

[0012]

According to this configuration, when the user finishes using the vehicle, the value of the key side rolling counter stored in the portable terminal of the user is acquired by the management server, so that the management server can grasp the value of the key side rolling counter corresponding to the value of the vehicle side rolling counter. When the next user uses the vehicle, the value of the key side rolling counter stored in the management server is notified to the portable terminal of the next user, so that the value of the key side rolling counter stored in the portable terminal of the previous user can be stored in the portable terminal of the next user. Namely, you using vehicles

Even if the visor is replaced, the value of the key side rolling counter corresponding to the value of the vehicle side rolling counter can be taken over between the portable terminals possessed by each user, so that the locking and unlocking of the door lock using each portable terminal can be appropriately performed.

[0013]

According to a 2 aspect of the present invention, in the car sharing system according to the 1 aspect, when the management server obtains the value of the key side rolling counter stored in the portable terminal, the management server notifies the portable terminal of the value of the key side rolling counter to the portable terminal through the wireless communication. According to an aspect of the present invention, there is provided a portable terminal which deletes the value of the key side rolling counter stored in itself based on the notification of the command.

[0014]

According to this configuration, when a command to erase the value of the key side rolling counter is notified from the management server to the portable terminal, the value of the key side rolling counter stored in the portable terminal is erased. Thus, it is possible to prevent an illegal act such as intercepting the value of the key side rolling counter stored in the portable terminal after the use of the vehicle is finished. Therefore, it is possible to prevent an illegal act by a third party such as locking and unlocking of the door lock by using the value of the key side rolling counter which has been intercepted, so that the security level can be increased.

[0015]

According to a 3 aspect of the present invention, in the car sharing system according to the 1 or 2 aspect, the portable terminal has a function capable of connecting to the Internet, and the management server has a function of being connectable to the Internet. While notifying the value of the aforementioned key side rolling counter to the aforementioned mobile terminal using the Internet connectivity function of the aforementioned mobile terminal, it is making into the summary to be what acquires the value of the aforementioned key side rolling counter memorized by the aforementioned mobile terminal.

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[0016]

According to this configuration, it is possible for the management server to notify the mobile terminal of the value of the rolling counter by utilizing the Internet connection function of the mobile terminal, or to obtain the value of the rolling counter from the mobile terminal, without newly providing a communication line between the mobile terminal and the management server. Therefore, it is easy to install the car sharing system described in claims 1 and 2.

[Effect of the Invention]

[0017]

According to the car sharing system of the present invention, even when a vehicle equipped with a keyless entry system is used, locking and unlocking of a door lock can be appropriately performed using a portable terminal.

[Brief Description of the Drawings]

[0018]

[Fig. 1]FIG. 1 schematically shows an outline of an embodiment of a car sharing system according to the present invention ;.

[Fig. 2]FIG. 4 is a plan view schematically showing an outline of a smart entry system and a keyless entry system mounted on a vehicle in the car sharing system of the embodiment ;.

[Fig. 3]FIG. 1 is a block diagram showing a system configuration of a car sharing system according to the same embodiment ;.

[Fig. 4]FIG. 4 is a diagram schematically showing contents stored in a memory of a portable terminal of the car sharing system of the embodiment ;.

[Fig. 5]FIG. 5 a is a diagram schematically showing information stored in a database of a management apparatus in the car sharing system according to the embodiment ;.

[Fig. 6]FIG. 4 is a flowchart showing a process procedure of reservation acceptance processing by the car sharing system of the embodiment ;.

[Fig. 7]FIG. 4 is a flowchart showing a process procedure of reservation application processing by the car sharing system of the embodiment ;.

[Fig. 8]FIG. 4 is a flowchart showing a processing procedure of return reception processing by the car sharing system of the embodiment ;.

[Fig. 9]FIG. 4 is a flowchart showing a processing procedure of return application processing by the car sharing system of the embodiment ;.

[Fig. 10]FIG. 4 is a diagram schematically showing transition of a vehicle side rolling counter and a key side rolling counter when a user A and a user B use a vehicle in the car sharing system of the embodiment ;.

[Fig. 11]FIG. 1 schematically shows an outline of a conventional car sharing system ;.

[Fig. 12]FIG. 1 is a plan view schematically showing an outline of a conventional keyless entry system ;.

[Fig. 13]FIG. 4 is a sequence chart showing an operation example of the portable terminal

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and the vehicle of the keyless entry system of the related art ;.

[Fig. 14]FIG. 4 is a diagram schematically showing transition of a vehicle side rolling counter and a key side rolling counter when a user A and a user B use a vehicle for a conventional car sharing system ;.

[Mode for carrying out the invention]

[0019]

Hereinafter, an embodiment of a car sharing system according to the present invention will be described with reference to FIGS. 1 to 9. First, a car sharing system according to this embodiment will be described with reference to FIGS. 1 and 2.

[0020]

As shown in FIG. 1, in this car sharing system, a single group is formed by a plurality of users A to D, and a vehicle 2 used jointly by these users A to D is parked in a parking lot. In addition, in this system, users A to D carry mobile terminals 1 a to 1 d, respectively, and connecting the mobile terminals 1 a to 1 d to the management server 3 using an Internet connection function mounted on the mobile terminals 1 a to 1 d makes it possible to reserve lending of the vehicle 2. In this system, if, for example, the user A reserves lending of the vehicle 2 through the portable terminal 1 a, information necessary for using the vehicle 2 is notified from the management server 3 to the portable terminal 1 a via the communication network 4. Note that information necessary for using the vehicle 2 includes a vehicle identification code iDC unique to the vehicle 2, a key identification code IDk necessary for authenticating the portable terminal 1 a, a communication algorithm AL, and the key side rolling counter RCk. Here, the communication algorithm AL indicates information necessary for performing wireless communication with the in-vehicle device 20, such as a modulation / demodulation system and a bit format. Then, by storing the information notified from the management server 3 in the portable terminal 1 a, it becomes possible to use the vehicle 2 by the user A.

[0021]

In other words, as shown in FIG. 2, when the user A who has the portable terminal 1 a operates the operation button 11 provided on the portable terminal 1 a as required in a state where the user A is located around the vehicle 2, the lock / unlock signal is transmitted from the portable terminal 1 a to the in-vehicle device 20, and the door lock of the vehicle can be locked or unlocked. On the other hand, when the user A who has the portable terminal 1 a enters the outside communication area A 1 set around the vehicle 2, the request signal and the response signal are transmitted and received between the in-vehicle device 20 mounted on the vehicle 2 and the portable terminal 1 a, and authentication of the portable terminal 1 a by the in-vehicle device 20 is performed. Then, on condition that authentication of the portable terminal 1 a is established, the door lock of the vehicle 2 is unlocked. Also, when the user A who owns the portable terminal 1 a enters the in-vehicle communication area A 2 set in the vehicle compartment, the request signal and the response signal are transmitted and received between the in-vehicle device 20 and the portable terminal 1 a, and the portable terminal 1 a is authenticated by the in-vehicle device 20 at this time. The

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n, when the user presses the engine switch 21 installed in the vicinity of the steering devic e T in a state in which authentication of the portable terminal 1 a is established, the engin e starts. In this way, the vehicle 2 has the smart entry system and the keyless system des cribed above.

Both entry systems are mounted.

[0022]

FIG. 3 shows a block diagram of a system configuration of such a car sharing system, and the configuration and operation of the system will be described in more detail with referen ce to FIG. 3. Note that, since the portable terminals 1 a to 1 d have the same structure, on ly the configuration of the portable terminal 1 a is illustrated in FIG. 3 for convenience, and the configuration of the other portable terminals 1 b to 1 d is not shown as the same as th at of the portable terminal 1 a.

[0023]

As shown in FIG. 3, the in-vehicle device 20 includes a transmitting unit 22 for transmittin g the request signal to the communication areas A 1 and A 2, and a receiving unit 23 for r eceiving the response signal and the locking / unlocking signal transmitted from the mobile terminal 1 a. Then, transmission control of the request signal by the transmission unit 22, processing of the response signal and the locking / unlocking signal received via the receivi ng unit 23 are collectively performed through the communication control unit 24 provided i n the in-vehicle device 20. Incidentally, the communication control unit 24 includes a nonv olatile memory 24 a, and the memory 24 a stores the vehicle identification code iDC and t he key identification code IDk used for authentication of the portable terminal 1 a, and als o stores the vehicle side rolling counter RCc. Further, the in-vehicle device 20 is provided w ith a door lock motor 25 for locking and unlocking the door lock, and an engine control unit 26 which comprehensively controls the engine. Then, execution of various vehicle control o perations, such as locking and unlocking of the door lock by driving the door lock motor 2 5, and starting the engine through the engine control unit 26 when the pressing operation of the engine switch 21 is detected, is comprehensively executed through the vehicle contr ol unit 27. Incidentally, communication between the communication control unit 24 and th e vehicle control unit 27 and communication between the vehicle control unit 27 and the e ngine control unit 26 are performed using CAN (Controller Area Network) communication or the like.

[0024]

On the other hand, the portable terminal 1 a is provided with a transmission / reception un it 12 which receives a request signal transmitted from the in-vehicle device 20, transmits a response signal based on reception of the request signal, or transmits a locking / unlocking signal based on an operation of the operation button 11. Further, the portable terminal 1 a is provided with a microphone 13, a speaker 14, a display unit 15 such as a liquid crystal d isplay, and the like, which are used for a telephone function, an Internet connection functio n, and the like. Further, the operation button 11 provided in the portable terminal 1 a funct

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ions as a part to be pressed by a user when inputting a telephone number, various operations for connecting to the Internet, and locking and unlocking the vehicle door. Then, the processing of the voice information input from the microphone 13 and the detection of the pressing operation of the operation button 11 are performed through the control unit 16 provided in the portable terminal 1 a. Note that the control unit 16 is also a portion that controls the speaker 14 and the display unit 15. Further, the control unit 16 can perform Internet communication with the management server 3 via the communication network 4 from the transmission / reception unit 12. Further, a nonvolatile memory (here, flash PROM) 16 A is incorporated in the control unit 16, and information communicated from the management server is stored in the memory 16 a. Specifically, as shown in FIG. 4, in the 1 storage area R 1 in which reading and writing of the memory 16 a can be performed. A 2 storage area R 2 which stores the key side rolling counter RCk and which can be written and which can be accessed only by the portable terminal 1 a is stored with the vehicle identification code iDC, the key identification code IDk, and the communication algorithm AL. Then, the control unit 16 performs the processing of the request signal, the transmission control of the response signal and the locking / unlocking signal, and the like according to the communication algorithm AL stored in the memory 16 a.

[0025]

On the other hand, as shown in FIG. 3, the management server 3 is provided with a network communication unit 31 for performing Internet communication with the portable terminal 1 a via the communication network 4, and a database 32. As shown in FIG. 5 (a) and FIG. 4 (b), in the database 32, the use date of the vehicle 2, the use time, and the like are used.

Stored and stored are the vehicle identification code iDC, the key identification code IDk, the key rolling counter RCk and the communication algorithm AL. Then, communication control of the network communication unit 31, writing of data into the database 32, and reading thereof are also performed through the control unit 33 provided in the management server 3.

[0026]

In this car sharing system, if the user operates the operation button 11 of the portable terminal 1 a as required for locking and unlocking the door lock, the portable terminal 1 a and the in-vehicle device 20 operate in the same manner as the sequence chart illustrated in FIG. 13. In other words, upon detecting an operation of the operation button 11, the control unit 16 of the portable terminal 1 a increments the value of the key side rolling counter RCk. Further, the control unit 16 generates a locking / unlocking signal including the key identification code IDk and the key side rolling counter RCk, and transmits the generated locking / unlocking signal to the in-vehicle device 20 via the transmitting / receiving unit 12. When receiving the locking / unlocking signal, the receiving unit 23 of the in-vehicle device 20 transmits the received locking / unlocking signal to the communication control unit 24. Thus, the communication control unit 24 compares the key identification code IDk included

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in the locking / unlocking signal with the key identification code IDk stored in the memory 24 a, and determines whether or not the identification codes IDk match each other throug h the comparison. And if it judges that the mutual identification code is in agreement, it is a value of the key side rolling counter RCk, When a value of a key side rolling counter RCK is judged to be larger than a value of a vehicle side rolling counter RCc by comparing the v alue of a vehicle side rolling counter RCc stored in a memory 24 a, a command for locking / unlocking a door lock is notified to a vehicle control part 27. When a command for lockin g and unlocking the door lock is notified, the vehicle control unit 27 performs locking and u nlocking of the door lock by driving the door lock motor 25.

[0027]

Incidentally, the user A can make a rental reservation for the vehicle 2 by accessing a pag e of the management server 3, specifically, a date and time at which the vehicle 2 is used, and a page to which a user is input using the Internet connection function of the portable t erminal 1 a. Further, the user A can also perform a return procedure of the vehicle 2 by ac cessing a return page of the management server 3 from the portable terminal 1 a.

[0028]

Next, with reference to FIG. 6 and FIG. 7, a reservation acceptance process and a reservat ion application process executed through the control unit 33 of the management server 3 a nd the reservation application process executed through the control unit 16 of the mobile t erminal 1 a will be described, respectively, when the user A accesses the reservation page of the management server 3 from the mobile terminal 1 a and reserves the lending of the vehicle 2.

[0029]

Here, FIG. 6 is a flowchart showing a procedure of the reservation acceptance process exe cuted through the control unit 33 of the management server 3, and a specific procedure of this process will be described with reference to FIG. 6. Note that the processing shown in F IG. 6 is executed when the reservation page of the management server 3 has been access ed from the portable terminal 1 a.

[0030]

As shown in FIG. 6, in this reservation accepting process, the reservation page information necessary for displaying a reserved page on the display unit 15 is first notified to the porta ble terminal 1 a (Step S 10), and it is determined whether or not the information input in t he reserved page is notified from the portable terminal 1 a (Step S 11). When it is determi ned that the information input in the reserved page is notified from the portable terminal 1 a (Step S 11 : YES), it is determined whether or not the vehicle 2 can be lent based on the input information (Step S 12). Specifically, when there is no reservation at the input lendin g date and time, it is determined that the vehicle 2 can be lent. When it is determined that the vehicle 2 cannot be lent (Step S 12 : NO), the reservation page information is notified again to the portable terminal 1 a (Step S 10), and the user is urged to change the lending date and time.

[0031]

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On the other hand, if it is determined that the vehicle 2 can be lent (Step S 12 : YES), the information input in the reserved page is stored in the database 32 (Step S 13). Further, following the process of step S 13, vehicle identification code iDC is obtained. The key identification code IDk, the key side rolling counter RCk, and the communication algorithm AL are read from the database 32 (Step S 14), and the read data is notified as key information to the portable terminal 1 a, and the control unit 33 ends this series of processing.

[0032]

FIG. 7 is a flowchart showing a procedure of the reservation application process executed through the control unit 16 of the portable terminal 1 a, and a specific procedure of this process will be described next with reference to FIG. 7. Note that the processing shown in FIG. 7 is executed when the reserved page information is transmitted from the management server 3. Further, this processing is similarly executed by the portable terminals 1 b to 1 d.

[0033]

As shown in FIG. 7, in this reservation application process, the reservation page is first displayed on the display unit 15 based on the reservation page information (Step S 20), and it is determined whether or not the input to the reservation page by the user A is completed (Step S 21). Specifically, for example, when the user A inputs a user, a usage time, or the like to a reserved page, and then, when a portion on which "reservation completed" is displayed in the same reserved page is operated by the user, it is determined that input to the reserved page is completed. When it is determined that the input to the reserved page by the user is completed (Step S 21 : YES), the input information is notified to the management server 3 (Step S 22). Thereafter, it is determined whether or not the reservation page information is notified again (Step S 23), and when the reservation page information is notified again (Step S 23 : YES), the reservation page is again displayed on the display unit 15 (Step S 20), and the user is urged to change the lending date and time. On the other hand, if the key information is notified from the management server 3 (Step S 24 : YES) without being notified of the reservation page information again (Step S 23 : NO), the notified key information is stored in the memory 16 a (Step S 25), and this series of processing ends.

[0034]

Next, referring to FIG. 8 and FIG. 9, a return reception process executed through the management server 3 and a return application process executed through the control unit 16 of the mobile terminal 1 a will be described when the user A accesses the return page of the management server 3 from the mobile terminal 1 and performs the return procedure of the vehicle 2.

[0035]

Here, FIG. 8 shows a flowchart of the return acceptance process executed through the control unit 33 of the management server 3 as a flowchart, and a specific procedure of this process will be described with reference to FIG. 8. Note that the processing shown in FIG. 8 is executed when a return page of the management server 3 is accessed from the portable

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terminal 1 A.

[0036]

As shown in FIG. 8, in this return reception process, the return page information necessary for displaying a return page on the display unit 15 is first notified to the mobile terminal 1 a (Step S 30), and it is determined whether or not the mobile terminal 1 a has been notified of the return application (Step S 31). And when it is reported from the mobile terminal 1 a that the return application was made, it is (Step S31:YES), The memory 16 a of the portable terminal 1 a is accessed to obtain the value of the key side rolling counter RCk (Step S 32), and the obtained value of the key side rolling counter RCk is stored in the database 32 (Step S 33). Then, following the processing in step S 33, a key information deletion command is notified to the mobile terminal 1 a (step S 34), and the control unit 33 ends this series of processing.

[0037]

FIG. 9 is a flowchart showing a processing procedure of the return application process executed through the control unit 16 of the portable terminal 1 a, and a specific procedure of this process will be described next with reference to FIG. 7. Note that the processing shown in FIG. 9 is executed when the return page information is transmitted from the management server 3. Further, this processing is similarly executed by the portable terminals 1 b to 1 d.

[0038]

As shown in FIG. 9, in this return application process, a return page is first displayed on the display unit 15 based on the return page information (Step S 40), and it is determined whether or not a return application is made by the user (Step S 41). Specifically, for example, when a part of the return page displayed as "Return application" is operated by the user, it is determined that a return application is made by the user. When it is determined that a return application has been made by the user (Step S 41 : YES), it is notified to the management server 3 that a return application has been made (Step S 42), and it is determined whether or not a key information deletion command has been notified from the management server 3 (Step S 43). Subsequently, when it is determined that a key information deletion command has been notified from the management server 3 (Step S 43 : YES), it is determined whether or not the key information deletion command is received. The key information stored in the memory 16 a, I. e., the vehicle identification code iDC, the key identification code IDk, the key side rolling counter RCk, and the communication algorithm AL are erased (Step S 44), and the control unit 16 ends this series of processing.

[0039]

FIG. 10 shows the transition of the values of the vehicle side rolling counter RCc and the key side rolling counter RCk in the situation where the user A uses the vehicle 2 and the user B uses the vehicle 2 as an operation example of the car sharing system based on these processing. Here, it is assumed that the vehicle side rolling counter RCc indicated by the value of "AAAA" in binary number is stored in the in-vehicle device 20 (more specifically, th

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e memory 23 a) as an initial state, and the key side rolling counter RCk having the same v alue is stored in the management server 3 (more specifically, the database 32) as an initial state of the vehicle side rolling counter RCc shown in FIG. 16.

[0040]

As shown in FIG. 10, if the user A who has the portable terminal 1 a reserves the rental of the vehicle, the key side rolling counter RCk is notified from the management server 3 to t he portable terminal 1 a, and the rolling counter RCk is stored in the portable terminal 1 a. Thereafter, when the user A uses the portable terminal 1 a for the plurality of times of locki ng and unlocking of the door lock and the value of the vehicle side rolling counter RCc and the value of the key side rolling counter RCk change to "AABB" and the user A makes a ret urn application, the user A is stopped. In other words, the value of the key side rolling cou nter RCk corresponding to the value of the vehicle side rolling counter RCc is stored in the management server. Therefore, if the user B who is the next user reserves the lending of t he vehicle, the key side rolling counter RCk indicated by the value of "AABB" is stored in th e portable terminal 1 b of the user B, so that the value of the vehicle side rolling counter R Cc and the value of the key side rolling counter RCK can be matched with each other. In th is way, in the car sharing system according to the present embodiment, even if a user who uses the vehicle is replaced, the value of the key side rolling counter corresponding to the value of the vehicle side rolling counter can be taken from the portable terminal 1 a to the portable terminal 1 b. The user B can appropriately unlock the door lock using the portable terminal 1 B.

[0041]

Further, in the present embodiment, for example, when a return application of the vehicle 2 is made, key information such as the vehicle identification code iDC and the key side rolli ng counter RCk stored in the portable terminal 1 a is erased, so that interception of key inf ormation by a third party can be prevented accurately. As a result, it is possible to prevent an illegal act such as the unlocking of the door lock by a third party and the start of the do or lock or the start of the vehicle engine.

[0042]

As described above, according to the car sharing system of the present embodiment, the f ollowing effects can be obtained.

(1) When the rental reservation of the vehicle 2 is performed, the key side rolling counter RCk is read from the database 32 of the management server 3 and is notified to the porta ble terminals 1 a to 1 d.

Also, when a return application of the vehicle 2 is made, the value of the key side rolling c ounter RCk stored in the portable terminals 1 a to 1 d is stored in the database 32 of the management server 3. As a result, the management server 3 can grasp the value of the ke y side rolling counter RCk corresponding to the value of the vehicle side rolling counter RC c, and can take over the value of the key side rolling counter RCk between the portable ter minals 1 a to 1 d. Therefore, locking and unlocking of the door lock using the portable ter

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minals 1 a to 1 d can be appropriately performed.

[0043]

(2) When a return application of the vehicle 2 is made, a key information deletion comman d is notified from the management server 3 to the portable terminal 1 a, and the key infor mation stored in the portable terminal 1 a is erased based on the notification. As a result, i t is possible to accurately prevent the key information from being intercepted by the third party, thereby increasing the security level.

[0044]

(3) Communication is performed between the mobile terminals 1 a to 1 d and the manage ment server 3 using an Internet connection function mounted on the mobile terminals 1 a to 1 d. As a result, it is not necessary to newly provide a communication line between the mobile terminals 1 a to 1 d and the management server 3, so that the car sharing system can be easily installed.

[0045]

(4) At the time when the rental reservation of the vehicle by the users A to D is complete d, the key information is notified to the portable terminals 1 a to 1 d. Thus, since the users A to D can use the vehicle immediately after completing the rental reservation, convenienc e of the users A to D is improved.

[0046]

It is to be noted that the above embodiment can be implemented in the following form, wh ich is modified as appropriate.

In the above embodiment, the key information is notified to the portable terminal 1 a at th e time when the rental reservation of the vehicle 2 by the users A to D is completed, but t he time at which the key information is notified to the portable terminals 1 a to 1 d can be changed as appropriate as long as the users A to D actually start the use of the vehicle 2.

[0047]

In the above embodiment, the key information stored in the portable terminals 1 a - 1 d is erased at the time when the user A - D has made a return application, but the time at whic h the key information stored in the portable terminals 1 a - 1 d is erased may be changed as appropriate as long as the user A - D is later than the time at which the user A - D mak es a return application. However, from a viewpoint of security, it is desirable to erase the k ey information stored in the portable terminals 1 a to 1 d at the time when the user A to D have made a return application.

[0048]

In the above embodiment, the portable terminals 1 a to 1 d are versatile with a telephone function or the like, but instead of this, they may be used only for the purpose of performi ng various operations of the vehicle. When such a dedicated portable terminal is used, ther e is a possibility that the Internet connection function is not mounted on the portable termi nal. In this case, it is effective to newly provide a communication line between the portable terminal and the management server 3.

[0049]

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- Although the car-sharing system concerning the present invention was applied to the vehicles 2 which mount the both sides of a keyless entry system and a smart entry system in the above-mentioned embodiment, It is also possible to apply to the vehicles which replace with this, for example, mount only a keyless entry system. In addition, when the car sharing system according to the present invention is applied to a vehicle equipped with only the keyless entry system, it is necessary to change the contents of the key information as appropriate.

[0050]

In the above embodiment, the lock / unlock of the door lock is executed on condition that the value of the key side rolling counter is larger than the value of the vehicle side rolling counter ; however, instead of this, the door lock / unlocking of the door lock is performed.

The door lock may be locked or unlocked on condition that the value of the key side rolling counter and the value of the vehicle side rolling counter coincide with each other. In short, the door lock may be locked or unlocked based on a comparison between the value of the vehicle side rolling counter and the value of the key side rolling counter.

(Additional remark)

Next, a technical idea which can be grasped from the above embodiment and its modified example will be additionally described.

[0051]

(b) in the car-sharing system of the description to Claim 2 -- the aforementioned managing server, A car sharing system according to claim 1, wherein said portable terminal is provided with a function of acquiring said key side rolling counter and a notification of said key side rolling counter to delete a value of said key side rolling counter when the use of said vehicle is finished. According to this configuration, when the user finishes the use of the vehicle, the value of the key side rolling counter stored in the portable terminal can be erased, so that it is possible to accurately prevent the third party from intercepting the key side rolling counter. Thus, it is possible to further increase the security level.

[0052]

(b) The car sharing system according to any one of claims 1 to 3 and Appendix, wherein the management server notifies the mobile terminal of the key side rolling counter stored in the management server on condition that the reservation of the vehicle is reserved. With this configuration, when the user reserves the use of the vehicle, the value of the rolling counter is notified to the portable terminal of the user, so that the user can use the vehicle immediately after the completion of the reservation. Thus, convenience of the user is improved.

[Explanation of letters or numerals]

[0053]

RCc -- The vehicles side rolling counter, RCk -- Key side rolling counter, 1a-1d,5,5a,5b,8 -- a mobile terminal, and 2, 6 and 9 -- vehicles, and 3 and 7 -- a managing server and 4 -- a communication network, and 11 and 81 -- a manual operation button and 12 -- a transmis

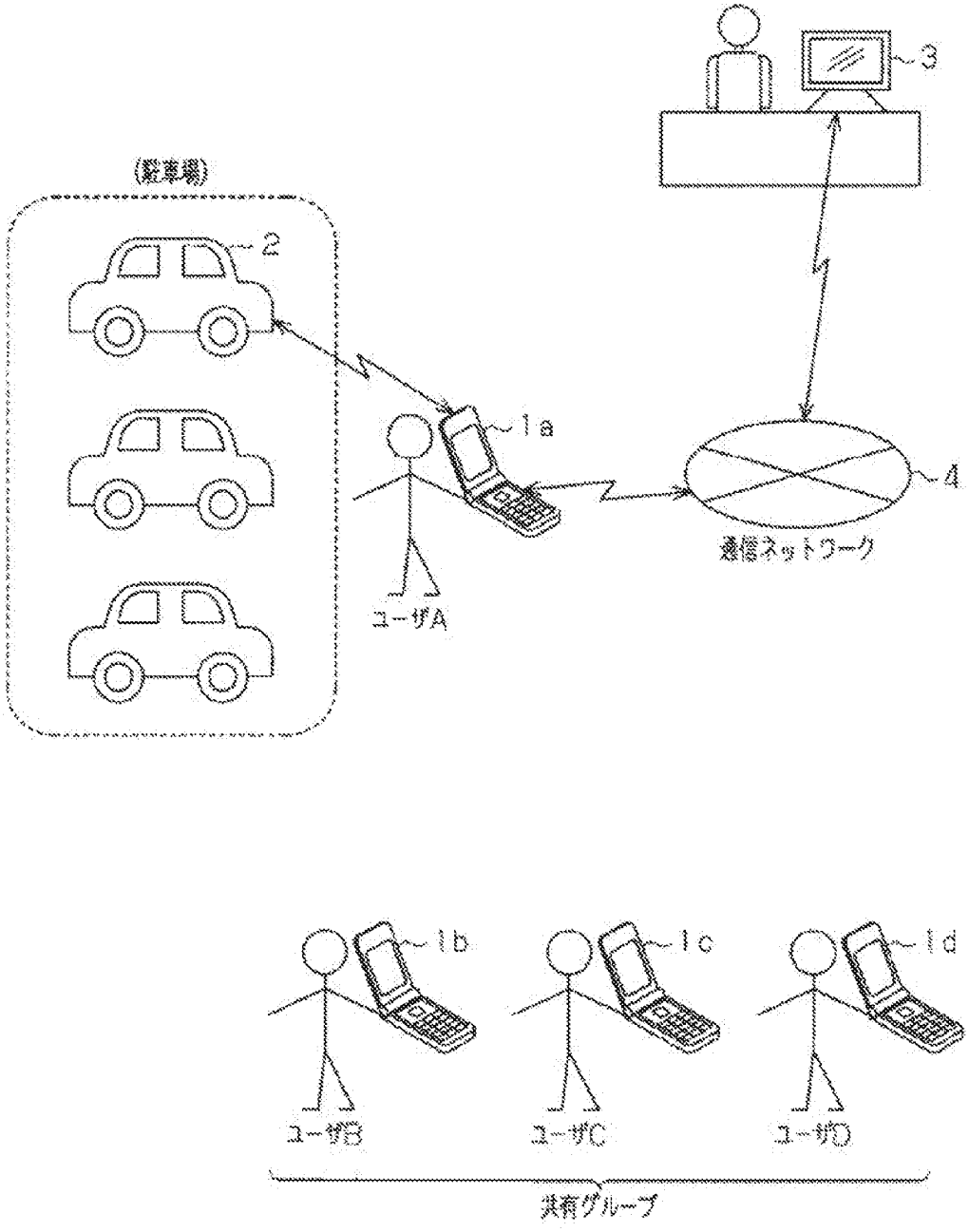
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sion and reception section and 13 -- a microphone and 14 -- a loudspeaker and 15 -- a display part, and 16 and 33 -- a control part, 16 a -- a memory, and 20 and 61, 91 -- mobile device, 21 -- engine switch, 22 -- transmission section, 23 -- receive section, 24 -- communication control part, 24 a -- memory, 25 -- door lock motor, 26 -- Engine control section, 27 -- vehicle control part, 31 -- network communication part, 32 -- database.

Drawings Close —

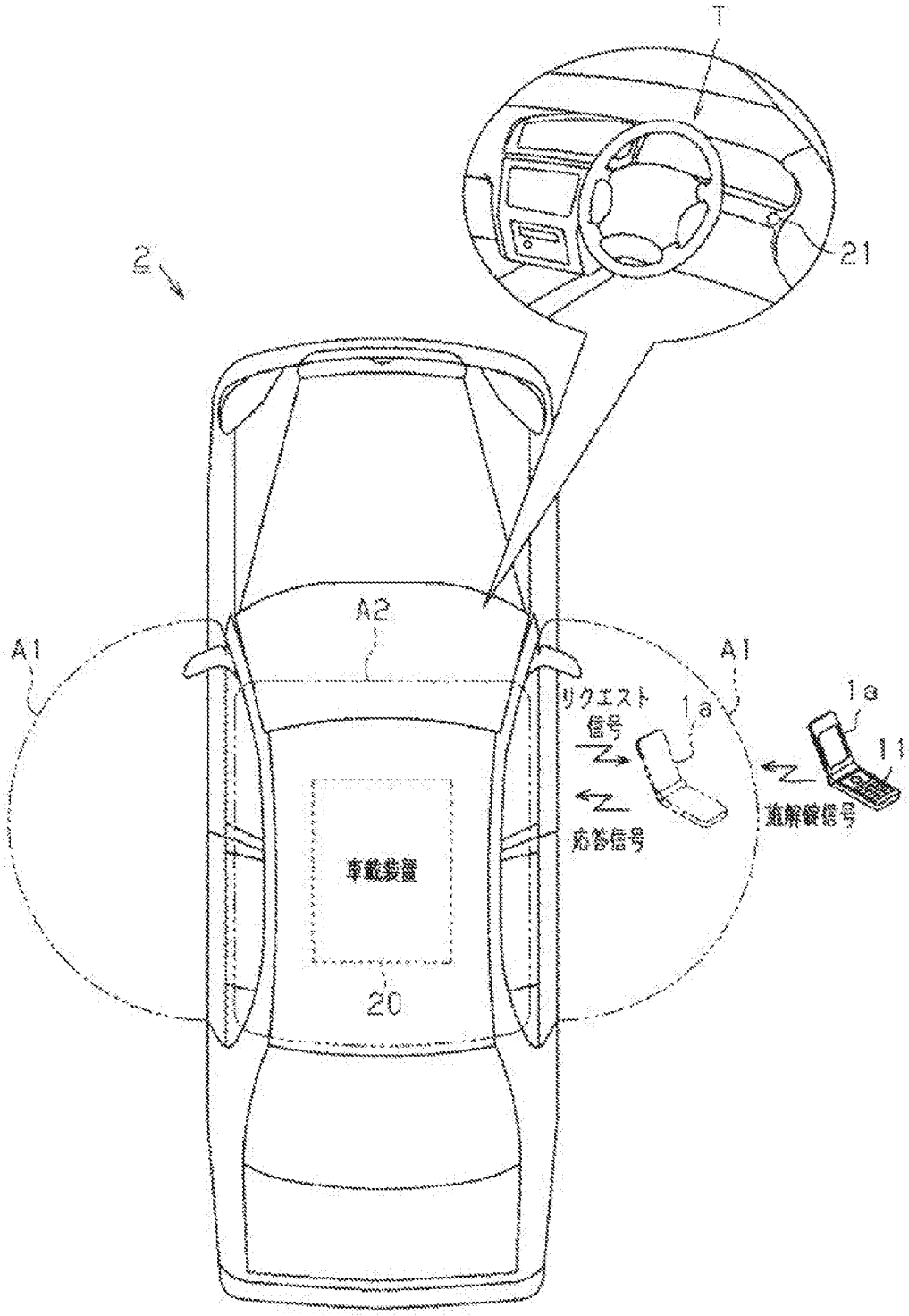
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[FIG.1]



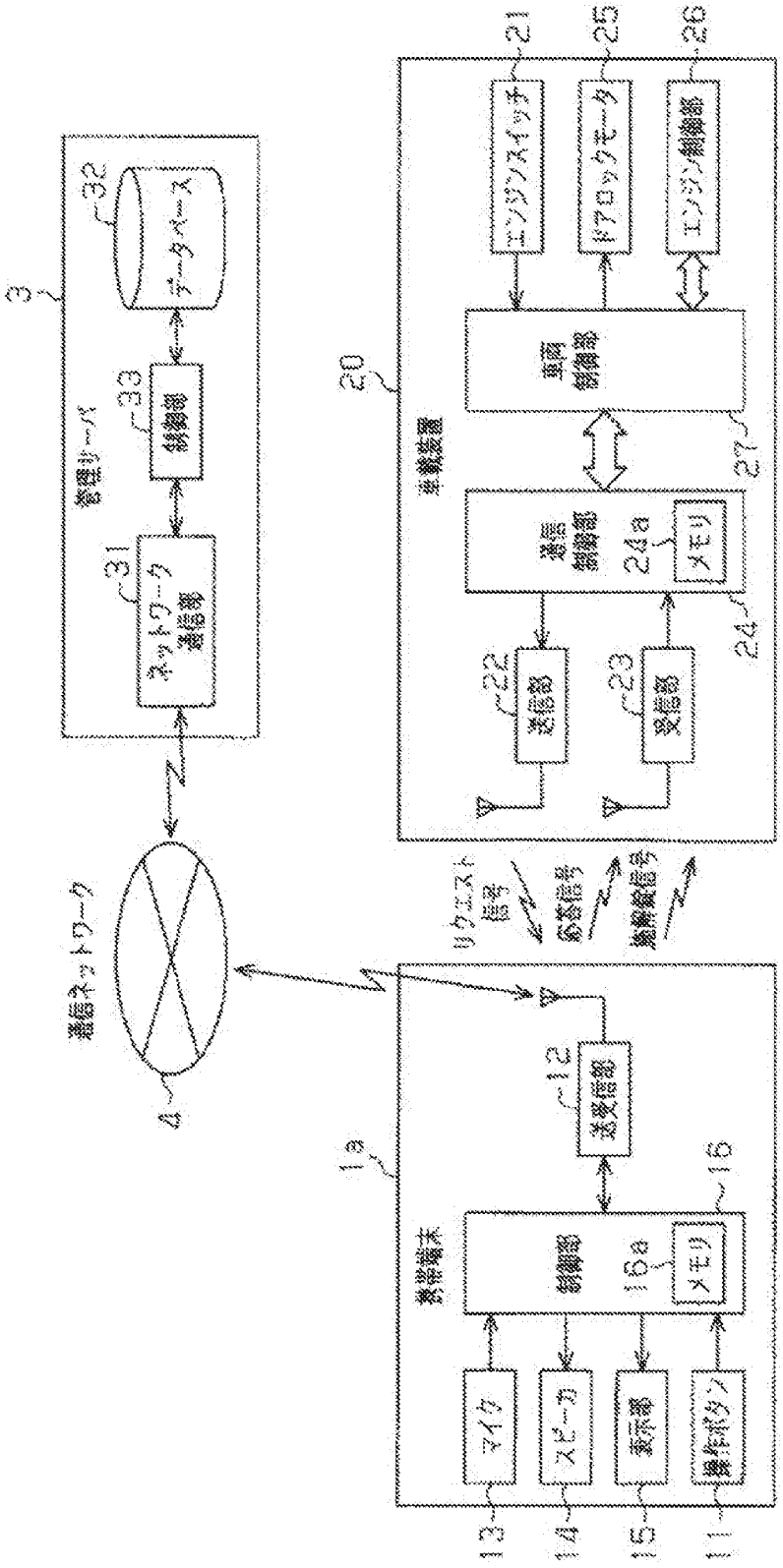
[FIG.2]

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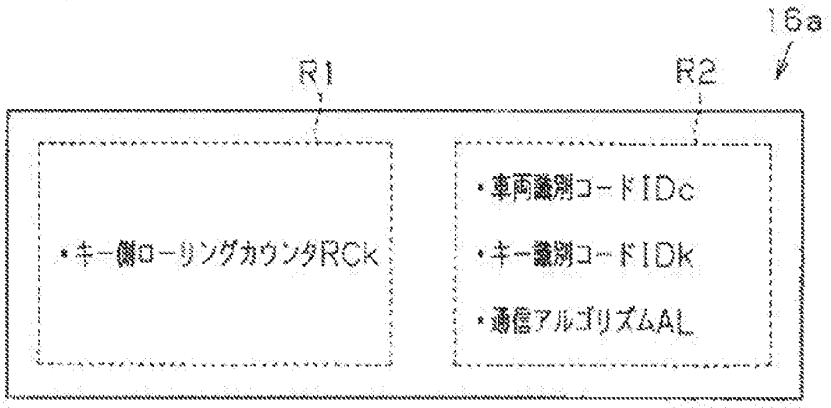
[FIG.3]

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[FIG.4]

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[FIG.5]

(a)

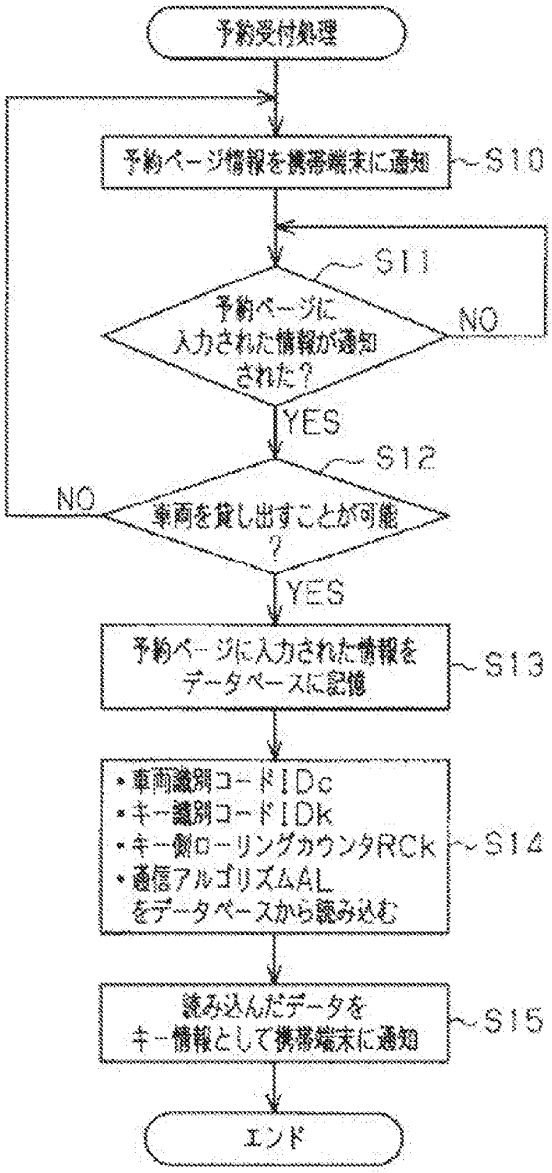
利用日	利用時間	利用者	
2009/01/01	8:00~11:00	A	
2009/01/01	13:00~20:00	B	
2009/01/02	9:00~10:00	C	
2009/01/02	12:00~15:00	D	

(b)

車両識別コード	キー識別コード	キー側ローリングカウンタ	通信アルゴリズム
IDc	IDk	RCk	AL

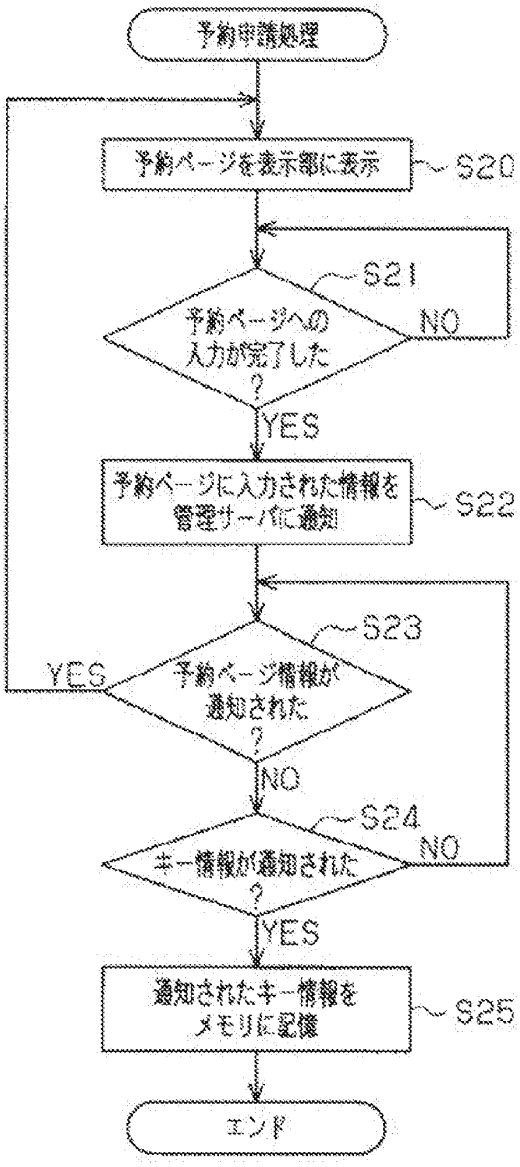
[FIG.6]

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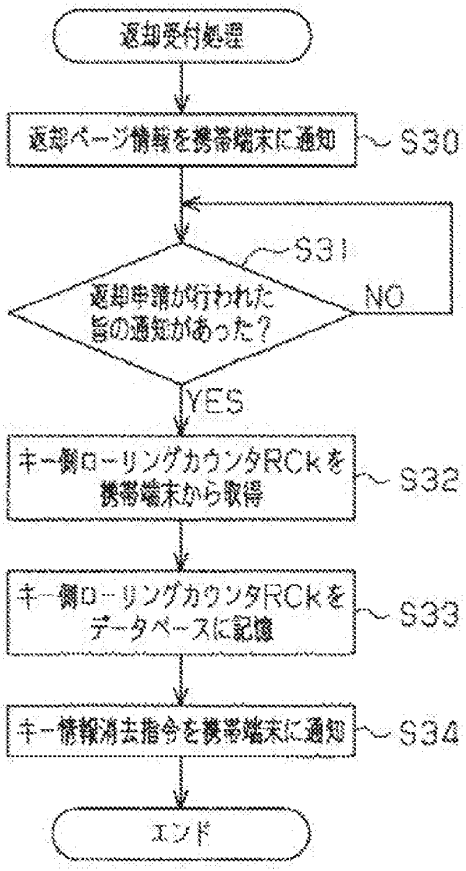
[FIG. 7]

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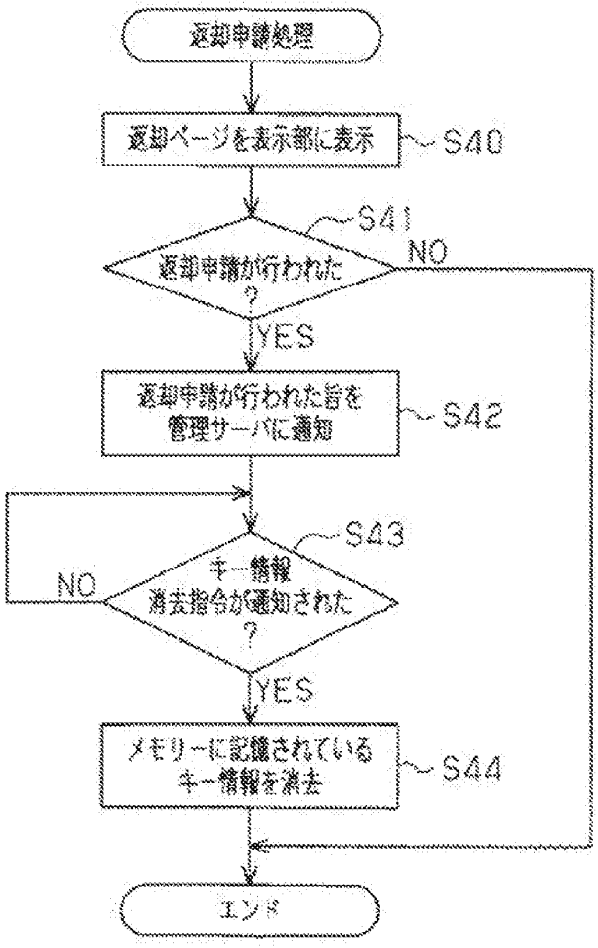
[FIG.8]

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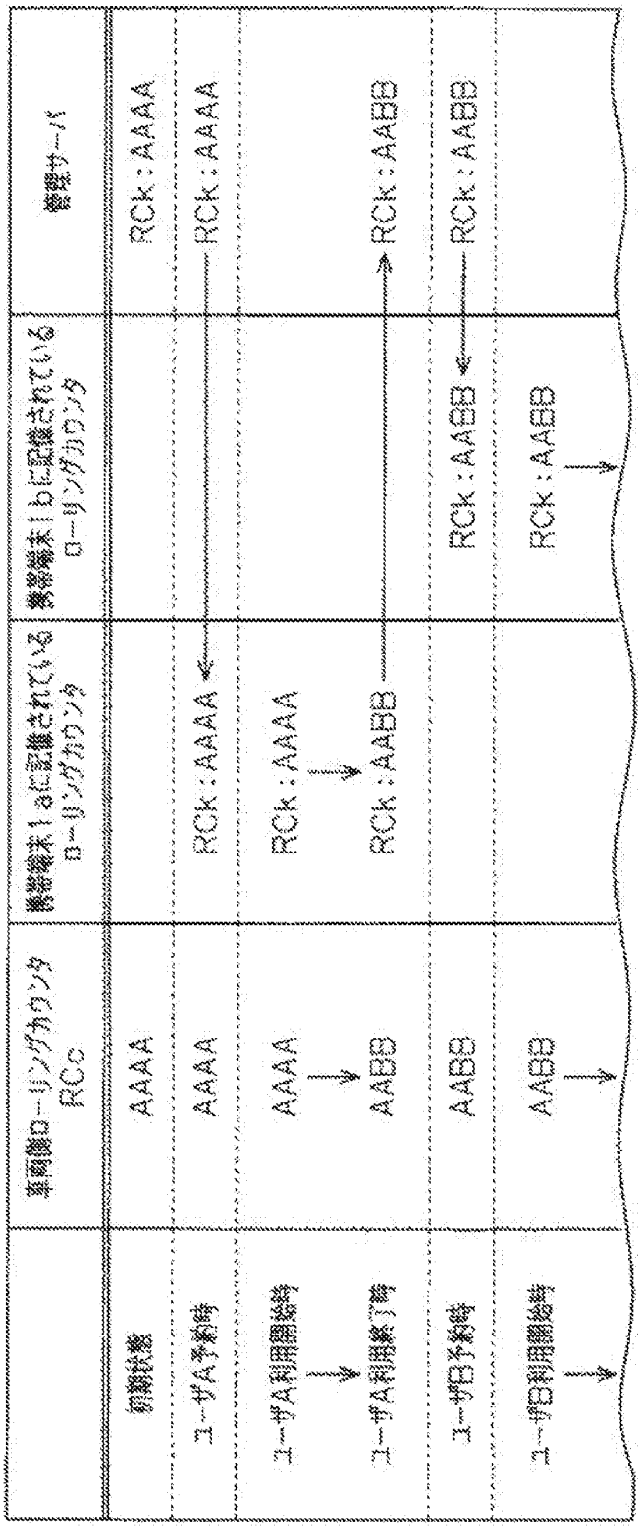
[FIG.9]

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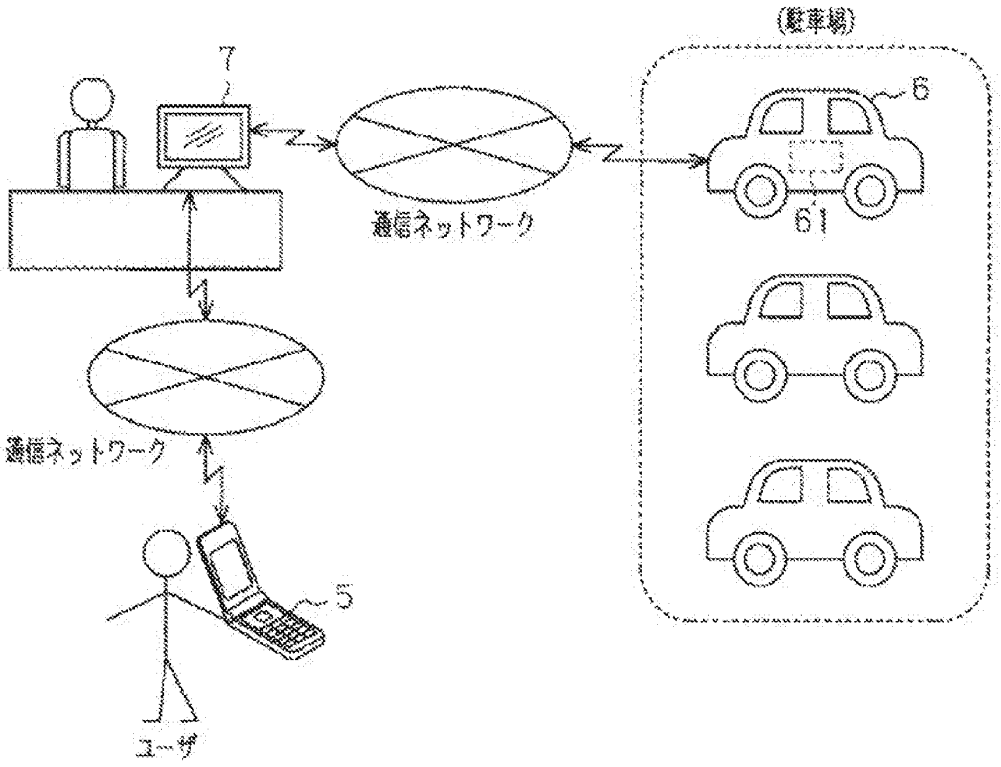
[FIG. 10]

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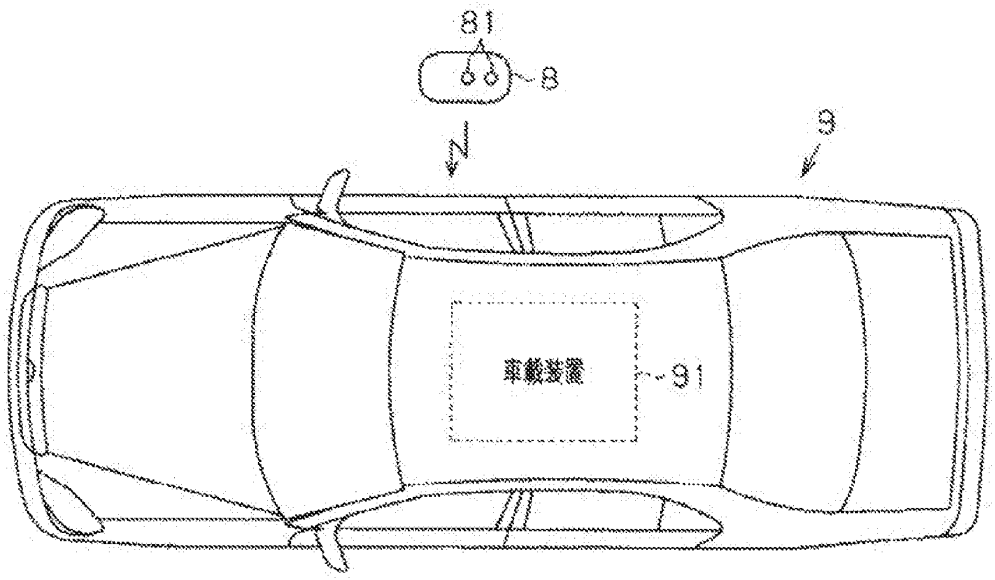


[FIG.11]

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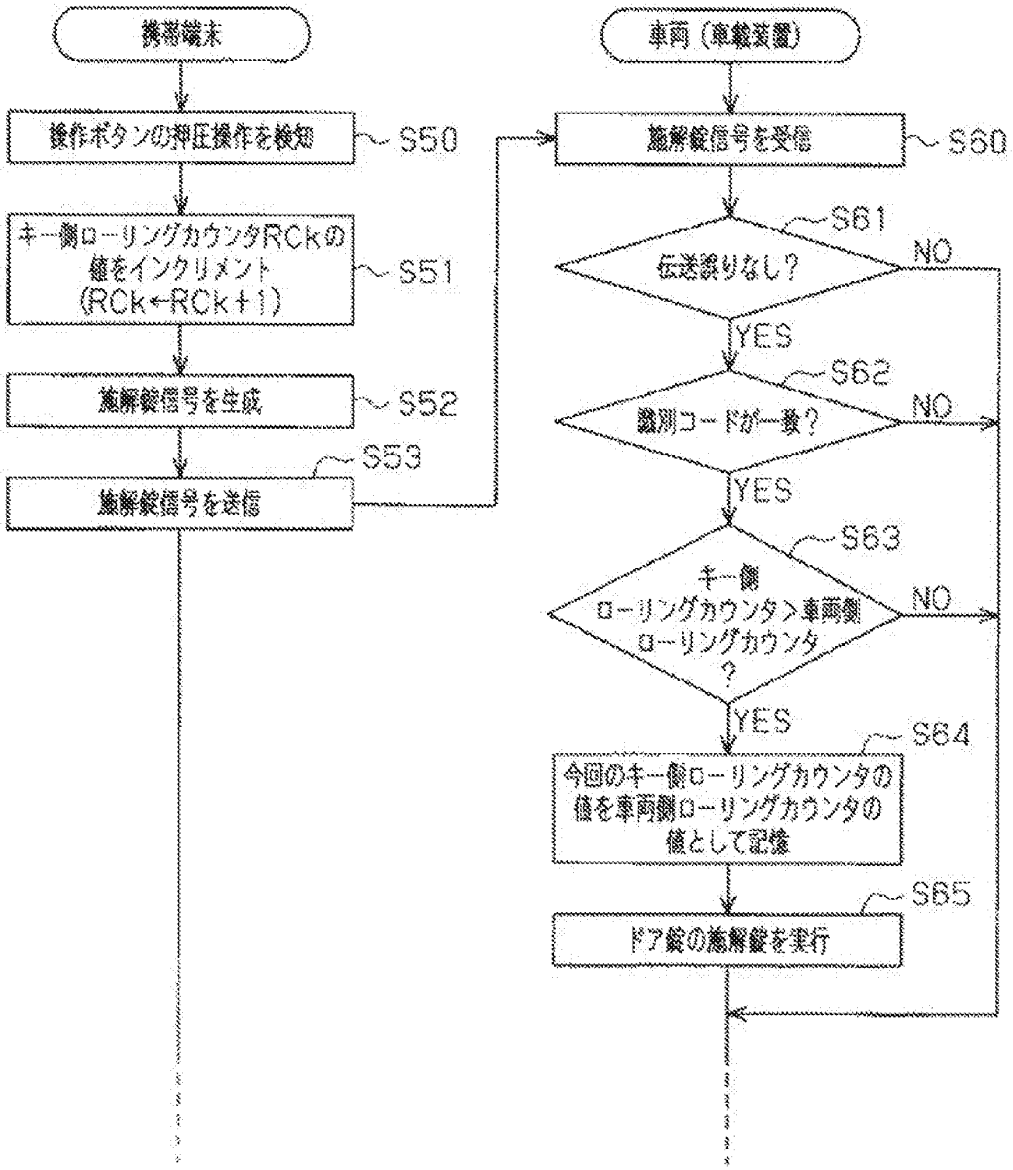


[FIG.12]



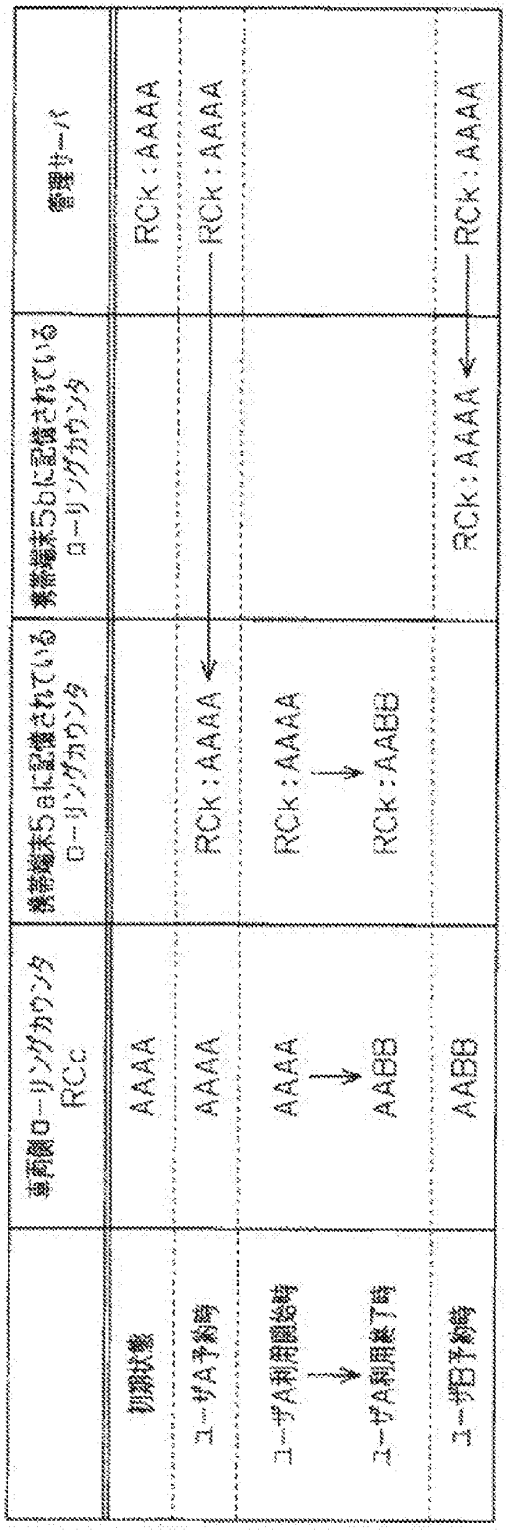
[FIG.13]

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[FIG.14]

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	車両側ローリングカウンタ RCc	携帯端末Sb1に記憶されているローリングカウンタ	携帯端末Sb2に記憶されているローリングカウンタ	管理サーバ
初期状態	AAAA			RCk：AAAA
ユーザA予約時	AAAA	RCk：AAAA		RCk：AAAA
ユーザA利用開始時 ↓ ユーザA利用終了時	AAAA ↓ AABB	RCk：AAAA ↓ RCk：AABB		
ユーザB予約時	AABB		RCk：AAAA	RCk：AAAA

Drawings Open +

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Electronic Patent Application Fee Transmittal

Application Number:	16800571
Filing Date:	25-Feb-2020
Title of Invention:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
First Named Inventor/Applicant Name:	Masato ENDO
Filer:	Daniel Gregory Shanley/Charisma Oparaugo
Attorney Docket Number:	115628.0000058

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	260	260
		Total in USD ($)		**260**

Electronic Acknowledgement Receipt

EFS ID:	43873905
Application Number:	16800571
International Application Number:	
Confirmation Number:	6616
Title of Invention:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
First Named Inventor/Applicant Name:	Masato ENDO
Customer Number:	23838
Filer:	Daniel Gregory Shanley/Charisma Oparaugo
Filer Authorized By:	Daniel Gregory Shanley
Attorney Docket Number:	115628.0000058
Receipt Date:	27-SEP-2021
Filing Date:	25-FEB-2020
Time Stamp:	15:47:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$260
RAM confirmation Number	E20219QF48041201
Deposit Account	500206
Authorized User	Charisma Oparaugo
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	115628-0000058-IDS.pdf	1034297 ec35a27f9d489195a19e30dfdfcd1c95bb479d67	no	4
Warnings:					
Information:					
A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.					
2	Foreign Reference	JP2011044112A.pdf	9243674 20fc5a008cfcbd0cbc9a43afd703c1979428e715	no	47
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	38169 789cce03960d1f095b7b293df571aa1ff3e532f7	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	10316140		

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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/800,571	02/25/2020	Masato ENDO	115628.0000058	6616

23838 7590 09/10/2021

Hunton Andrews Kurth LLP/HAK
2200 Pennsylvania Avenue NW
Washington, DC 20037

EXAMINER	
ALUNKAL, THOMAS D	

ART UNIT	PAPER NUMBER
2687	

NOTIFICATION DATE	DELIVERY MODE
09/10/2021	ELECTRONIC

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

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

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uuspto@hunton.com

IPR2024-00981
Emerging Auto EX2010

Office Action Summary	Application No. 16/800,571	Applicant(s) ENDO et al.	
	Examiner THOMAS D ALUNKAL	Art Unit 2687	AIA (FITF) Status Yes

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 6/18/2021.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1 and 3-8 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 and 3-8 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

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Emerging Auto EX2010

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Terminal Disclaimer

The terminal disclaimer filed on 6/18/2021 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of **US 10,614,644** has been reviewed and is accepted. The terminal disclaimer has been recorded.

Response to Arguments

Applicant's arguments, see Remarks, filed 6/18/2021, with respect to the rejection(s) of claim(s) 1-8 under 35 U.S.C. 102(a)(2) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the amendments to the claims.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
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.

Claims 1 and 3-8 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter

which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C. 112, the applicant), regards as the invention.

Regarding claim 1, this claim recites "wherein the information processing device is configured to transmit information related to the predetermined service to the mobile terminal having the unique information corresponding to the owner user **in response to a request from the mobile terminal**".

It is unclear from the language and context of the claim to which mobile terminal the final recitation of "the mobile terminal" is referring to. More specifically, it is unclear whether the final recitation of "the mobile terminal" refers to "a mobile terminal" recited in step (i), to "another third party mobile terminal" or to "the mobile terminal...corresponding to the owner". Therefore, the overall functionality and structure of the system remains unclear. The examiner suggests amending the claim to clearly define which mobile terminal the final recitation of "the mobile terminal" is referencing.

Regarding claim 7, this claim recites "transmitting information related to the predetermined service to the mobile terminal having the unique information corresponding to the owner user **in response to a request from the mobile terminal**".

It is unclear from the language and context of the claim to which mobile terminal the final recitation of "the mobile terminal" is referring to. More specifically, it is unclear whether the final recitation of "the mobile terminal" refers to "a mobile terminal" in the first limitation after the preamble, to "another third party mobile terminal" or to "the mobile terminal...corresponding to the owner". Therefore, the overall functionality and structure of the system remains unclear. The examiner suggests amending the claim to clearly define which mobile terminal the final recitation of "the mobile terminal" is referencing.

Regarding claim 8, this claim recites "transmitting information related to the predetermined service to the mobile terminal having the unique information corresponding to the owner user **in response to a request from the mobile terminal**".

It is unclear from the language and context of the claim to which mobile terminal the final recitation of "the mobile terminal" is referring to. More specifically, it is unclear whether the final recitation of "the mobile terminal" refers to "a mobile terminal" in the first limitation after the preamble, to "another third party mobile terminal" or to "the mobile terminal...corresponding to the owner". Therefore, the overall functionality and structure of the system remains unclear. The examiner suggests amending the claim to clearly define which mobile terminal the final recitation of "the mobile terminal" is referencing.

Dependent claims 3-6, inclusive of all of the limitations of claim 1, are rejected with their base claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS D ALUNKAL whose telephone number is (571)270-1127. The examiner can normally be reached on **M-F 9am-5pm**.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Srilakshmi Kumar** can be reached on **571-272-7769**. 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 https://ppair-my.uspto.gov/pair/PrivatePair. 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.

/THOMAS D ALUNKAL/
Primary Examiner, Art Unit 2687

Notice of References Cited	Application/Control No. 16/800,571	Applicant(s)/Patent Under Reexamination ENDO et al.	
	Examiner THOMAS D ALUNKAL	Art Unit 2687	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-10614644-B2	04-2020	Endo; Masato	G06Q10/0832	1/1
*	B	US-20190005445-A1	01-2019	Bahrainwala; Shazaan	G06Q10/08	1/1
*	C	US-20160098870-A1	04-2016	Bergerhoff; Nikolas	B60R25/2018	340/5.61
*	D	US-20150310532-A1	10-2015	Gura; Ron	G06Q50/30	705/7.13
*	E	US-20160189098-A1	06-2016	BEAUREPAIRE; Jerome	H04W12/084	705/337
*	F	US-20160098871-A1	04-2016	Oz; Seval	H04L63/06	340/5.61
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC 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.

IPR2024-00981
Emerging Auto EX2010

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/800,571	ENDO et al.
	Examiner	Art Unit
	THOMAS D ALUNKAL	2687

CPC - Searched*		
Symbol	Date	Examiner
h04w4/50,h04w4/40,b60r25/209,b60r25/24,b60r25/241,g07c9/00571 ,g07c2009/00452,g07c9/00309	09/08/2021	TDA

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

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

Search Notes		
Search Notes	Date	Examiner
CPC: Text limited search	09/08/2021	TDA
Inventor Name Search	09/08/2021	TDA

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

/THOMAS D ALUNKAL/ Primary Examiner, Art Unit 2687	

IPR2024-00981
Emerging Auto EX2010

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	523,778	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
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L10	9,315	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 08:57
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L23	94	L14 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
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L29	139	L28 and L12	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
L30	394	L27 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
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L32	437	L2 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
L33	32	L1 same L32	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
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L35	92	L1 same L34	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
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L37	44	L1 same L36	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
L38	31	(owner or driver$3) with (vehicl$4 or car or automobil$4) with (grant$4 or permission$3) with (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
L39	754	(key$3 or token$3) near5 (mobil$3 or handheld or phone or smart$3 or wireless$3) near5 (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
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L41	4,462	(register$4 or registration$3) with (owner$3) with (vehicl$4 or car or automobil$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01

L42	437	L2 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/09/05 09:01
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S1	1	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 13:22
S2	596	((("ENDO") near3 ("Masato")) OR (("HARUNA") near3 ("Yuichiro")) OR (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/02 13:25
S3	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/02 13:26
S4	1	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 12:03
S5	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/14 12:03
S6	23,073,734	(vehicl$4 or automobil$4 or car$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:51

S7	424,412	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:52
S8	112,864	S6 same S7	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:52
S10	38,835	S8 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:53
S11	511	S10 same (permission$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:54
S12	94	S11 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:55
S13	81,265	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 14:14
S14	957	S7 same S13	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 14:19

S15	119	S14 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 14:20
S16	44	S15 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 14:21
S17	23,073,734	(vehicl$4 or automobil$4 or car$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S18	424,412	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S19	112,864	S17 same S18	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S20	38,835	S19 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S21	511	S20 same (permission$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24

S22	94	S21 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S23	81,265	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S24	957	S18 same S23	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S25	119	S24 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S26	44	S25 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:25
S27	168	S24 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:35
S28	96	S27 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:36

S29	23,158,791	(vehicl$4 or automobil$4 or car$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S30	425,664	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S31	113,215	S29 same S30	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S32	38,950	S31 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S33	513	S32 same (permission$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S34	94	S33 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S35	81,684	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41

S36	967	S30 same S35	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S37	124	S36 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S38	47	S37 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S39	425,664	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S40	81,684	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42
S41	967	S39 same S40	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42
S42	124	S41 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42

S43	47	S42 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42
S44	172	S41 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42
S45	97	S44 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42
S46	1	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42
S47	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/22 09:42
S48	12	S41 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:04
S49	14,453	S40 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:07
S50	50	S49 same trunk$3	US-PGPUB; USPAT; USOCR;	OR	OFF	2019/05/22 10:07

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S51	1,705	S30 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:10
S52	176	S35 and S51	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:10
S53	162	S52 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:10
S54	311	S51 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:12
S55	33	S35 and S54	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:12
S56	18,504	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:33
S57	17,555	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	OFF	2019/05/22 10:34

			JPO; DERWENT; IBM_TDB			
S58	6,491	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S59	930	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S60	12,073	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S61	1,383	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S62	5,159	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S63	28	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S64	53,942	S56 S57 S58 S59 S60 S61 S62 S63	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/05/22 10:35

			DERWENT; IBM_TDB			
S65	144	S36 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:36
S66	58	S37 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:36
S67	58	S42 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S68	38	S44 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S69	21	S38 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S70	28	S45 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S71	10	S48 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/05/22 10:37

			DERWENT; IBM_TDB			
S72	18	S50 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S73	51	S52 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S74	45	S53 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S75	89	S54 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S76	438,480	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S77	85,487	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S78	1,051	S76 same S77	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S79	18,368	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S80	15,892	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S81	10,016	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S82	956	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S83	12,039	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S84	1,476	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S85	5,452	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S86	33	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S87	55,568	S79 S80 S81 S82 S83 S84 S85 S86	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S88	183	S78 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S89	159	S78 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S90	79	S89 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S91	438,480	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S92	85,487	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S93	1,051	S91 same S92	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S94	159	S93 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S95	79	S94 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S96	201	S93 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S97	55	S96 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S98	58	S89 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S99	29	S98 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S100	124	S96 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S101	45	S100 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S102	19	S93 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S103	15	S102 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S104	15,532	S92 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S105	87	S104 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S106	42	S105 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S107	1,776	S76 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S108	211	S77 and S107	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S109	80	S108 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S110	196	S108 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S111	73	S110 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S112	335	S107 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S113	104	S112 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:23

			DERWENT; IBM_TDB			
S114	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/11/12 09:53
S115	1	("20130321178").PN.	US-PGPUB; USPAT	OR	OFF	2019/11/12 10:07
S116	1	("9499129").PN.	US-PGPUB; USPAT	OR	OFF	2019/11/12 10:08
S117	444,916	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S118	87,326	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S119	1,088	S117 same S118	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S120	18,729	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S121	16,296	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S122	10,861	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR;	OR	OFF	2019/11/12 10:11

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S123	984	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S124	12,291	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S125	1,539	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S126	5,660	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S127	35	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S128	57,422	S120 S121 S122 S123 S124 S125 S126 S127	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S129	196	S119 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	OFF	2019/11/12 10:11

			JPO; DERWENT; IBM_TDB			
S130	167	S119 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S131	84	S130 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S132	444,916	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S133	87,326	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S134	1,088	S132 same S133	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S135	167	S134 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S136	84	S135 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S137	207	S134 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S138	58	S137 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S139	61	S130 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S140	30	S139 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S141	128	S137 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S142	47	S141 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S143	19	S134 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S144	15	S143 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S145	1,798	S117 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S146	219	S118 and S145	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S147	82	S146 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S148	202	S146 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S149	75	S148 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S150	338	S145 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S151	105	S150 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S152	444,916	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S153	87,326	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S154	1,088	S152 same S153	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S155	18,729	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S156	16,296	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S157	10,861	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S158	984	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S159	12,291	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S160	1,539	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S161	5,660	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S162	35	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S163	57,422	S155 S156 S157 S158 S159 S160 S161 S162	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S164	196	S154 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S165	167	S154 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S166	84	S165 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S167	444,916	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S168	87,326	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S169	1,088	S167 same S168	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S170	167	S169 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S171	84	S170 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S172	207	S169 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S173	58	S172 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S174	61	S165 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S175	30	S174 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S176	128	S172 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S177	47	S176 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S178	19	S169 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:12

			DERWENT; IBM_TDB			
S179	15	S178 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S180	16,124	S168 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S181	88	S180 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S182	42	S181 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S183	1,798	S152 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S184	219	S153 and S183	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S185	82	S184 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:12

			DERWENT; IBM_TDB			
S186	202	S184 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S187	75	S186 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S188	338	S183 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S189	105	S188 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S190	119,293	(vehicl$4 or automobil$4 or car$3) same S117	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:24
S191	8,675	(register$4) near7 (permission$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:28
S192	241,090	(register$4) with (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:28

			DERWENT; IBM_TDB			
S193	25,899	S192 same server$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:29
S194	1,374	S190 and S193	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:29
S195	8,899	(register$4) with (permission$3 or allow$3 or permit$4) with (user$3) with (server$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:32
S196	17,184	S190 same (trunk$3 or servic$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:35
S197	135	S195 and S196	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:37
S198	2	((key$3) and (manag$5) and (mobil$3 or handheld or smart$5) and (vehicl$3 or car or automobil$4) and (permission$3) and (server$3) and (request$4) and (third adj party)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/18 10:36
S200	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/11/21 10:06

S201	461,906	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S202	92,164	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S203	1,178	S201 same S202	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S204	21,433	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S205	20,440	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S206	14,678	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S207	1,182	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S208	13,938	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S209	1,756	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S210	6,974	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S211	42	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S212	69,564	S204 S205 S206 S207 S208 S209 S210 S211	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S213	242	S203 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S214	194	S203 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S215	102	S214 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S216	461,906	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S217	92,164	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S218	1,178	S216 same S217	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S219	194	S218 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S220	102	S219 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S221	226	S218 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S222	68	S221 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S223	70	S214 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S224	36	S223 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S225	139	S221 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S226	55	S225 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S227	21	S218 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S228	17	S227 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S229	17,549	S217 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S230	103	S229 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S231	51	S230 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S232	1,868	S201 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S233	248	S202 and S232	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S234	92	S233 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S235	228	S233 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S236	85	S235 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S237	348	S232 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S238	117	S237 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S239	461,906	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S240	124,540	(vehicl$4 or automobil$4 or car$3) same S239	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S241	9,145	(register$4) with (permission$3 or allow$3 or permit$4) with (user$3) with (server$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S242	18,035	S240 same (trunk$3 or servic$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S243	144	S241 and S242	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S244	2	((key$3) and (manag$5) and (mobil$3 or handheld or smart$5) and (vehicl$3 or car or automobil$4) and (permission$3) and (server$3) and (request$4) and (third adj party)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S245	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/04/02 10:44
S246	1	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:44
S247	178,032	((vehicl$4 or automobil$4 or car$3) near4 shar$3) or C2C or (deliver$4 with trunk$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 11:10
S248	507,212	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S249	105,679	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S250	1,378	S248 same S249	US-PGPUB; USPAT; USOCR;	OR	OFF	2021/04/16 11:40

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S251	24,356	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S252	23,697	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S253	23,991	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S254	1,439	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S255	15,701	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S256	2,156	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S257	8,549	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	OFF	2021/04/16 11:40

			JPO; DERWENT; IBM_TDB			
S258	50	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S259	86,659	S251 S252 S253 S254 S255 S256 S257 S258	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S260	316	S250 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S261	257	S250 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S262	134	S261 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S263	507,212	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S264	105,679	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:40

			DERWENT; IBM_TDB			
S265	1,378	S263 same S264	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S266	257	S265 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S267	134	S266 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S268	287	S265 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S269	100	S268 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S270	89	S261 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S271	53	S270 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:41

			DERWENT; IBM_TDB			
S272	189	S268 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S273	79	S272 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S274	31	S265 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S275	27	S274 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S276	21,291	S264 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S277	143	S276 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S278	80	S277 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:41

			DERWENT; IBM_TDB			
S279	2,038	S248 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S280	312	S249 and S279	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S281	125	S280 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S282	289	S280 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S283	116	S282 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S284	382	S279 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S285	143	S284 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:41

			DERWENT; IBM_TDB			
S286	507,212	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S287	138,724	(vehicl$4 or automobil$4 or car$3) same S286	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S288	9,729	(register$4) with (permission$3 or allow$3 or permit$4) with (user$3) with (server$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S289	20,253	S287 same (trunk$3 or servic$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S290	163	S288 and S289	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S291	3	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S292	407	S249 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:49

			DERWENT; IBM_TDB			
S293	31	S248 same S292	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:49
S294	1,973	(register$4 or grant$4) with (permission$3 or allow$3 or permit$4) with (user$3 or third) with (vehicl$4 or car or automobil$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:57
S295	88	S248 same S294	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:58
S296	7	S295 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:59
S297	3,313	trunk$3 near5 deliver$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:59
S298	41	S248 same S297	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:59
S299	112	S249 and S297	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 12:00

			DERWENT; IBM_TDB			
S300	28	(owner or driver$3) with (vehicl$4 or car or automobil$4) with (grant$4 or permission$3) with (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 12:11
S301	720	(key$3 or token$3) near5 (mobil$3 or handheld or phone or smart$3 or wireless$3) near5 (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 12:14
S302	14	S301 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 12:15
S307	32	("2019/0005445").URPN.	USPAT	OR	OFF	2021/04/22 11:13
S308	1	("20160098871").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/04/22 11:17
S309	99	(package with deliver$4 with trunk)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/22 11:52
S310	10	("2016/0098876").URPN.	USPAT	OR	OFF	2021/04/22 11:55
S311	3	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/22 12:09
S312	13	("20150343993" | "9189900" | "20140232524" | "20110191126" | "20130321178" | "20140222298" | "20150310532" | "20160055699" | "20170178035" | "20170334395" |	US-PGPUB; USPAT	OR	OFF	2021/04/22 14:01

		"20190001925" | "9365188" | "9499129").PN.				
S313	3	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/23 08:28
S314	519,078	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S315	109,491	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S316	1,440	S314 same S315	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S317	24,974	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S318	24,284	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S319	25,914	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/08/06 13:31

			DERWENT; IBM_TDB			
S320	1,485	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S321	15,977	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S322	2,222	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S323	8,996	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S324	52	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S325	90,135	S317 S318 S319 S320 S321 S322 S323 S324	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S326	344	S316 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/08/06 13:31

			DERWENT; IBM_TDB			
S327	273	S316 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S328	146	S327 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S329	519,078	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S330	109,491	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S331	1,440	S329 same S330	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S332	273	S331 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S333	146	S332 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/08/06 13:31

			DERWENT; IBM_TDB			
S334	299	S331 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S335	108	S334 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S336	94	S327 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S337	56	S336 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S338	198	S334 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S339	86	S338 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:31
S340	2,079	S314 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/08/06 13:32

			DERWENT; IBM_TDB			
S341	329	S315 and S340	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S342	136	S341 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S343	393	S340 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S344	152	S343 and S325	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S345	430	S315 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S346	31	S314 same S345	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S347	2,055	(register$4 or grant$4) with (permission$3 or allow$3 or permit$4) with (user$3 or third) with (vehicl$4 or car or automobil$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/08/06 13:32

			DERWENT; IBM_TDB			
S348	92	S314 same S347	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S349	3,362	trunk$3 near5 deliver$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S350	43	S314 same S349	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S351	30	(owner or driver$3) with (vehicl$4 or car or automobil$4) with (grant$4 or permission$3) with (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S352	746	(key$3 or token$3) near5 (mobil$3 or handheld or phone or smart$3 or wireless$3) near5 (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S353	15	S352 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 13:32
S354	3	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/08/06 14:29

			DERWENT; IBM_TDB			
S355	4,415	(register$4 or registration$3) with (owner$3) with (vehicl$4 or car or automobil$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 14:44
S356	430	S315 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 14:45
S357	39	S355 and S356	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/08/06 14:45

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S199	2	((key$3) and (manag$5) and (mobil$3 or handheld or smart$5) and (vehicl$3 or car or automobil$4) and (permission$3) and (server$3) and (request$4) and (third adj party)).clm.	US-PGPUB; USPAT	OR	OFF	2019/11/18 10:37

9/5/2021 10:17:02 AM
C:\Users\talunkal\Documents\EAST\Workspaces\16-139519.wsp

Doc Code: DIST.E.FILE **Document Description: Electronic Terminal Disclaimer - Filed**	PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	16800571
Filing Date	25-Feb-2020
First Named Inventor	Masato ENDO
Attorney Docket Number	115628.0000058
Title of Invention	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

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Owner	Percent Interest
TOYOTA JIDOSHA KABUSHIKI KAISHA	100%

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- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

◉ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.

○ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.	
Applicant claims the following fee status: ○ Small Entity ○ Micro Entity ◉ Regular Undiscounted I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.	
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application Registration Number 54863 ○ A sole inventor ○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ○ A joint inventor; all of whom are signing this request	
Signature	/Daniel G. Shanley/
Name	Daniel G. Shanley

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	16800571
Filing Date:	25-Feb-2020
Title of Invention:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
First Named Inventor/Applicant Name:	Masato ENDO
Filer:	Daniel Gregory Shanley/Sandra Salmeron
Attorney Docket Number:	115628.0000058

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	1814	1	170	170
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**170**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 16800571

Filing Date: 25-Feb-2020

Applicant/Patent under Reexamination: ENDO

Electronic Terminal Disclaimer filed on June 18, 2021

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt

EFS ID:	43020846
Application Number:	16800571
International Application Number:	
Confirmation Number:	6616
Title of Invention:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
First Named Inventor/Applicant Name:	Masato ENDO
Customer Number:	23838
Filer:	Daniel Gregory Shanley/Sandra Salmeron
Filer Authorized By:	Daniel Gregory Shanley
Attorney Docket Number:	115628.0000058
Receipt Date:	18-JUN-2021
Filing Date:	25-FEB-2020
Time Stamp:	14:39:52
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$170
RAM confirmation Number	E20216HE39480456
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer-Filed (Electronic)	eTerminal-Disclaimer.pdf	33515 bce885dfbe467ff28f025516b93abfeebb6db6a9	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30384 0db9b1c5bb391dbc738068ba0149904b523c93a0	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	63899		

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.

Electronic Acknowledgement Receipt

EFS ID:	43020108
Application Number:	16800571
International Application Number:	
Confirmation Number:	6616
Title of Invention:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
First Named Inventor/Applicant Name:	Masato ENDO
Customer Number:	23838
Filer:	Daniel Gregory Shanley/Sandra Salmeron
Filer Authorized By:	Daniel Gregory Shanley
Attorney Docket Number:	115628.0000058
Receipt Date:	18-JUN-2021
Filing Date:	25-FEB-2020
Time Stamp:	14:30:27
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	Amendment/Req. Reconsideration-After Non-Final Reject	115628-0000058_Response.pdf	163842 73bb04b9835b8c56a17c657ea5d3b1bb7120b141	no	7

Warnings:

Information:	
Total Files Size (in bytes):	163842

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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of	:	TOYOTA JIDOSHA KABUSHIKI KAISHA
Application No.	:	16/800,571
Filed	:	February 25, 2020
For	:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
Examiner	:	Thomas D. ALUNKAL
Group Art Unit	:	2687
Confirmation No.	:	6616

MAIL STOP AMENDMENT
Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313-1450

RESPONSE TO APRIL 27, 2021 OFFICE ACTION

SIR:

The following amendments and remarks are respectfully submitted in response to the non-final Office Action mailed April 27, 2021, along with an electronic Terminal Disclaimer.

Amendments to the Claims begin on page 2 of this paper.
Remarks begin on page 5 of this paper.

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Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

1. (Currently Amended) A key information management device comprising:

an information processing device configured to

i) deliver key information to a mobile terminal as the mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle, and

ii) register permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to cause the information processing device to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle,

wherein the information processing device is configured to register the permission further in association with unique information corresponding to an owner user of the vehicle, and

wherein the information processing device is configured to transmit information related to the predetermined service to the mobile terminal having the unique information corresponding to the owner user in response to a request from the mobile terminal.

2. (Canceled).

3. (Currently Amended) The key information management device according to claim [[2]]1, wherein:

~~the information processing device is configured to transmit information related to the predetermined service to the mobile terminal having the unique information corresponding to the owner user in response to a request from the mobile terminal having the unique information corresponding to the owner user; and~~

———the predetermined service corresponds to the permission associated with the unique information corresponding to the owner user.

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4. (Original) The key information management device according to claim 3, wherein:

the information processing device is configured to store the permission for each user of the vehicle in association with the unique information corresponding to the owner user;

the information processing device is configured to transmit information related to a user of the vehicle, other than the owner user, to the mobile terminal having the unique information corresponding to the owner user in response to a request from the mobile terminal having the unique information corresponding to the owner user; and

the user of the vehicle, other than the owner user, corresponds to the permission associated with the unique information corresponding to the owner user.

5. (Original) The key information management device according to claim 1, further comprising a communication device configured to bidirectionally carry out communication with each of the vehicles, the mobile terminals, and the external server device through a predetermined communication network.

6. (Original) The key information management device according to claim 1, wherein the key information further includes information for locking the vehicle.

7. (Currently Amended) A key information management method that is executed by a key information management device, the key information management method comprising:

delivering key information to a mobile terminal as the mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle; [[and]]

registering permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle;

registering the permission further in association with unique information corresponding to an owner user of the vehicle; and

transmitting information related to the predetermined service to the mobile terminal

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having the unique information corresponding to the owner user in response to a request from the mobile terminal.

8. (Currently Amended) A non-transitory computer-readable recording medium comprising a key information management program recorded on the recording medium, the key information management program causing an information processing device to execute instructions for:

delivering key information to a mobile terminal as the mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle; [[and]]

registering permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle;

registering the permission further in association with unique information corresponding to an owner user of the vehicle; and

transmitting information related to the predetermined service to the mobile terminal having the unique information corresponding to the owner user in response to a request from the mobile terminal.

REMARKS

I. Status of Claims

Claims 1-8 are currently pending in the present application, with claims 1, 7, and 8 being the independent claim and currently amended. Claim 3 is also amended to change claim dependency. Support for these amendments can at least be found in claims 2 and 3 of the application as originally filed. No new matter has been added.

Claims 1-8 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 10,614,644.

Claims(s) 1-8 are rejected under 35 U.S.C. 102(a)(2) as being anticipated by Bahrainwala et al. ("Bahrainwala") (US PG Pub 2019/0005445).

The Applicant respectfully requests reconsideration of these rejections in view of the foregoing amendments and the following remarks.

II. Remarks Regarding Double Patenting Rejection

Claims 1-8 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 10,614,644.

The Applicant submits electronically herewith a terminal disclaimer. Thus, the Applicant respectfully requests withdrawal of this rejection.

III. Remarks Regarding 35 USC §102 Rejections

Claims(s) 1-8 are rejected under 35 U.S.C. 102(a)(2) as being anticipated by Bahrainwala.

Claim 1 is patentable over the cited references at least because it recites, *inter alia*, "wherein the information processing device is configured to register the permission further in association with unique information corresponding to an owner user of the vehicle, and wherein the information processing device is configured to transmit information related to the predetermined service to the mobile terminal having the unique information corresponding to the owner user in response to a request from the mobile terminal…" **Claims 7 and 8 recite similar limitations and are allowable for the same reasons that claim 1 is allowable.**

The Examiner alleges that Baharaiwala discloses the feature of claim 2 in paragraphs [0152], [0157], and [0161].

In the present application, the mobile terminal has **the unique information corresponding to the owner user** (claims 2, 3).

On the other hand, Baharaiwala merely discloses that the predetermined data from the smartphone of the driver is used to set different levels of permission to the courier (paragraph 0156). Therefore, Baharaiwala fails to disclose the unique information corresponding to the owner user. In addition, Baharaiwala also fails to disclose the feature of a part of claim 3.

Thus, it is respectfully submitted that the present applicant is different from Baharaiwala.

Thus, lacking any teaching and/or suggestion of each and every limitation of claims 1, 7, and 8, it respectfully submitted that Baharaiwala fails to anticipate the same. It is respectfully submitted that "[a]nticipation requires a showing that each limitation of a claim is found in a single reference." *Atofina v. Great Lakes Chem. Corp.*, 441 F.3d 991, 999 (Fed. Cir. 2006).

Also, none of the other cited references cure the deficiencies of Baharaiwala. As discussed in *KSR Int'l Co. v. Teleflex Inc.,* 550 U.S. 398, 418 (2007*),* it is necessary to identify the reason why a person of ordinary skill in the art would have been prompted to modify Baharaiwala as recited in the inventions of claims 1, 7, and 8. Obviousness cannot be sustained by mere conclusory statements.

Therefore, based on the foregoing, the Applicant respectfully submits that claims 1, 7, and 8 are patentable over Baharaiwala, as well as the other cited references

IV. Conclusion

In light of the above discussion, the Applicant respectfully submits that the present application is in all aspects in allowable condition, and earnestly solicits favorable reconsideration and early issuance of a Notice of Allowance.

The Examiner is invited to contact the undersigned at (202) 662-3047 to discuss any matter concerning this application. The Office is authorized to charge any fees related to this communication to Deposit Account No. 500206.

Respectfully submitted,

Dated: June 18, 2021

By: /Daniel G. Shanley/
Daniel G. Shanley
(Reg. No. 54,863)

HUNTON ANDREWS KURTH LLP
2200 Pennsylvania Avenue, N.W.
Washington, D.C. 20037
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Customer No. 23838

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/800,571	Filing Date 02/25/2020	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $460 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	06/18/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 7	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

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

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

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

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/800,571	02/25/2020	Masato ENDO	115628.0000058	6616

23838 7590 04/27/2021

Hunton Andrews Kurth LLP/HAK
2200 Pennsylvania Avenue NW
Washington, DC 20037

EXAMINER	
ALUNKAL, THOMAS D	

ART UNIT	PAPER NUMBER
2687	

NOTIFICATION DATE	DELIVERY MODE
04/27/2021	ELECTRONIC

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

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

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uuspto@hunton.com

IPR2024-00981
Emerging Auto EX2010

Office Action Summary	Application No. 16/800,571	Applicant(s) ENDO et al.	
	Examiner THOMAS D ALUNKAL	Art Unit 2687	AIA (FITF) Status Yes

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 2/25/2020.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-8 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 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 2/25/2020 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☑ All b)☐ Some** c)☐ None of the:

1.☑ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

IPR2024-00981
Emerging Auto EX2010

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP § 2146 *et seq.* for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 1-8 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 10,614,644.

Although the conflicting claims are not identical, they are not patentably distinct from each other because:

The patent claims include all of the limitations of the instant application claims, respectively. The patent claims also include additional limitations. Hence, the instant application claims are generic to the species of invention covered by the respective patent claims. As such, the instant application claims are anticipated by the patent claims and are therefore not patentably distinct therefrom. (See Eli Lilly and Co. v. Barr Laboratories Inc., 58 USPQ2D 1869, "a later genus claim limitation is anticipated by, and therefore not patentably distinct from, an earlier species claim", *In re Goodman*, 29 USPQ2d 2010, "Thus, the generic invention is 'anticipated' by the species of the patented invention" and the instant "application claims are generic to species of invention covered by the patent claim, and since without terminal disclaimer, extant species claims preclude issuance of generic application claims").

Claim Rejections - 35 USC § 102

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory

basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

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 –
>
> (a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

Claim(s) 1-8 are rejected under 35 U.S.C. 102(a)(2) as being anticipated by Bahrainwala et al. (hereafter Bahrainwala)(US PgPub 2019/0005445) .

The applied reference has a common assignee with the instant application. Based upon the earlier effectively filed date of the reference, it constitutes prior art under 35 U.S.C. 102(a)(2). This rejection under 35 U.S.C. 102(a)(2) might be overcome by: (1) a showing under 37 CFR 1.130(a) that the subject matter disclosed in the reference was obtained directly or indirectly from the inventor or a joint inventor of this application and is thus not prior art in accordance with 35 U.S.C. 102(b)(2)(A); (2) a showing under 37 CFR 1.130(b) of a prior public disclosure under 35 U.S.C. 102(b)(2)(B) if the same invention is not being claimed; or (3) a statement pursuant to 35 U.S.C. 102(b)(2)(C) establishing that, not later than the effective filing date of the claimed invention, the subject matter disclosed in the reference and the claimed invention were either owned by the same person or subject to an obligation of assignment to the same person or subject to a joint research agreement.

Regarding claim 1, Bahrainwala discloses a key information management device (Figure 5) comprising: an information processing device (Figure 5, Element 108) configured to i) deliver key information to a mobile terminal as the mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle (Figure 5, Elements 103A and 505 and Paragraphs 0152-0153

where the driver smartphone includes a key module that receives key information from a server for unlocking a vehicle), and ii) register permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to cause the information processing device to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle (Figure 5, Element 130B and Paragraphs 0152-0154, 0156, 0157 and 0161 where the driver smartphone registers permission levels for use of the vehicle to the courier smartphone. The courier smartphone uses the permissions to access the trunk of the vehicle).

Regarding claim 2, Bahrainwala discloses wherein the information processing device is configured to register the permission further in association with unique information corresponding to an owner user of the vehicle (Paragraphs 0152-0154, 0156, 0157 and 0161 where predetermined data from the smartphone of the driver is used to set different levels of permission to the courier).

Regarding claim 3, Bahrainwala discloses wherein: the information processing device is configured to transmit information related to the predetermined service to the mobile terminal having the unique information corresponding to the owner user in response to a request from the mobile terminal having the unique information corresponding to the owner user; and the predetermined service corresponds to the permission associated with the unique information corresponding to the owner user (Figure 5 and Paragraphs 0152-0154, 0156, 0157, 0161 and 0162 where trunk access to the vehicle is relayed to the driver smartphone).

Regarding claim 4, Bahrainwala discloses wherein: the information processing device is configured to store the permission for each user of the vehicle in association with the unique information corresponding to the owner user; the information processing device is configured to transmit information related to a user of the vehicle, other than the owner user, to the mobile terminal

having the unique information corresponding to the owner user in response to a request from the mobile terminal having the unique information corresponding to the owner user; and

the user of the vehicle, other than the owner user, corresponds to the permission associated with the unique information corresponding to the owner user (Figure 5, Element 130B and Paragraphs 0152-0154, 0156, 0157 and 0161 where the driver smartphone registers permission levels for use of the vehicle to the courier(s) smartphone. Trunk access to the vehicle is relayed to the driver smartphone).

Regarding claim 5, Bahrainwala discloses a communication device configured to bidirectionally carry out communication with each of the vehicles, the mobile terminals, and the external server device through a predetermined communication network (Figure 5, Element 105).

Regarding claim 6, Bahrainwala discloses wherein the key information further includes information for locking the vehicle (Figure 5, Elements 103A and 505 and Paragraphs 0152-0153 where the driver smartphone includes a key module that receives key information from a server for locking and unlocking the vehicle).

Regarding claim 7, see rejections for claims 1-6.

Regarding claim 8, see rejections for claims 1-6.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS D ALUNKAL whose telephone number is (571)270-1127. The examiner can normally be reached on **M-F 9am-5pm**.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Curtis Kuntz** can be reached on **571-272-7499**. 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 https://ppair-my.uspto.gov/pair/PrivatePair. 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.

/THOMAS D ALUNKAL/
Primary Examiner, Art Unit 2687

Notice of References Cited	Application/Control No. 16/800,571	Applicant(s)/Patent Under Reexamination ENDO et al.	
	Examiner THOMAS D ALUNKAL	Art Unit 2687	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-10614644-B2	04-2020	Endo; Masato	B60R25/24	1/1
*	B	US-20190005445-A1	01-2019	Bahrainwala; Shazaan	G06Q10/08355	1/1
*	C	US-20160098870-A1	04-2016	Bergerhoff; Nikolas	B60R25/2018	340/5.61
*	D	US-20150310532-A1	10-2015	Gura; Ron	G06Q50/30	705/7.13
*	E	US-20160189098-A1	06-2016	BEAUREPAIRE; Jerome	H04W12/084	705/337
*	F	US-20160098871-A1	04-2016	Oz; Seval	H04L63/06	340/5.61
	G					
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	J					
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FOREIGN PATENT DOCUMENTS

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	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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	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.

IPR2024-00981
Emerging Auto EX2010

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/800,571	ENDO et al.
	Examiner	Art Unit
	THOMAS D ALUNKAL	2687

CPC - Searched*		
Symbol	Date	Examiner
h04w4/50,h04w4/40,b60r25/209,b60r25/24,b60r25/241,g07c9/00571 ,g07c2009/00452	04/22/2021	TDA

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

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

Search Notes		
Search Notes	Date	Examiner
CPC: Text limited search	04/22/2021	TDA
Inventor Name Search	04/22/2021	TDA

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

/THOMAS D ALUNKAL/ Primary Examiner, Art Unit 2687	

IPR2024-00981
Emerging Auto EX2010

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16800571
Filing Date	2020-02-25
First Named Inventor	Masato ENDO
Art Unit	2687
Examiner Name	ALUNKAL, THOMAS D
Attorney Docket Number	115628.0000058

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	9189900	B1	2015-11-17	Penilla et al.	(Cited in JP OA issued 2020-12-22)

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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	20150343993	A1	2015-12-03	FERRIERES et al.	(Corresponds to JP2016511191A)

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2016511191	JP	A	2016-04-14	Renault S. A. S.	(Cited in JP OA issued 2020-12-22) =US2015/0343993A1	X

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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]

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IPR2024-00981
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	First Named Inventor	Masato ENDO
	Art Unit	2687
	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

	1	

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Examiner Signature	/THOMAS D ALUNKAL/	Date Considered	04/22/2021

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	First Named Inventor	Masato ENDO
	Art Unit	2687
	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

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☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Daniel G. Shanley/	Date (YYYY-MM-DD)	2021-02-05
Name/Print	Daniel G. Shanley	Registration Number	54,863

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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.

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IPR2024-00981
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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
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First Named Inventor	Masato ENDO
Art Unit	2687
Examiner Name	ALUNKAL, THOMAS D
Attorney Docket Number	115628.0000058

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	1	20140232524	A1	2014-08-21	Nakai et al.	(Corresponds to CN103946898A)

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	1	103946898	CN	A	2014-07-23	Mitsubishi Electric Corp	(Cited in CN OA issued 2020-09-02) =US20140232524A1 & English abstract provided	☓
	2	2006233475	JP	A	2006-09-07	Nippon Telegraph & Telephone	(Cited in CN OA issued 2020-09-02) English abstract & machine translation provided	☒

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	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

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]
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Examiner Signature	/THOMAS D ALUNKAL/	Date Considered	04/22/2021

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Signature	/Daniel G. Shanley/	Date (YYYY-MM-DD)	2020-09-29
Name/Print	Daniel G. Shanley	Registration Number	54,863

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.D.A/

IPR2024-00981
Emerging Auto EX2010

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L7	32	("2019/0005445").URPN.	USPAT	OR	OFF	2021/04/22 11:13
L8	1	("20160098871").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/04/22 11:17
L9	99	(package with deliver$4 with trunk)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/22 11:52
L10	10	("2016/0098876").URPN.	USPAT	OR	OFF	2021/04/22 11:55
L11	3	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/22 12:09
L12	13	("20150343993" | "9189900" | "20140232524" | "20110191126" | "20130321178" | "20140222298" | "20150310532" | "20160055699" | "20170178035" | "20170334395" | "20190001925" | "9365188" | "9499129").PN.	US-PGPUB; USPAT	OR	OFF	2021/04/22 14:01
S1	1	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/02 13:22
S2	596	((("ENDO") near3 ("Masato")) OR (("HARUNA") near3 ("Yuichiro")) OR (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/02 13:25
S3	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro"))	US-PGPUB; USPAT;	OR	OFF	2019/05/02 13:26

		and (("OSHIMA") near3 ("Masaki"))).INV.	USOCR; EPO; JPO; DERWENT			
S4	1	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 12:03
S5	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/14 12:03
S6	23,073,734	(vehicl$4 or automobil$4 or car$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:51
S7	424,412	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:52
S8	112,864	S6 same S7	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:52
S10	38,835	S8 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:53
S11	511	S10 same (permission$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:54

S12	94	S11 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 13:55
S13	81,265	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 14:14
S14	957	S7 same S13	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 14:19
S15	119	S14 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 14:20
S16	44	S15 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/14 14:21
S17	23,073,734	(vehicl$4 or automobil$4 or car$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S18	424,412	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24

S19	112,864	S17 same S18	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S20	38,835	S19 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S21	511	S20 same (permission$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S22	94	S21 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S23	81,265	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S24	957	S18 same S23	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24
S25	119	S24 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:24

S26	44	S25 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:25
S27	168	S24 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:35
S28	96	S27 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/15 09:36
S29	23,158,791	(vehicl$4 or automobil$4 or car$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S30	425,664	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S31	113,215	S29 same S30	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S32	38,950	S31 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41

S33	513	S32 same (permission$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S34	94	S33 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S35	81,684	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S36	967	S30 same S35	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S37	124	S36 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S38	47	S37 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41
S39	425,664	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:41

S40	81,684	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42
S41	967	S39 same S40	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42
S42	124	S41 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42
S43	47	S42 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42
S44	172	S41 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42
S45	97	S44 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42
S46	1	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 09:42

S47	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/05/22 09:42
S48	12	S41 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:04
S49	14,453	S40 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:07
S50	50	S49 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:07
S51	1,705	S30 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:10
S52	176	S35 and S51	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:10
S53	162	S52 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:10
S54	311	S51 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR;	OR	OFF	2019/05/22 10:12

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S55	33	S35 and S54	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:12
S56	18,504	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:33
S57	17,555	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S58	6,491	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S59	930	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S60	12,073	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S61	1,383	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	OFF	2019/05/22 10:34

			JPO; DERWENT; IBM_TDB			
S62	5,159	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S63	28	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:34
S64	53,942	S56 S57 S58 S59 S60 S61 S62 S63	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:35
S65	144	S36 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:36
S66	58	S37 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:36
S67	58	S42 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S68	38	S44 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/05/22 10:37

			DERWENT; IBM_TDB			
S69	21	S38 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S70	28	S45 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S71	10	S48 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S72	18	S50 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S73	51	S52 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S74	45	S53 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/05/22 10:37
S75	89	S54 and S64	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/05/22 10:37

			DERWENT; IBM_TDB			
S76	438,480	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S77	85,487	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S78	1,051	S76 same S77	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S79	18,368	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S80	15,892	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S81	10,016	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S82	956	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S83	12,039	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S84	1,476	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S85	5,452	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S86	33	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S87	55,568	S79 S80 S81 S82 S83 S84 S85 S86	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S88	183	S78 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S89	159	S78 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S90	79	S89 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S91	438,480	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S92	85,487	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S93	1,051	S91 same S92	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S94	159	S93 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S95	79	S94 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S96	201	S93 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S97	55	S96 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S98	58	S89 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S99	29	S98 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S100	124	S96 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S101	45	S100 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S102	19	S93 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S103	15	S102 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:22

			DERWENT; IBM_TDB			
S104	15,532	S92 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S105	87	S104 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S106	42	S105 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:22
S107	1,776	S76 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S108	211	S77 and S107	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S109	80	S108 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S110	196	S108 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/09/06 14:23

			DERWENT; IBM_TDB			
S111	73	S110 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S112	335	S107 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S113	104	S112 and S87	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/06 14:23
S114	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/11/12 09:53
S115	1	("20130321178").PN.	US-PGPUB; USPAT	OR	OFF	2019/11/12 10:07
S116	1	("9499129").PN.	US-PGPUB; USPAT	OR	OFF	2019/11/12 10:08
S117	444,916	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S118	87,326	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S119	1,088	S117 same S118	US-PGPUB; USPAT; USOCR;	OR	OFF	2019/11/12 10:11

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S120	18,729	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S121	16,296	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S122	10,861	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S123	984	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S124	12,291	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S125	1,539	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S126	5,660	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	OFF	2019/11/12 10:11

			JPO; DERWENT; IBM_TDB			
S127	35	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S128	57,422	S120 S121 S122 S123 S124 S125 S126 S127	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S129	196	S119 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S130	167	S119 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S131	84	S130 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S132	444,916	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S133	87,326	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S134	1,088	S132 same S133	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S135	167	S134 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S136	84	S135 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S137	207	S134 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S138	58	S137 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S139	61	S130 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S140	30	S139 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S141	128	S137 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S142	47	S141 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S143	19	S134 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S144	15	S143 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S145	1,798	S117 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S146	219	S118 and S145	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S147	82	S146 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S148	202	S146 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S149	75	S148 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S150	338	S145 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S151	105	S150 and S128	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S152	444,916	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S153	87,326	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S154	1,088	S152 same S153	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S155	18,729	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S156	16,296	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S157	10,861	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S158	984	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S159	12,291	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S160	1,539	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S161	5,660	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S162	35	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S163	57,422	S155 S156 S157 S158 S159 S160 S161 S162	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S164	196	S154 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S165	167	S154 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S166	84	S165 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S167	444,916	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S168	87,326	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S169	1,088	S167 same S168	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S170	167	S169 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S171	84	S170 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S172	207	S169 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S173	58	S172 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S174	61	S165 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:11
S175	30	S174 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:11

			DERWENT; IBM_TDB			
S176	128	S172 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S177	47	S176 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S178	19	S169 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S179	15	S178 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S180	16,124	S168 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S181	88	S180 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S182	42	S181 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:12

			DERWENT; IBM_TDB			
S183	1,798	S152 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S184	219	S153 and S183	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S185	82	S184 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S186	202	S184 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S187	75	S186 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S188	338	S183 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:12
S189	105	S188 and S163	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:12

			DERWENT; IBM_TDB			
S190	119,293	(vehicl$4 or automobil$4 or car$3) same S117	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:24
S191	8,675	(register$4) near7 (permission$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:28
S192	241,090	(register$4) with (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:28
S193	25,899	S192 same server$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:29
S194	1,374	S190 and S193	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:29
S195	8,899	(register$4) with (permission$3 or allow$3 or permit$4) with (user$3) with (server$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:32
S196	17,184	S190 same (trunk$3 or servic$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2019/11/12 10:35

			DERWENT; IBM_TDB			
S197	135	S195 and S196	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:37
S198	2	((key$3) and (manag$5) and (mobil$3 or handheld or smart$5) and (vehicl$3 or car or automobil$4) and (permission$3) and (server$3) and (request$4) and (third adj party)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/18 10:36
S200	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/11/21 10:06
S201	461,906	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S202	92,164	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S203	1,178	S201 same S202	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S204	21,433	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S205	20,440	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S206	14,678	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S207	1,182	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S208	13,938	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S209	1,756	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S210	6,974	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S211	42	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S212	69,564	S204 S205 S206 S207 S208 S209 S210 S211	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S213	242	S203 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S214	194	S203 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S215	102	S214 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S216	461,906	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S217	92,164	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S218	1,178	S216 same S217	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S219	194	S218 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S220	102	S219 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S221	226	S218 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S222	68	S221 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S223	70	S214 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S224	36	S223 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S225	139	S221 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S226	55	S225 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S227	21	S218 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S228	17	S227 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S229	17,549	S217 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S230	103	S229 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S231	51	S230 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S232	1,868	S201 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S233	248	S202 and S232	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S234	92	S233 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S235	228	S233 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S236	85	S235 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S237	348	S232 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S238	117	S237 and S212	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S239	461,906	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43

S240	124,540	(vehicl$4 or automobil$4 or car$3) same S239	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S241	9,145	(register$4) with (permission$3 or allow$3 or permit$4) with (user$3) with (server$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S242	18,035	S240 same (trunk$3 or servic$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S243	144	S241 and S242	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S244	2	((key$3) and (manag$5) and (mobil$3 or handheld or smart$5) and (vehicl$3 or car or automobil$4) and (permission$3) and (server$3) and (request$4) and (third adj party)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:43
S245	1	((("ENDO") near3 ("Masato")) and (("HARUNA") near3 ("Yuichiro")) and (("OSHIMA") near3 ("Masaki"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/04/02 10:44
S246	1	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/02 10:44
S247	178,032	((vehicl$4 or automobil$4 or car$3) near4 shar$3) or C2C or (deliver$4 with trunk$3)	US-PGPUB; USPAT; USOCR;	OR	OFF	2020/04/02 11:10

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S248	507,212	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S249	105,679	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S250	1,378	S248 same S249	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S251	24,356	g07c9/00309.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S252	23,697	h04w4/50.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S253	23,991	h04w4/40.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S254	1,439	b60r25/209.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	OFF	2021/04/16 11:40

			JPO; DERWENT; IBM_TDB			
S255	15,701	b60r25/24.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S256	2,156	b60r25/241.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S257	8,549	g07c9/00571.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S258	50	g07c2009/00452.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S259	86,659	S251 S252 S253 S254 S255 S256 S257 S258	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S260	316	S250 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S261	257	S250 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:40

			DERWENT; IBM_TDB			
S262	134	S261 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S263	507,212	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S264	105,679	(vehicl$4 or automobil$4 or car$3) near4 shar$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S265	1,378	S263 same S264	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S266	257	S265 same (unlock$4 or start$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S267	134	S266 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:40
S268	287	S265 same request$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:41

			DERWENT; IBM_TDB			
S269	100	S268 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S270	89	S261 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S271	53	S270 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S272	189	S268 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S273	79	S272 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S274	31	S265 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S275	27	S274 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:41

			DERWENT; IBM_TDB			
S276	21,291	S264 same (user or owner$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S277	143	S276 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S278	80	S277 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S279	2,038	S248 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S280	312	S249 and S279	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S281	125	S280 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S282	289	S280 and (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:41

			DERWENT; IBM_TDB			
S283	116	S282 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S284	382	S279 same (permission$3 or allow$3 or permit$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S285	143	S284 and S259	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S286	507,212	(key$3 or token$3) with (mobil$3 or handheld or phone or smart$3 or wireless$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S287	138,724	(vehicl$4 or automobil$4 or car$3) same S286	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S288	9,729	(register$4) with (permission$3 or allow$3 or permit$4) with (user$3) with (server$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S289	20,253	S287 same (trunk$3 or servic$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:41

			DERWENT; IBM_TDB			
S290	163	S288 and S289	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S291	3	16/139519	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:41
S292	407	S249 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:49
S293	31	S248 same S292	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:49
S294	1,973	(register$4 or grant$4) with (permission$3 or allow$3 or permit$4) with (user$3 or third) with (vehicl$4 or car or automobil$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:57
S295	88	S248 same S294	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:58
S296	7	S295 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/16 11:59

			DERWENT; IBM_TDB			
S297	3,313	trunk$3 near5 deliver$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:59
S298	41	S248 same S297	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 11:59
S299	112	S249 and S297	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 12:00
S300	28	(owner or driver$3) with (vehicl$4 or car or automobil$4) with (grant$4 or permission$3) with (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 12:11
S301	720	(key$3 or token$3) near5 (mobil$3 or handheld or phone or smart$3 or wireless$3) near5 (delivery or courier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 12:14
S302	14	S301 same trunk$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/16 12:15

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp

S199	2	((key$3) and (manag$5) and (mobil$3 or handheld or smart$5) and (vehicl$3 or car or automobil$4) and (permission$3) and (server$3) and (request$4) and (third adj party)).clm.	US-PGPUB; USPAT	OR	OFF	2019/11/18 10:37

4/22/2021 2:03:38 PM
C:\Users\talunkal\Documents\EAST\Workspaces\16-139519.wsp

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	
	Filing Date	
	First Named Inventor	Masato ENDO
	Art Unit	N/A
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	115628.0000058

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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	9499129	B1	2016-11-22	Penilla et al.	Cited in Parent U.S. 16/139,519
	2	9365188	B1	2016-06-14	Penilla et al.	Cited in Parent U.S. 16/139,519
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	1	20130321178	A1	2013-12-05	Jameel et al.	Cited in Parent U.S. 16/139,519
	2	20160055699	A1	2016-02-25	VINCENTI	Cited in Parent U.S. 16/139,519
	3	20170334395	A1	2017-11-23	LU et al.	Cited in Parent U.S. 16/139,519
	4	20190001925	A1	2019-01-03	ARAKAWA et al.	Cited in Parent U.S. 16/139,519

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IPR2024-00981
Emerging Auto EX2010

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Masato ENDO
	Art Unit	N/A
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	115628.0000058

	5	20170178035	A1	2017-06-22	GRIMM et al.	Cited in Parent U.S. 16/139,519
	6	20110191126	A1	2011-08-04	HAMPSHIRE et al.	Cited in Parent U.S. 16/139,519
	7	20140222298	A1	2014-08-07	Gurin	Cited in Parent U.S. 16/139,519
	8	20150310532	A1	2015-10-29	Gura et al.	Cited in Parent U.S. 16/139,519

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	1	2006118122	JP	A	2006-05-11	Honda Motor Co Ltd	Cited in Parent U.S. 16/139,519	
	2	2006206225	JP	A	2006-08-10	Denso Corp	Cited in Parent U.S. 16/139,519	
	3	2015045141	JP	A	2015-03-12	Auto Network Gijutsu Kenkyusho	Cited in Parent U.S. 16/139,519	
	4	2016150532	WO	A1	2016-09-29	VOLKSWAGEN AG	Cited in Parent U.S. 16/139,519	
	5	2016054276	WO	A1	2016-04-07	CONTINENTAL INTELLIGENT TRANSP SYSTEMS LLC	Cited in Parent U.S. 16/139,519	

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IPR2024-00981
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Masato ENDO
	Art Unit	N/A
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	115628.0000058

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Masato ENDO
	Art Unit	N/A
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	115628.0000058

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Daniel G. Shanley/	Date (YYYY-MM-DD)	2020-02-25
Name/Print	Daniel G. Shanley	Registration Number	54,863

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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IPR2024-00981
Emerging Auto EX2010

Bibliographic Data

Application No: 16/800,571

Foreign Priority claimed: (•) Yes ( ) No

35 USC 119 (a-d) conditions met: [✓] Yes [ ] No [ ] Met After Allowance

Verified and Acknowledged: /THOMAS D ALUNKAL/ Examiner's Signature [ ] Initials

Title: KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
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APPLICANTS

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CONTINUING DATA

This application is a CON of 16139519 09/24/2018 PAT 10614644

FOREIGN APPLICATIONS

JAPAN JP2017-205675 10/24/2017

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	16800571
	Filing Date	2020-02-25
	First Named Inventor	Masato ENDO
	Art Unit	2687
	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

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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	9189900	B1	2015-11-17	Penilla et al.	(Cited in JP OA issued 2020-12-22)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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See attached certification statement.

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☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Daniel G. Shanley/	Date (YYYY-MM-DD)	2021-02-05
Name/Print	Daniel G. Shanley	Registration Number	54,863

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最終頁に続く

(54)【発明の名称】車両を利用可能にする方法および車両を利用可能にするための対応するシステム

(57)【要約】
本発明は、車両（Ｖ）を利用可能にする方法に関し、ユーザリクエスト（Ｍ１）に続いて、少なくとも１つの車両ドア（Ｖ）を解錠するために遠隔車両管理サーバ（ＳＤＧＶ）からメッセージ（Ｍ２、Ｍ３）を送信するステップ（Ｅ３、Ｅ４）を備え、前記ユーザリクエストにより、ユーザ（Ｕ）の識別および車両（Ｖ）に対するユーザ（Ｕ）による使用の認証を受けさせる。本方法は、上記解錠メッセージ（Ｍ２、Ｍ３）とは独立したメッセージ（Ｍ５、Ｍ６）を送信し、遠隔車両管理サーバ（ＳＤＧＶ）から前記車両（Ｖ）の制御システム（ＳＣ）によって車両（Ｖ）の始動を認証するステップ（Ｅ７、Ｅ９）をさらに備えることを特徴とする。
【選択図】図１

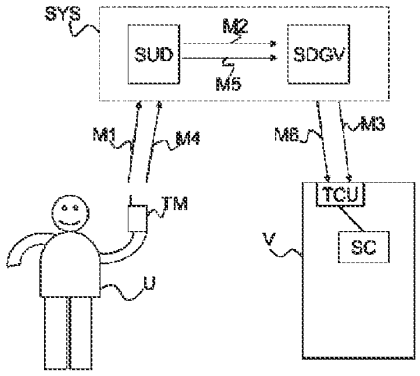


Fig.1

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【特許請求の範囲】
【請求項１】
車両（Ｖ）を利用可能にするための方法であって、
ユーザリクエスト（Ｍ１）に応答して、遠隔車両管理サーバ（ＳＤＧＶ）から前記車両（Ｖ）の少なくとも１つのドアの解錠を可能にするメッセージ（Ｍ２、Ｍ３）を送信するステップ（Ｅ３、Ｅ４）を含み、前記ユーザリクエストは、前記ユーザ（Ｕ）の識別および前記車両（Ｖ）の前記ユーザ（Ｕ）による使用の認証の対象を形成しており、
前記方法はさらに、前記解錠を可能にする前記メッセージ（Ｍ２、Ｍ３）とは別に、前記遠隔車両管理サーバ（ＳＤＧＶ）から、前記車両（Ｖ）の制御システム（ＳＣ）によって前記車両（Ｖ）の始動を認証するメッセージ（Ｍ５、Ｍ６）を送信するステップ（Ｅ７、Ｅ９）をさらに含むことを特徴とする、方法。
【請求項２】
利用の前記識別および認証は、前記遠隔車両管理サーバ（ＳＤＧＶ）とは分離した遠隔ユーザサーバ（ＳＵＤ）によって実行され、
少なくとも１つのドアの前記解錠を可能にする前記メッセージ（Ｍ３）は、前記遠隔ユーザサーバ（ＳＵＤ）によって前記ユーザリクエストを処理するステップ（Ｅ２）の後、前記遠隔ユーザサーバ（ＳＵＤ）によって送信された解錠メッセージ（Ｍ２）の受信時に、前記車両（Ｖ）に、前記遠隔車両管理サーバ（ＳＤＧＶ）によって送信され、
前記車両（Ｖ）の始動を認証する前記メッセージ（Ｍ６）は、前記遠隔ユーザサーバ（ＳＵＤ）によって送信されたプロテクト解除メッセージ（Ｍ５）の受信時に、前記車両（Ｖ）に、前記遠隔車両管理サーバ（ＳＤＧＶ）によって送信され、
前記解錠（Ｍ２）およびプロテクト解除（Ｍ５）メッセージは、前記ユーザの識別子を欠いた前記遠隔車両管理サーバ（ＳＤＧＶ）に、前記遠隔ユーザサーバ（ＳＵＤ）によって送信されることを特徴とする、請求項１に記載の車両（Ｖ）を利用可能にするための方法。
【請求項３】
前記遠隔車両管理サーバ（ＳＤＧＶ）は、前記遠隔ユーザサーバ（ＳＵＤ）が前記車両（Ｖ）に関する可変パラメータの値を前記ユーザ（Ｕ）から受信した場合のみ、前記車両（Ｖ）の始動を認証する前記メッセージ（Ｍ６）を送信し、さらに前記値は、前記遠隔車両管理サーバ（ＳＤＧＶ）によって、または前記遠隔ユーザサーバ（ＳＵＤ）によって事前に記録された値に対応することを特徴とする、請求項２に記載の車両（Ｖ）を利用可能にするための方法。
【請求項４】
前記車両（Ｖ）の前記制御システム（ＳＣ）は、前記車両のキーまたはフォブが識別された後、および前記車両（Ｖ）が少なくとも１つのドアの解錠を許可し、前記車両（Ｖ）の始動を認証する前記メッセージ（Ｍ３、Ｍ６）を受信した後にのみ、前記車両（Ｖ）の始動を認証することを特徴とする、請求項１から３のいずれか一項に記載の車両を利用可能にするための方法。
【請求項５】
前記遠隔車両管理サーバ（ＳＤＧＶ）は、前記車両（Ｖ）のドアの手動開放が検出された後にのみ、前記車両（Ｖ）の始動を認証する前記メッセージ（Ｍ６）を送信することを特徴とする、請求項１から４のいずれか一項に記載の車両を利用可能にするための方法。
【請求項６】
前記遠隔ユーザサーバ（ＳＵＤ）が、
前記車両（Ｖ）が前記遠隔車両管理サーバ（ＳＤＧＶ）と通信することを可能にする通信ネットワークが利用可能であることを検出する、および／または
前記ユーザ（Ｕ）から項目別リスト検証メッセージを受信するまで、
前記遠隔ユーザサーバ（ＳＵＤ）は、前記ユーザ（Ｕ）による前記車両（Ｖ）の返却を認証しないことを特徴とする、請求項２から５のいずれか一項に記載の車両を利用可能にするための方法。

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【請求項７】
前記ユーザ（Ｕ）による前記車両（Ｖ）の予約の前に、前記ユーザ（Ｕ）が前記遠隔ユーザサーバ（ＳＵＤ）に、前記車両の少なくとも１つのドアの解錠を可能にする前記メッセージ（Ｍ３）の前記送信を所定の期間だけ遅延するための値を供給するステップを含むことを特徴とする、請求項２から６のいずれか一項に記載の車両を利用可能にする方法。
【請求項８】
前記車両の少なくとも１つのドアの解錠を可能にするメッセージ（Ｍ３）を送信するための前記ステップは、前記ユーザ（Ｕ）と前記車両（Ｖ）との間の距離を判断するためのステップの後のみに、前記判断ステップの間に判断された前記距離が所定の閾値未満である場合に、実行されることを特徴とする、請求項１から７のいずれか一項に記載の車両を利用可能にするための方法。
【請求項９】
前記車両の少なくとも１つのドアの解錠を可能にする前記メッセージ（Ｍ３）の前記車両（Ｖ）による受信時に、前記車両（Ｖ）は、視覚的および／または可聴ドア開放指示機能を抑制することを特徴とする、請求項１から８のいずれか一項に記載の車両を利用可能にするための方法。
【請求項１０】
車両（Ｖ）を利用可能にするためのシステム（ＳＹＳ）であって、請求項１から９のいずれか一項に記載の車両（Ｖ）を利用可能にするための前記方法を実施するための手段を含み、前記手段は、
ユーザ（Ｕ）を識別し、ユーザリクエスト（Ｍ１）の受信時に前記ユーザによる前記車両（Ｖ）の使用を認証するのに適しており、遠隔車両管理サーバ（ＳＤＧＶ）と通信するのに適した遠隔ユーザサーバ（ＳＵＤ）、
前記遠隔ユーザサーバ（ＳＵＤ）によって送信された解錠メッセージ（Ｍ２）の受信に応じて前記車両（Ｖ）の少なくとも１つのドアの解錠を可能にするメッセージ（Ｍ３）を前記車両（Ｖ）に送信するのに適切した前記遠隔車両管理サーバ（ＳＤＧＶ）、
前記解錠を可能にする前記メッセージ（Ｍ３）とは別にメッセージ（Ｍ６）を前記車両（Ｖ）に送信し、前記遠隔ユーザサーバ（ＳＵＤ）によって送信されたプロテクト解除メッセージ（Ｍ５）の受信時に前記車両（Ｖ）の制御システム（ＳＣ）によって前記車両（Ｖ）の始動を認証するのに適切した前記遠隔車両管理サーバ（ＳＤＧＶ）、を含むことを特徴とする、システム（ＳＹＳ）。
【請求項１１】
１つまたは複数のプロセッサで実行された場合に、請求項１から９のいずれか一項に記載の車両（Ｖ）を利用可能にするための前記方法を実施するための命令を含むコンピュータプログラム。
【発明の詳細な説明】
【技術分野】
【０００１】
本発明は、一般に、自動車の分野に関し、より具体的には、ユーザが、とりわけ、車両のレンタルまたはカーシェアリングサービスの状況において、車両を利用可能にするための方法に関する。
【背景技術】
【０００２】
ほとんどの車両レンタルまたはカーシェアリングサービスでは、車両の予約を望むユーザは、この車両を貸し出す、またはシェアするサービスマネージャから車両のキーまたはフォブを受け取らなければならず、そのことが、ユーザおよびマネージャを拘束する。キーまたはフォブはそれぞれ、キーで作動する車両またはキーレス車両のそれぞれを始動可能にする、ユーザの一般的な識別子であることに留意されたい。この後者の種類の車両は、車両のコンピュータによって識別されて車両の始動を承認するフォブを使用し、次いで、始動ボタンを押すことによって実行される。

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【０００３】
車両レンタルおよびカーシェアリングサービスのより幅広い利用を妨害するこの抑制を取り除くために、キーまたはフォブを譲渡することなく、カーシェアまたはレンタルを利用可能にするために提供するシステムが、想像されてきた。このことは、例えば、日本特許第２０１１０４４１１２号明細書および中国特許第１０１８３３７２９号明細書で説明されるカーシェアリングシステムに対するケースであり、それらの明細書では、予約は、インターネット型公共データネットワークを使用することによって、携帯電話を介してオンラインで実行される。その場合、携帯電話は、車両と通信し、ユーザを識別し、車両のドアを解錠する。

【０００４】
それにもかかわらず、これらのシステムは、ユーザを識別するために、車両に搭載される、レンタルまたはカーシェアセットアップ専用の装置を必要とするという欠点を示し、これには、そのような装置を工業化する観点から、コストがかかり、制限的である。

【０００５】
さらに、この装置は、外部から視認可能であることが多く、容易にバイパスされ、その車両を始動することを可能にすることができる。これは、例えば、そのような装置が車両のフォブを備える場合であり、または単純なオープンリレーを含み、ユーザが識別される前に、イグニッションキーで車両が始動することを防止する場合である。

【０００６】
仏国特許出願第１２５９４９９号明細書には、ユーザが自身の携帯電話から遠隔サーバにコールすることによって、カーシェア車両のドアを遠隔で解錠するカーシェアリングシステムが記載されている。この解錠順序は、イグニッションキーが（キーで作動する車両に対して）挿し込まれると、または始動認証が（キーレス車両に対して）得られると、そのキーにより、またはキーレス車両の場合には始動ボタンを押すことにより、車両を始動する。さらに、遠隔サーバは、ユーザおよびカーシェア車両を同時に識別しなければならない。したがって、このシステムは、ドアの解錠と始動との間の非常に短い時間の間の車両のセキュリティを保証せず、車両の製造者に特有であることが多い車両管理サーバでのカーシェアサービスの統合を必要とするという欠点を示す。

【先行技術文献】
【特許文献】
【０００７】
【特許文献１】日本特許第２０１１０４４１１２号明細書
【特許文献２】中国特許第１０１８３３７２９号明細書
【特許文献３】仏国特許出願第１２５９４９９号明細書

【発明の概要】
【発明が解決しようとする課題】
【０００８】
本発明の目的の一つは、キーを譲渡することなく車両を利用可能にするための方法およびシステムを提供することによって、先行技術の欠点の少なくとも一部に対処することであり、それにより、車両のオーナーに対して良好なレベルのセキュリティを提供し、標準通信車両のために開発された標準ＴＣＵ（Ｔｅｌｅｍａｔｉｃｓ Ｃｏｎｔｒｏｌ Ｕｎｉｔ：テレマティクス・コントロール・ユニット）に加えて、カーシェアリングのための特定の搭載ユニットを必要としない。

【課題を解決するための手段】
【０００９】
この目的を達成するために、本発明は、車両を利用可能にするための方法を提案し、本方法は、ユーザリクエストに応答して、遠隔車両管理サーバから車両の少なくとも１つのドアの解錠を可能にするメッセージを送信するステップを含み、前記ユーザリクエストは、前記ユーザの識別および前記車両の前記ユーザによる使用の認証の対象を形成しており、本方法はさらに、前記解錠を可能にする前記メッセージとは別に、前記遠隔車両管理サ

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ーバから前記車両の制御システムによって車両の始動を認証するメッセージを送信するステップをさらに含むことを特徴とする。

【００１０】

前記解錠を可能にするメッセージおよび車両の始動を認証するメッセージを送信するステップは、その後にこれらのメッセージを車両に送信し、ユーザ識別および認証がこれと同じ遠隔サーバによって、もしくは別の遠隔サーバによって実行される前記遠隔サーバによって、またはユーザを識別ならびに認証する場合に割り当てられた遠隔サーバによって間接的に実行され、車両と通信することにより遠隔解錠および始動認証を可能にする遠隔サーバに前記メッセージを送信する。

【００１１】

本出願において、サーバに適用される「遠隔」という用語は、車両から、ならびにユーザから遠隔であるという意味であり、「解錠」という用語は、車両のドアの電気的解錠に適用する。

【００１２】

本発明によって、カーシェア車両の予約は、例えば、携帯電話または固定端末を介して、車両内の特定のカーシェア関連機器がなくても、オンラインで実行され、後者は、ユーザの識別において介入する必要がない。実際に、ますます多くの最近の車両が、車両関連データを遠隔サーバにアップロードし、さらにこの遠隔サーバが遠隔に車両のある種の機能を作動することを可能にするための電気通信ユニットを備えている。したがって、本発明による車両を利用可能にするための方法は、元々カーシェアリングのためではない、車両内にすでに存在しているサービス部品を応用し、それにより、個々のユーザによるこの方法の実施を容易にする。

【００１３】

先行技術システムとは異なり、本発明では、車両ドアの遠隔解錠は、車両の始動を許可しない。これは、車両の始動が、車両に、この解錠を許可するメッセージ以外のメッセージを受信し、さらに遠隔で車両に送信することを必要とするためであり、この他のメッセージは、車両の始動を認証する前記メッセージである。したがって、車両ドアの遠隔解錠が、車両の近くで実行されなかった場合に、別の人が盗むためにその車両を利用可能にしないことをユーザに保証する。同様に、車両がカーシェアモードのままである場合に、車両のイグニッションキーまたはフォブが車両のグローブボックス内にあると仮定すると、部外者が、強制エントリーによってこのキーまたはこのフォブを奪うことができるということにより、その人が車両を始動することを許可しない。

【００１４】

本発明による車両を利用可能にするための方法の有利な特徴によれば、利用の識別および認証は、前記遠隔車両管理サーバから分けられた遠隔ユーザサーバによって実行され、少なくとも１つのドアの解錠を可能にする前記メッセージは、前記遠隔ユーザサーバによる前記ユーザリクエストを処理するステップの後、前記遠隔ユーザサーバによって送信された解錠メッセージを受信すると、前記車両に前記遠隔車両管理サーバによって送信され、前記車両の始動を認証する前記メッセージは、前記遠隔ユーザサーバによって送信されたプロテクト解除メッセージを受信すると、前記車両に前記遠隔車両管理サーバによって送信され、前記解錠およびプロテクト解除メッセージは、前記ユーザの識別子が欠如している前記遠隔車両管理サーバに前記遠隔ユーザサーバによって送信される。

【００１５】

この出願では、「プロテクト解除」とは、制御システムの遠隔解錠、車両の始動の認証を意味する。

【００１６】

遠隔ユーザサーバと遠隔車両管理サーバとの間のこのインターフェースは、この後者の遠隔サーバが、例えば、カーシェアされる車両の製造者に属することを可能にし、遠隔ユーザサーバが、車両のオーナー（私人またはサービスオペレータ）によって開発されたウェブサーバであることを可能にする。したがって、本発明のこの特徴は、自動車分野での

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専門家ではない人々、例えば、都合のよい空き時間の間だけ、このように自身の車両をカーシェアすることができる個人ユーザによるカーシェアリングアプリケーションの開発を促進する。

【００１７】

本発明による車両を利用可能にするための方法の別の有利な特徴によれば、前記遠隔車両管理サーバは、前記遠隔ユーザサーバが前記車両に関する可変パラメータの値を前記ユーザから受信した場合のみ、前記車両の始動を認証する前記メッセージを送信し、前記値は、前記遠隔車両管理サーバによって、または前記遠隔ユーザサーバによって事前に記録された値に対応する。

【００１８】

したがって、始動認証は、ユーザが遠隔ユーザサーバに、車両の走行距離計に表示される走行距離、車両の燃料レベル、または車両のメインバッテリの充電レベルなどの、車両に関する値を供給した場合のみに、車両のエンジンの制御システムによって与えられる。このことは、この認証が与えられた場合にユーザを再識別すること、および、提供される値が車両の計器パネルを見ることを要求するため、ユーザが車両付近に、または車両内部にいる場合にこの認証をもたらすことを提供する。したがって、そのドアが解錠された後に車両が盗まれる危険性を低減する。「車両に関する値」とは、この場合、車両によって提供される値、したがって、あるいは車両内のマルチメディアスクリーン上に表示される乱数値を意味することが理解されよう。

【００１９】

本発明による車両を利用可能にするための方法の別の有利な特徴によれば、前記車両の前記制御システムは、前記車両のキーまたはフォブが識別された後、および前記車両が少なくとも１つのドアの解錠を許可し、前記車両の始動を認証する前記メッセージを受信した後にのみ、前記車両の始動を認証する。

【００２０】

本発明による車両を利用可能にするための方法の別の有利な特徴によれば、前記遠隔車両管理サーバは、前記車両のドアの手動開放が検出された後にのみ、前記車両の始動を認証する前記メッセージを送信する。

【００２１】

この特徴は、車両の始動を認証する前に、ユーザが車両のキーまたはフォブを受け取ることができたことを確かめることを提供し、したがって、車両を利用可能にするための手順を確実にすることを提供する。この検出は、例えば、標準テレマティクス・コントロール・ユニットを介して遠隔サーバと通信する車両によって実行することができる。

【００２２】

車両の始動を認証する制御システムは、車両のイグニッションキーまたはフォブの成功認証や、車両セキュリティコンピュータの正確な動作などを含む、複数の始動基準を検証するコンピュータに格納される。キーまたはフォブは、例えば、車両のグローブボックス内で共有され、車両のユーザが利用可能である。遠隔車両管理サーバによって送信される、車両の解錠およびそれに続くプロテクト解除を可能にする２つの独立したメッセージの受信を始動基準に追加することによって、始動基準の１つをエミュレートすることによるシステムのハッキングの危険性を低減する。

【００２３】

本発明による車両を利用可能にするための方法の別の有利な特徴によれば、前記遠隔ユーザサーバは、前記遠隔ユーザサーバが、前記遠隔車両管理サーバと前記車両が通信することを可能にする通信ネットワークの利用可能率を検出する、および／または前記ユーザから登録簿検証メッセージを受信するまで、前記ユーザによる前記車両の返却を認証しない。

【００２４】

したがって、車両がユーザによって返却される場合、すなわち、ユーザがカーシェアリングされた車両を返すことを望む場合、遠隔車両管理サーバは、車両が良好な状態である

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ことを遠隔ユーザサーバが検証した後、遠隔で車両を再プロテクトする。ユーザが車両の標準テレマティクス・コントロール・ユニットと同じ通信ネットワークを必ずしも使用しないこと、したがって、車両が遠隔車両管理サーバと通信することができない場所でユーザが電話によって車両の返却を要求するかもしれないことに留意されたい。

【００２５】

本発明による車両を利用可能にするための方法の別の有利な特徴によれば、前記方法は、前記ユーザによる前記車両の予約の前に、前記ユーザが前記遠隔ユーザサーバに、車両の少なくとも１つのドアの解錠を可能にする前記メッセージの送信を所定の期間だけ遅延するための値を供給するステップを含む。

【００２６】

したがって、ユーザが、利用可能にすることをカーシェア車両に要求する一方で、数分後にその車両と合流することを考えている場合、ユーザは、車両の解錠を遅延し、そのドアが解錠される前に車両と合流するための時間を有することができる。これはまた、ユーザが、例えば、電気通信ネットワークの遅延による、車両を利用可能にするための電話によるリクエストの送信と、車両の解錠との間の待ち時間を予想することを可能にする。これはまた、例えば、車両が停車している場所で、ユーザの携帯端末が、適合可能な電気通信ネットワークと十分に繋がらない場合に、ユーザが、リスクをとることなく、車両から離れた場所で車両を利用可能にするよう要求することを可能にする。さらに、したがって、車両を利用可能にするための要求と、車両の解錠との間に経過するに違いない時間を評価するための責任は、ユーザの裁量に委ねられる。

【００２７】

本発明による車両を利用可能にするための方法の別の有利な特徴によれば、車両の少なくとも１つのドアの解錠を可能にするメッセージを送信するためのステップは、ユーザと前記車両との間の距離を判断するためのステップの後のみに、前記判断ステップの間に判断された距離が所定の閾値未満である場合に、実行される。

【００２８】

この特徴は、ユーザに車両を利用可能にし、車両を解錠する間の遅延を減らし、ユーザが車両を引き継ぐ前に車両または車両の内部を盗難されるリスクを限定する。

【００２９】

本発明による車両を利用可能にするための方法の別の有利な特徴によれば、車両の少なくとも１つのドアの解錠を可能にする前記メッセージの前記車両による受信時に、前記車両は、視覚的および／または可聴ドア開放指示機能を抑制する。

【００３０】

したがって、車両の解錠は周囲に示されず、それにより、さらに、ユーザが車両を引き継ぐ前に、車両または車両の内部を盗難されるリスクを限定する。

【００３１】

本発明はまた、本発明による車両を利用可能にするための方法を実施するための手段を含むことを特徴とする車両を利用可能にするためのシステムに関し、前記手段は、ユーザを識別し、ユーザリクエストの受信時に前記ユーザによる前記車両の使用を認証するのに適切であり、遠隔車両管理サーバと通信するのに適切である遠隔ユーザサーバを含み、前記遠隔車両管理サーバは、前記遠隔ユーザサーバによって送信された解錠メッセージの受信に応じて前記車両の少なくとも１つのドアの解錠を可能にするメッセージを前記車両に送信するのに適切であり、前記遠隔車両管理サーバは、前記解錠を可能にする前記メッセージとは別にメッセージを前記車両に送信し、遠隔ユーザサーバによって送信されたプロテクト解除メッセージの受信時に前記車両の制御システムによって前記車両の始動を認証するのに適切である。

【００３２】

最後に、本発明は、１つまたは複数のプロセッサで実行された場合に、本発明により車両を利用可能にするための方法を実施するための命令を含むコンピュータプログラムに関する。

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【００３３】
本発明による車両を利用可能にするためのシステムおよび本発明によるコンピュータプログラムは、本発明による車両を利用可能にするための方法のものと同様の利点を示す。
【００３４】
他の特徴および利点は、図面を参照して説明される好適な実施形態について読むことで、より明確になるであろう。
【図面の簡単な説明】
【００３５】
【図１】この好適な実施形態における、本発明による車両を利用可能にするためのシステムを示す図である。
【図２】この好適な実施形態における、本発明による車両を利用可能にするための方法のステップを示す図である。
【図３】この好適な実施形態における、本発明による車両を利用可能にするための方法の他のステップを示す図である。
【発明を実施するための形態】
【００３６】
図１で示される本発明の好適な実施形態によれば、本発明により車両を利用可能にするためのシステムＳＹＳは、２つのサーバ、すなわち、本発明のユーザの管理専用の遠隔ユーザサーバＳＵＤと、車両の遠隔管理専用の遠隔車両管理サーバＳＤＧＶとを含む。
【００３７】
変形例として、本発明による車両を利用可能にするためのシステムは、ユーザと車両との両方を管理する唯一のサーバを含む。
【００３８】
本発明の主な変形実施形態において、サーバＳＵＤは、ユーザＵなどのユーザを識別および認証するための手段と、これらのユーザによって送信されるリクエストを処理するための手段とを含む。例えば、サーバＳＵＤは、車両Ｖのオーナー（私人またはサービス会社とすることができる）によって開発されたウェブサーバであり、またはカーシェアリングもしくはカーレンタル会社のサーバである。車両または複数車両に対する予約管理手段と、ユーザへ課金するための手段と、サーバＳＤＧＶなどの１つまたは複数のサーバと通信するための手段を含み、サーバＳＤＧＶは、例えば、車両製造者のサーバであり、車両Ｖの通信デバイスＴＣＵなどの、遠隔で管理する車両に搭載された通信手段で遠隔に通信するのに適している。
【００３９】
サーバＳＵＤとサーバＳＤＧＶとの間の通信手段は、この実施形態において、ＡＰＩ（Ａｐｐｌｉｃａｔｉｏｎ Ｐｒｏｇｒａｍｍｉｎｇ Ｉｎｔｅｒｆａｃｅ：アプリケーション・プログラム・インターフェース）型のコンピュータインターフェースを含むが、ショートメッセージ、すなわち、ＳＭＳ（Ｓｈｏｒｔ Ｍｅｓｓａｇｅ Ｓｅｒｖｉｃｅ：ショート・メッセージ・サービス）メッセージに基づくインターフェースなどの他の種類のインターフェースもまた、使用することができる。サーバＳＵＤとサーバＳＤＧＶとの間のインターフェースは、例えば、ＣＯＲＢＡ（Ｃｏｍｍｏｎ Ｏｂｊｅｃｔ Ｒｅｑｕｅｓｔ Ｂｒｏｋｅｒ Ａｒｃｈｉｔｅｃｔｕｒｅ：共通オブジェクトリクエストブローカアーキテクチャ）型またはＳＯＡＰ（Ｓｉｍｐｌｅ Ｏｂｊｅｃｔ Ａｃｃｅｓｓ Ｐｒｏｔｏｃｏｌ：簡易オブジェクト・アクセス・プロトコル）型のオブジェクトバスを使用し、ＸＭＬ（ｅＸｔｅｎｄｅｄ Ｍａｒｋｕｐ Ｌａｎｇｕａｇｅ：拡張マークアップ言語）またはＪａｖａでのサーバＳＤＧＶへのリクエストのサーバＳＵＤでのシンプルコーディングをもたらす。これらのリクエストは、主に、製造者識別子ＶＩＮ（Ｖｅｈｉｃｌｅ Ｉｄｅｎｔｉｆｉｃａｔｉｏｎ Ｎｕｍｂｅｒ：車両識別番号）によりこのリクエストにおいて識別される、カーシェア車両またはレンタル車両のドアをサーバＳＤＧＶに遠隔で解錠するよう要求する、解錠リクエスト、および製造者識別子ＶＩＮ（Ｖｅｈｉｃｌｅ Ｉｄｅｎｔｉｆｉｃａｔｉｏｎ Ｎｕｍｂｅｒ：車両識別番号）によりこのリクエ

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ストにおいて識別される、カーシェア車両またはレンタル車両の始動を遠隔で認証するようサーバＳＤＧＶに要求する、プロテクト解除リクエストである。

【００４０】

他のリクエストもまた、とりわけ、サーバＳＵＤなどの１つまたはいくつかのサーバをサーバＳＤＧＶに登録し、これらのサーバを識別および認証するが、さらにとりわけ、サーバＳＤＧＶに車両がシェアリングまたはレンタルモードに入ったことを通知し、この車両のエンジンに対する始動システムがサーバＳＤＧＶから認証を受信し、始動するために必要な機能などの、車両のある種の遠隔機能を作動することを可能にするために使用することができ、特に、車両がシェアリングまたはレンタルモードにある場合、車両のキーまたはフォグが車両内にあるが、（この遠隔保護により）「作動せず」、車両を始動できないため、その自動車固定具を遠隔で保護する。したがって、サーバＳＤＧＶは、ある条件下で車両の始動を遠隔で認証し、車両がシェアリングまたはレンタルモードのままであることをサーバＳＤＧＶに通知し、シェアリングまたはレンタルモードのための特定の上記した機能を停止し、サーバＳＤＧＶに車両の位置を特定するよう要求し、サーバＳＤＧＶに（シェアリングまたはレンタルモードにある）車両のドアを遠隔で施錠するよう要求し、またはサーバＳＤＧＶに、（カーシェアまたはレンタルモードで）サーバＳＤＧＶから認証メッセージを受け取るまで車両の遠隔始動を防止するよう要求する。

【００４１】

本発明により車両を利用可能にするためのシステムＳＹＳは、ユーザＵが、例えば、携帯端末ＴＭによって、レンタルまたはカーシェア車両Ｖをオンラインで予約することを可能にする。

【００４２】

例えば、携帯端末ＴＭは、ＧＳＭ（Ｇｌｏｂａｌ Ｓｙｓｔｅｍ ｆｏｒ Ｍｏｂｉｌｅ ｃｏｍｍｕｎｉｃａｔｉｏｎｓ：汎欧州デジタル移動電話方式）またはＵＭＴＳ（Ｕｎｉｖｅｒｓａｌ Ｍｏｂｉｌｅ Ｔｅｌｅｃｏｍｍｕｎｉｃａｔｉｏｎｓ Ｓｙｓｔｅｍ：ユニバーサル移動体通信システム）チップを備えた電話、または標準ＩＥＥＥ８０２．１１を用いるＷｉ－Ｆｉ通信手段を備えたポータブルコンピュータまたは携帯情報端末である。それにより、ユーザＵが、無線通信ネットワークを使用して、ウェブインターフェースを介して、サーバＳＵＤとデータを交換することを可能にする。変形例として、サーバＳＵＤは、アナログおよび／またはデジタル電話接続を介して、ユーザＵとの通信を可能にする音声認識手段を有する。別の変形例において、ユーザは、ユーザリクエストをサーバＳＵＤに電気的に入力するカーシェアリングまたはカーレンタルサービスの担当者に電話する。

【００４３】

車両Ｖは、データをサーバＳＤＧＶに送信するための、およびデータをサーバＳＤＧＶから受信するための、通信デバイスＴＣＵを含む。デバイスＴＣＵによって送信されたデータは、とりわけ、車両Ｖの位置についてであり、燃焼エンジンを含む場合の燃料レベルおよび／または電気エンジンを含む場合のメインバッテリの充電レベルであり、走行距離であり、可能性のある警告メッセージであり、実行すべき次のメンテナンスサービスの日付などである。この目的を達成するために、通信デバイスＴＣＵは、ショートメッセージをサーバＳＤＧＶに送信するためのＧＳＭまたはＵＭＴＳチップを含み、電話機ネットワークとの通信インターフェースを含む。変形例として、通信デバイスＴＣＵは、ＵＳＳＤメッセージ（Ｕｎｓｔｒｕｃｔｕｒｅｄ Ｓｕｐｐｌｅｍｅｎｔａｒｙ Ｓｅｒｖｉｃｅ Ｄａｔａ：非構造付加サービスデータ）によって、サーバＳＤＧＶと通信し、または、例えば、通信デバイスＴＣＵが第３世代通信チップを含む場合にショートメッセージの受信時に作動するＩＰデータ接続上でのＨＴＴＰＳリクエストによって通信する。

【００４４】

通信デバイスＴＣＵは、ＣＡＮ（Ｃｏｎｔｒｏｌｌｅｒ Ａｒｅａ Ｎｅｔｗｏｒｋ：コントローラエリアネットワーク）データバスを介して車両Ｖの制御システムＳＣに接続され、車両Ｖの始動を調整する。この制御システムＳＣは、車両のメインコンピュータな

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どの車両の他のコンピュータと通信する車両のコンピュータであり、車両Ｖの１つまたは複数のエンジンを制御する。制御システムＳＣは、車両Ｖの始動を認証する前に、いくつかの条件を検証する。これらの条件は、例えば、ステアリングコラムの解錠、車両のセキュリティコンピュータの正確なスタートアップ、および車両のイグニッションキーまたはフォブの識別を備える。本発明により、車両Ｖがカーシェアモードにある場合、制御システムＳＣは、後者が通信デバイスＴＣＵを介してサーバＳＤＧＶから、一方で、車両Ｖのドアの解錠を認証する第１のメッセージ、および他方で、車両Ｖの始動を認証する、第１のメッセージとは異なる第２のメッセージを受信するまで車両の始動を認証しない。

【００４５】

図２を参照すると、本発明により車両Ｖを利用可能にするための方法はステップＥ１からＥ１１を含むアルゴリズムの形式で表される。

【００４６】

この方法のステップのほとんどは、この実施形態において、本発明によるシステムＳＹＳによって、すなわち、サーバＳＵＤおよびＳＤＧＶの一方または他方によって、ソフトウェアおよび／またはハードウェア方式で実施される。いくつかのステップは、車両Ｖ自体によって実施される。

【００４７】

ステップＥ１は、遠隔ユーザサーバＳＵＤによるメッセージＭ１の受信である。このメッセージＭ１は、携帯端末ＴＭによって送信されたユーザリクエストであり、車両Ｖが利用可能になることを要求し、車両Ｖは、例えば、ユーザＵと遠隔ユーザサーバＳＵＤとの事前交換の間に予約されている。必要であるなら、このユーザリクエストは、ユーザＵによって選択された遅延期間を含み、メッセージＭ１がサーバＳＵＤによって受信された後、この遅延期間だけ、車両Ｖのドアの解錠を遅らせる。この期間は、例えば、ユーザの携帯端末ＴＭ上のグラフィカルインターフェースで、ユーザＵによって選択される。したがって、ユーザＵは、例えば、メッセージＭ１が送信された後、１０、１５、２０、または３０秒、または１分から数分間でドアを解錠するよう選択し、この解錠前にユーザが車両Ｖと合流することを可能にする。

【００４８】

次のステップＥ２は、遠隔ユーザサーバＳＵＤによってメッセージＭ１で受信したユーザリクエストの処理である。このステップでは、遠隔サーバＳＵＤは、ユーザの電話番号によって、および／または識別子ならびにパスワードによって、ユーザＵを識別および認証し、遠隔サーバＳＵＤによって提供されるカーシェアリングもしくはレンタルサイトに接続する。次いで、遠隔サーバＳＵＤは、ユーザＵが使用することを認証する前に、車両Ｖの利用可能率および状態を検証する。本発明のこの例示的実施形態において、ユーザＵが、車両Ｖを使用するために識別、認証、および承認されたと仮定する。ユーザは、必要なら、このステップＥ２において、遠隔ユーザサーバＳＵＤから車両Ｖを使用するための認証の確認を受け取る。

【００４９】

次のステップＥ３は、ステップＥ１で受信した遅延期間が、そのような遅延期間がメッセージＭ１に含まれていた場合に、期限が切れた可能性のある場合に、メッセージＭ２を遠隔ユーザサーバＳＵＤによって遠隔車両管理サーバＳＤＧＶに送信することである。このメッセージＭ２は、解錠リクエストであり、車両Ｖのドアの解錠を要求する。このリクエストは、車両ＶのＶＩＮ識別子を含むが、ユーザＵの識別子は含まず、これは、遠隔ユーザサーバＳＵＤによってのみ管理される。変形例として、遠隔ユーザサーバＳＵＤによって遠隔車両管理サーバＳＤＧＶに送信されたメッセージＭ２は、メッセージＭ１で受信された可能性のある遅延期間を含み、したがって、遠隔ユーザサーバＳＵＤによって管理されるこの遅延の代わりに、ステップＥ４でメッセージＭ３を送信する場合に遅延を管理する遠隔車両管理サーバＳＤＧＶである。

【００５０】

次のステップＥ４は、遠隔車両管理サーバＳＤＧＶによって車両Ｖの通信デバイスＴＣ

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ＵにメッセージＭ３を送信することであり、このメッセージＭ３は、車両Ｖのドアを解錠するためのリクエストである。必要なら、このステップは、ユーザＵが車両Ｖから５００メートル未満にいることを検証することが条件である。当然、他の距離閾値を使用することができる。この検証を行うために、遠隔ユーザサーバＳＵＤは、例えば、電話オペレータの位置サーバを使用することによって、ユーザＵの携帯端末ＴＭの位置を特定し、メッセージＭ３でユーザＵの位置を送信する。遠隔車両管理サーバＳＤＧＶは、車両Ｖの通信デバイスＴＣＵによって送信されたデータによって車両Ｖの位置を把握することに留意されたい。変形例として、ユーザＵが車両Ｖから５００メートル未満にいることの検証は、遠隔ユーザサーバＳＵＤによって実行され、次いで、車両Ｖの位置は、遠隔車両管理サーバＳＤＧＶによって、遠隔ユーザサーバＳＵＤに送信される。ユーザＵの、および車両Ｖのこの地理的位置特定は、当然、オプションであり、というのも、高いレベルの位置決め精度を要するためであり、理想的な状況は、ユーザＵが、一体型ＧＰＳ（Ｇｌｏｂａｌ Ｐｏｓｉｔｉｏｎｉｎｇ Ｓｙｓｔｅｍ：全地球測位システム）を伴う携帯電話を有していることである。さらに、例えば、ユーザが地下にいる場合、ユーザＵの地理的位置特定は、必ずしも、少なくとも正確には、可能ではない。

【００５１】

次のステップＥ５は、車両Ｖの解錠であり、すなわち、実際には、すべてのアクセスドアの電気的解錠である。このステップは、メッセージＭ３の受信時に、車両Ｖ自体によって実行される。好ましくは、車両は、この解錠が車両Ｖのイグニッションキーまたはフォブによって引き起こされた場合に通常実施される、視覚的および／または可聴ドア解錠指示を抑制する。

【００５２】

次のステップＥ６は、携帯端末ＴＭから、遠隔ユーザサーバＳＵＤへの、メッセージＭ４の送信である。このメッセージＭ４は、計器パネルに表示された車両Ｖの走行距離の値を含み、ユーザは、その値を自身の携帯端末ＴＭに入力しており、次いで、ユーザにこのデータを入力するよう要求するのに適切なグラフィカルインターフェースを介してそれを送信した。変形例として、ユーザは、遠隔ユーザサーバＳＵＤによって、または携帯端末ＴＭで提供されるソフトウェアアプリケーションによって、走行距離の代わりに、またはそれに加えて、車両Ｖに関するデータの１つまたは他の項目に対して尋ねることができる。データのこれらの項目は、始動認証がもたらされる場合、ユーザが間違いなく車両内にいること、または車両の非常に近くにいることを確実にすることを提供する。したがって、それらは、好ましくは変数であり、車両Ｖの燃料レベルまたは充電レベルなどであるが、ナンバープレートの番号または車両に特有のバーコードなど、固定されている可能性もある。しかしながら、車両に関する固定データの項目は、同じ車両の１回の使用から別の使用で変化しないため、車両から遠隔で事前に取得することができるという欠点を有する。車両内のマルチメディアスクリーンによって表示されるランダムデータの項目は、この理由により、車両Ｖがサーバ ＳＤＧＶによって利用可能になるたびにこの値を生成することが可能である限り、車両に関するデータのより安全な項目を形成する。本発明のこの実施形態において、車両の走行距離値は、このステップＥ６でユーザＵによって入力される値になるよう選択される。これは、ユーザＵが車両を手動で開いたこと、および車両のキーまたはフォブを受け取り、車両の計器パネルのスイッチを入れたことを確認することを提供し、このことは、この走行距離値を取得するための必要条件である。したがって、その場合、これは、ユーザＵが車両を間違いなく発見し、車両内に座った場合のみ、始動が認証されるという信頼性をもたらす。

【００５３】

次のステップＥ７は、遠隔ユーザサーバＳＵＤから遠隔車両管理サーバＳＤＧＶへのメッセージＭ５の送信である。このメッセージＭ５は、プロテクト解除メッセージであり、すなわち、車両Ｖを始動するための認証を与えるプロテクト解除リクエストである。このリクエストは、車両ＶのＶＩＮ識別子およびメッセージＭ４で受信した走行距離を含むが、ユーザＵの識別子は含まず、これは、遠隔ユーザサーバＳＵＤによってのみ管理される

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【００５４】

次のステップＥ８は、通信デバイスＴＣＵによりサーバＳＤＧＶに送信された最後の走行距離値とこの走行距離値とを比較することによる、ステップＥ７で受信した走行距離の妥当性についての、遠隔車両管理サーバＳＤＧＶによる検証である。このステップは、計器パネルのスイッチがオンになった後にのみ走行距離が利用可能になるため、ユーザＵが車両Ｖのドアを間違いなく手動で開けたことを検証する。

【００５５】

このステップＥ８では、メッセージＭ５で受信した走行距離値が有効ではないと遠隔サーバＳＤＧＶが観測した場合、または通信デバイスＴＣＵから車両Ｖが再び施錠されたことを通知するメッセージを遠隔サーバＳＤＧＶが受信した場合、本方法は、ステップＥ１１に進み、そうでなければ、本方法は、ステップＥ９に進む。具体的には、車両Ｖは、ドアの手動開放が、完全な電気的解錠の後２分間、検出されなかった場合、車両のドアを自動的に再施錠することに留意されたい。

【００５６】

ステップＥ１１は、ステップＥ９へ進むような不具合の後の、すなわち、遠隔車両管理サーバＳＤＧＶが、車両の始動を認証するメッセージを通信デバイスＴＣＵに送信できなかった場合の、ユーザＵと遠隔サーバＳＵＤとの間の新規交換からなる。ユーザＵに対して、この交換は、遠隔ユーザサーバＳＵＤへの新規リクエストを介して車両Ｖを利用可能にするための再要求からなり、再実行されるステップＥ３からＥ８に従って、新規メッセージＭ２からＭ５の送信および車両の走行距離の新規検証をすることになるであろう。これらの新規交換は、車両Ｖのドアが再施錠されたことを観測したユーザの主導で、またはステップＥ８で遠隔車両管理サーバＳＤＧＶによってステップＥ９へ進むような不具合について通知された場合に遠隔ユーザサーバＳＵＤの主導で行われる。この後者の場合では、遠隔ユーザサーバＳＵＤは、例えば、ユーザの携帯端末ＴＭでユーザＵに、後に続く手順についてユーザに通知するメッセージを送信する。通信デバイスＴＣＵは、遠隔車両管理サーバＳＤＧＶに車両Ｖのドアの再施錠について必ずしも通知せず、この特徴はオプションであることに留意されたい。したがって、ユーザＵがリクエストを再送信し、車両Ｖが解錠されなかったことをユーザが観測した場合に車両Ｖを利用可能にするように、携帯端末ＴＭに表示されるユーザインターフェースが直感的であることが必要である。

【００５７】

ステップＥ９は、遠隔車両管理サーバＳＤＧＶによって車両Ｖの通信デバイスＴＣＵにメッセージＭ６を送信することであり、このメッセージＭ６は、車両Ｖを始動するための認証である。

【００５８】

次のステップＥ１０は、車両Ｖを始動するための認証であり、認証は、制御システムＳＣによって、車両Ｖのエンジンの少なくとも１つに与えられる。このステップＥ１０は、通信デバイスＴＣＵがメッセージＭ３およびＭ６を受信した後、および車両Ｖのイグニッションキーまたはフォブが識別／認証された後、および他の始動基準が検証された後に行われる。通信デバイスＴＣＵがメッセージＭ６を受信した場合、制御システムＳＣに、遠隔車両管理サーバＳＤＧＶによって与えられたこの始動認証を送信する。

【００５９】

好ましくは、ユーザＵと遠隔ユーザサーバＳＵＤとの間の、遠隔ユーザサーバＳＵＤと遠隔車両管理サーバＳＤＧＶとの間の、遠隔車両管理サーバＳＤＧＶと通信デバイスＴＣＵとの間の、および通信デバイスＴＣＵと制御システムＳＣとの間のメッセージ交換は、暗号化される。さらに、この一連の交換の構成要素は、各メッセージが交換される前に、互いに識別および認証される。したがって、制御システムＳＣは、通信デバイスＴＣＵが認証された後にのみ、車両Ｖの始動を認証する。このデバイスは、単独で、事前に遠隔車両管理サーバを認証している。例えば、これらの認証は、従来の公開キーまたはプライベートキー、対称性または非対称性暗号化システムを使用する。

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【００６０】
ステップＥ１０の最後では、本方法は、ユーザＵによる車両Ｖの使用フェーズに進み、その場合、ユーザＵは、車両Ｖを始動して、使用することが可能となる。
【００６１】
ユーザＵが車両を返したい場合、使用のフェーズ後に、ユーザは、図３で示すステップＥ１２の後、遠隔車両管理サーバＳＤＧＶが通信デバイスＴＣＵと通信できること、すなわち、通信デバイスＴＣＵによって使用される通信ネットワークが車両Ｖで利用可能であることを検証しなければならない。
【００６２】
この通信ネットワークは、遠隔ユーザサーバＳＵＤと通信するために携帯端末ＴＭによって使用されるものと必ずしも同じではないこと、および他方で、ユーザＵが、ユーザの携帯端末ＴＭで使用することができる直感的インターフェースによって車両の返却手続きについてガイドされることに留意されたい。このインターフェースは、遠隔ユーザサーバＳＵＤで実施されるレンタルまたはカーシェアリングウェブサービスのインターフェースであるが、このインターフェースの実施は、携帯端末ＴＭと遠隔ユーザサーバＳＵＤとの間で配信することができる。
【００６３】
通信デバイスＴＣＵによって使用される通信ネットワークの利用可能率を検証するために、ユーザＵは、車両Ｖのマルチメディアインターフェースを見て、ネットワーク利用可能インジケータがあるかどうかを確認する。このインジケータがある場合、ユーザは、遠隔ユーザサーバＳＵＤに、ユーザの携帯端末ＴＭを介してこのことを通知する。このインジケータがない場合、ユーザＵは、通信デバイスＴＣＵによって使用される通信ネットワークが車両Ｖで利用可能である場所に、車両Ｖを移動しなければならない。
【００６４】
変形例として、または例えば、車両Ｖがネットワーク利用可能インジケータを表示することが可能なマルチメディアインターフェースを有さない場合、ユーザＵによって送信された返却リクエストの受信時に、遠隔ユーザサーバＳＵＤは、通信デバイスＴＣＵにテストメッセージを送信するサーバＳＤＧＶにリクエストを送信する。通信デバイスＴＣＵがサーバＳＤＧＶに応答する場合、後者は、遠隔ユーザサーバＳＵＤにこのことについて通知し、本方法は、次のステップＥ１３に進み、そうでなければ、遠隔ユーザサーバＳＵＤは、ユーザＵに、ネットワークが通信デバイスＴＣＵで利用可能である場所に車両Ｖを移動するよう要求し、ステップＥ１２が繰り返される。
【００６５】
ステップＥ１３は車両の登録簿ステップであり、ユーザＵによって実行される。このために、ユーザＵは、ユーザの携帯端末ＴＭ上のグラフィカルインターフェースを使用し、そのようなインターフェースにより、グローブボックス内の車両書類の存在、車両の良好状態、車両の駐車スペース番号などを確認または入力するために、ユーザがリストを容易に埋めることを可能となる。グラフィカルインターフェースはまた、ユーザが、車両の損傷部分の写真を挿入すること、および車両の３次元モデルに車両の損傷領域を明示することを可能にする。登録簿がグラフィカルインターフェースで検証されると、遠隔サーバＳＵＤに送信される。遠隔サーバＳＵＤとユーザとの間のメッセージ交換は、必要であれば、登録簿が不完全である場合に実施される。必要であれば、ユーザは、登録簿が車両の返却を妨げている問題を報告することになる場合、コールセンターと通信する。
【００６６】
このステップＥ１３では、車両Ｖの登録簿を完成させるのに要する条件は、一変形例において、車両Ｖの走行距離の新規値を備える。これは、この変形例において、メッセージＭ４においてステップＥ６でユーザによって提供された走行距離の値の検証が、遠隔車両管理サーバＳＤＧＶによって実行されないが、遠隔ユーザサーバＳＵＤによって実行されるからである。この変形例では、したがって、ステップＥ８およびＥ７は、ユーザが車両Ｖのドアの少なくとも１つを間違いなく手動で開けたことを検証するのが遠隔ユーザサー

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ＳＵＤであるため、切り替えられる。

【００６７】

次のステップＥ１４は、車両Ｖの遠隔保護である。このステップＥ１４では、遠隔車両管理サーバＳＤＧＶは、保護リクエストを、それを要求する遠隔ユーザサーバＳＵＤから受信して、遠隔で車両Ｖを保護する。このリクエストを受信すると、遠隔車両管理サーバＳＤＧＶは、通信デバイスＴＣＵに、車両Ｖの始動を抑制するメッセージを送信する。すなわち、車両Ｖの始動が、ステップＥ９でのメッセージＭ６などの新規認証メッセージの受信を必要とする。

【００６８】

次のステップＥ１５は、車両Ｖの遠隔施錠である。このステップＥ１５では、遠隔車両管理サーバＳＤＧＶは、施錠リクエストを、それを要求する遠隔ユーザサーバＳＵＤから受信して、遠隔で車両Ｖを施錠する。変形例として、この施錠リクエストの受信は、遠隔車両管理サーバＳＤＧＶが車両Ｖに対して遠隔施錠ステップＥ１５を実行するために不要である。

【００６９】

その場合、遠隔車両管理サーバＳＤＧＶは、通信デバイスＴＣＵに照会することによって、車両Ｖのキーまたはフォブが、車内に間違いなくあることを検証する。後者は、それ自体が、フォブ検出器に、またはキー検出器に接続される、車両内のコンピュータと通信する。車両の中には、キー検出器を備えていないものがあることに留意されたい。その場合、車内のキーの存在を検証することは、例えば、施錠リクエストが送信される前に、ユーザＵを照会することによってこの検証を実行する遠隔ユーザサーバＳＵＤによって管理される。

【００７０】

このステップＥ１５では、車内のキーまたはフォブの存在が遠隔車両管理サーバＳＤＧＶまたは遠隔ユーザサーバＳＵＤによって確認された場合、遠隔車両管理サーバＳＤＧＶは、メッセージを、それを要求する通信デバイスＴＣＵに送信し、車両Ｖを施錠する。車両のドアが間違いなく手動で閉められた場合、車両Ｖは、そのドアを施錠し、本方法は、ステップＥ１６に進む。そうでなければ、車内のキーまたはフォブの存在が検証されなかった場合、またはドアが適切に閉められなかった場合、ユーザＵは、ユーザの携帯端末ＴＭを介して、車内にキーがないため、またはドアが適切に閉められなかったため、車両を返却できないことを通知され、ステップＥ１５が繰り返される。

【００７１】

ステップＥ１６は、車両の返却であり、ステップＥ１２からＥ１５が正確に進められたことを条件とする。サーバＳＵＤは、ユーザＵに対するカーシェアリングまたはレンタルサービスの請求を停止する。

【００７２】

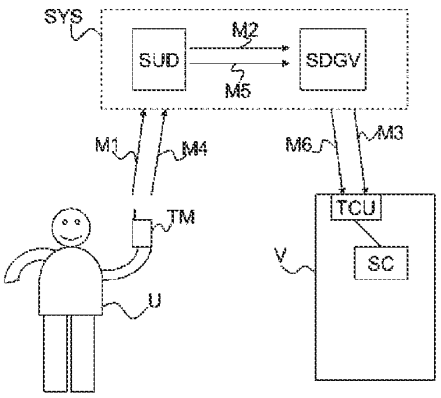
本発明による車両を利用可能にするためのシステムの実施形態および本発明による車両を利用可能にするための方法の実施形態は、この出願で説明したもの以外も想定することができることに留意されたい。とりわけ、この実施形態で説明したステップＥ１からＥ１６は、本発明を実施するためにすべてが必要不可欠ではなく、これらのステップのいくつか、またはそれらが並べられた方法は、異なるように実現することができる。例えば、ステップＥ１２からＥ１６は、実施しなくてもよく、車両Ｖ自体が、車両の登録簿をサーバＳＤＧＶに自動的にアップロードすることができ、ユーザによる車両の返却のためのリクエストの後、車両の１つまたは複数のエンジンの停止、グローブボックス内の車両のイグニッションキーまたはフォブの存在、車内に誰もいないこと、および車両のドアの手動閉鎖を検出するとすぐにドアを施錠し、車両の始動を防止することができる。

【００７３】

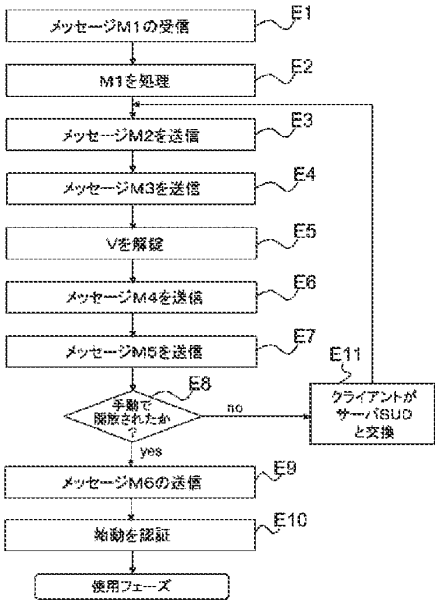
同様に、ユーザＵによって遠隔ユーザサーバＳＵＤに送信された走行距離値検証は、変形例として、遠隔ユーザサーバＳＵＤ自体によって実行され、遠隔車両管理サーバＳＤＧＶによっては実行されない。

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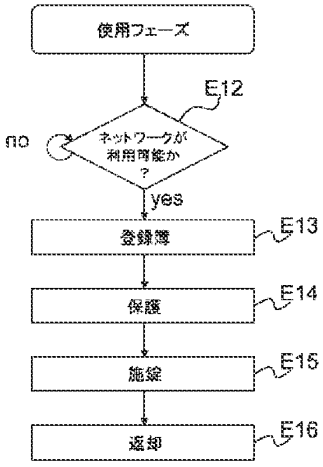
【図１】


SYS
SUD
M2
M5
SDGV
M1
M4
M6
M3
TM
TCU
SC
V
U

【図２】


メッセージM1の受信
E1
M1を処理
E2
メッセージM2を送信
E3
メッセージM3を送信
E4
Vを解錠
E5
メッセージM4を送信
E6
メッセージM5を送信
E7
E11
手動で開放されたか？
E8
no
クライアントがサーバSUDと交換
yes
メッセージM6の送信
E9
始動を認証
E10
使用フェーズ

【図３】


使用フェーズ
E12
no
ネットワークが利用可能か？
yes
登録簿
E13
保護
E14
施錠
E15
返却
E16

【国際調査報告】

INTERNATIONAL SEARCH REPORT

International application No
PCT/FR2014/050576

A. CLASSIFICATION OF SUBJECT MATTER
INV. B60R25/20 B60R25/04
ADD.

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)
B60R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2008/044087 A1 (RENAULT TRUCKS [FR]; VINCENT LOIC [FR]; CHEVRET GUILLAUME [FR]) 17 April 2008 (2008-04-17) claims	1,10,11
X	DE 103 39 476 B3 (BERNITZ GEORG [DE]) 4 May 2005 (2005-05-04) claims	1,10,11
X	EP 2 397 996 A2 (NCR CORP [US]) 21 December 2011 (2011-12-21) claims	1,10,11
A	US 2012/313796 A1 (LEE MIN-GU [KR] ET AL) 13 December 2012 (2012-12-13) claim 1	1-11

-/--

[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 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 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
1 July 2014	09/07/2014

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	Tamme, H

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

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INTERNATIONAL SEARCH REPORT

International application No
PCT/FR2014/050576

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 977 939 A2 (GM GLOBAL TECH OPERATIONS INC [US]) 8 October 2008 (2008-10-08) claim 1	1-11
A	JP 2011 044112 A (TOKAI RIKA CO LTD) 3 March 2011 (2011-03-03) cited in the application the whole document	1

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

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/FR2014/050576

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2008044087 A1	17-04-2008	NONE	
DE 10339476 B3	04-05-2005	DE 10339476 B3	04-05-2005
		EP 1708909 A1	11-10-2006
		GB 2421623 A	28-06-2006
		WO 2005021340 A1	10-03-2005
EP 2397996 A2	21-12-2011	EP 2397996 A2	21-12-2011
		US 2011307375 A1	15-12-2011
US 2012313796 A1	13-12-2012	KR 20120137729 A	24-12-2012
		US 2012313796 A1	13-12-2012
EP 1977939 A2	08-10-2008	DE 102007015869 A1	09-10-2008
		EP 1977939 A2	08-10-2008
JP 2011044112 A	03-03-2011	JP 5254905 B2	07-08-2013
		JP 2011044112 A	03-03-2011

Form PCT/ISA/210 (patent family annex) (April 2005)

RAPPORT DE RECHERCHE INTERNATIONALE

Demande internationale n°
PCT/FR2014/050576

A. CLASSEMENT DE L'OBJET DE LA DEMANDE
INV. B60R25/20 B60R25/04
ADD.

Selon la classification internationale des brevets (CIB) ou à la fois selon la classification nationale et la CIB

B. DOMAINES SUR LESQUELS LA RECHERCHE A PORTE

Documentation minimale consultée (système de classification suivi des symboles de classement)
B60R

Documentation consultée autre que la documentation minimale dans la mesure où ces documents relèvent des domaines sur lesquels a porté la recherche

Base de données électronique consultée au cours de la recherche internationale (nom de la base de données, et si cela est réalisable, termes de recherche utilisés)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERES COMME PERTINENTS

Catégorie*	Identification des documents cités, avec, le cas échéant, l'indication des passages pertinents	no. des revendications visées
X	WO 2008/044087 A1 (RENAULT TRUCKS [FR]; VINCENT LOIC [FR]; CHEVRET GUILLAUME [FR]) 17 avril 2008 (2008-04-17) revendications -----	1,10,11
X	DE 103 39 476 B3 (BERNITZ GEORG [DE]) 4 mai 2005 (2005-05-04) revendications -----	1,10,11
X	EP 2 397 996 A2 (NCR CORP [US]) 21 décembre 2011 (2011-12-21) revendications -----	1,10,11
A	US 2012/313796 A1 (LEE MIN-GU [KR] ET AL) 13 décembre 2012 (2012-12-13) revendication 1 -----	1-11

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[X] Voir la suite du cadre C pour la fin de la liste des documents

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Date à laquelle la recherche internationale a été effectivement achevée	Date d'expédition du présent rapport de recherche internationale
1 juillet 2014	09/07/2014

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Formulaire PCT/ISA/210 (deuxième feuille) (avril 2005)

RAPPORT DE RECHERCHE INTERNATIONALE

Demande internationale n°
PCT/FR2014/050576

C(suite). DOCUMENTS CONSIDERES COMME PERTINENTS

Catégorie*	Identification des documents cités, avec, le cas échéant, l'indication des passages pertinents	no. des revendications visées
A	EP 1 977 939 A2 (GM GLOBAL TECH OPERATIONS INC [US]) 8 octobre 2008 (2008-10-08) revendication 1 -----	1-11
A	JP 2011 044112 A (TOKAI RIKA CO LTD) 3 mars 2011 (2011-03-03) cité dans la demande le document en entier -----	1

Formulaire PCT/ISA/210 (suite de la deuxième feuille) (avril 2005)

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RAPPORT DE RECHERCHE INTERNATIONALE

Renseignements relatifs aux membres de familles de brevets

Demande internationale n°
PCT/FR2014/050576

Document brevet cité au rapport de recherche		Date de publication	Membre(s) de la famille de brevet(s)		Date de publication
WO 2008044087	A1	17-04-2008	AUCUN		
DE 10339476	B3	04-05-2005	DE	10339476 B3	04-05-2005
			EP	1708909 A1	11-10-2006
			GB	2421623 A	28-06-2006
			WO	2005021340 A1	10-03-2005
EP 2397996	A2	21-12-2011	EP	2397996 A2	21-12-2011
			US	2011307375 A1	15-12-2011
US 2012313796	A1	13-12-2012	KR	20120137729 A	24-12-2012
			US	2012313796 A1	13-12-2012
EP 1977939	A2	08-10-2008	DE	102007015869 A1	09-10-2008
			EP	1977939 A2	08-10-2008
JP 2011044112	A	03-03-2011	JP	5254905 B2	07-08-2013
			JP	2011044112 A	03-03-2011

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Ｆターム(参考) 5L049 CC11

US 20150343993A1

(19) United States

(12) Patent Application Publication

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(43) Pub. Date: Dec. 3, 2015

FERRIERES et al.

(54) METHOD OF MAKING A VEHICLE AVAILABLE AND CORRESPONDING SYSTEM FOR MAKING A VEHICLE AVAILABLE

(71) Applicant: RENAULT S.A.S., Boulogne Billancourt (FR)

(72) Inventors: Lionel FERRIERES, Gif Sur Yvette (FR); Eugenie LEVALLOIS, Versailles (FR); Jean-Marc DUBOIS, Tacoignieres (FR)

(73) Assignee: RENAULT S.A.S., Boulogne Billancourt (FR)

(21) Appl. No.: 14/761,464

(22) PCT Filed: Mar. 13, 2014

(86) PCT No.: PCT/FR2014/050576

§ 371 (c)(1),
(2) Date: Jul. 16, 2015

(30) Foreign Application Priority Data

Mar. 13, 2013 (FR) 1352213

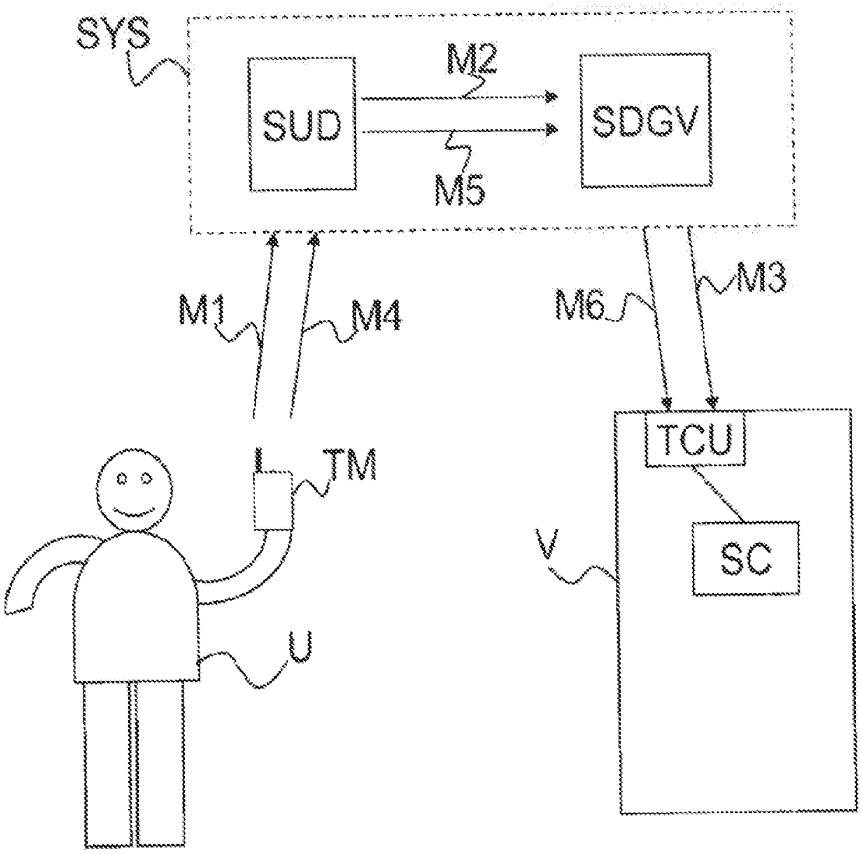
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B60R 25/20 (2006.01)
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(52) U.S. Cl.
CPC *B60R 25/2018* (2013.01); *H04L 63/08* (2013.01); *B60R 25/209* (2013.01)

(57) ABSTRACT

A method of making a vehicle available, including sending a message to unlock at least one vehicle door from a remote vehicle management server, following a user request, the user request having been subject to identification of the user and authorization of use by the user for the vehicle. The method further includes sending a message, independent of the above-mentioned unlocking message, authorizing starting of the vehicle by a control system of the vehicle from the remote vehicle management server.



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Electronic Acknowledgement Receipt

EFS ID:	41848181
Application Number:	16800571
International Application Number:	
Confirmation Number:	6616
Title of Invention:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
First Named Inventor/Applicant Name:	Masato ENDO
Customer Number:	23838
Filer:	Daniel Gregory Shanley/Charisma Oparaugo
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Time Stamp:	12:45:24
Application Type:	Utility under 35 USC 111(a)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	115628-0000058-IDS.pdf	1034365 c500afe94471808f819d28210081eeb8d20d4c34	no	4

Warnings:

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2	Foreign Reference	JP2016511191A.pdf	2168800 31fb856983d9c0cb83e42bafcae697c8e6c85565	no	23
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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	16800571
	Filing Date	2020-02-25
	First Named Inventor	Masato ENDO
	Art Unit	2687
	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

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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	20140232524	A1	2014-08-21	Nakai et al.	(Corresponds to CN103946898A)

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	1	103946898	CN	A	2014-07-23	Mitsubishi Electric Corp	(Cited in CN OA issued 2020-09-02) =US20140232524A1 & English abstract provided	☒
	2	2006233475	JP	A	2006-09-07	Nippon Telegraph & Telephone	(Cited in CN OA issued 2020-09-02) English abstract & machine translation provided	☒

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	First Named Inventor	Masato ENDO
	Art Unit	2687
	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

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]
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16800571
	Filing Date	2020-02-25
	First Named Inventor	Masato ENDO
	Art Unit	2687
	Examiner Name	ALUNKAL, THOMAS D
	Attorney Docket Number	115628.0000058

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Daniel G. Shanley/	Date (YYYY-MM-DD)	2020-09-29
Name/Print	Daniel G. Shanley	Registration Number	54,863

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Bibliographic data: JP2006233475 (A) — 2006-09-07

KEY SERVICE METHOD, SYSTEM AND ITS PROGRAM

Inventor(s): OGURO TAKESHI; MATSUYAMA KAZUO; MORIMURA KAZUO; KUROKI HIROAKI ± (OGURO TAKESHI, ; MATSUYAMA KAZUO, ; MORIMURA KAZUO, ; KUROKI HIROAKI)

Applicant(s): NIPPON TELEGRAPH & TELEPHONE ± (NIPPON TELEGR & TELEPH CORP <NTT>)

Classification: **- international:** ***E05B49/00***
- cooperative:

Application number: JP20050046843 20050223 Global Dossier

Priority number(s): JP20050046843 20050223

Also published as: JP4523449 (B2)

Abstract of JP2006233475 (A)

PROBLEM TO BE SOLVED: To provide a key service method capable of solving a usual problem in a key service. ;SOLUTION: A gate 32 receives an unlocking license as an electronic key containing a signature by a private key of a key administrator from a device 31 carried by a user (S48). The gate 32 verifies the signature of the unlocking license by using a public key of the key administrator and the unlocking license (S49). The gate 32 transmits a challenge to the device 31 carried by the user, the device 31 carried by the user makes signature operation by the private key of the user to the challenge to transmit a response to the gate 32, and the gate 32 verifies the response by making use of the public key of the user (S50 to S53). When it succeeds in the verification of the signature of the unlocking license, the verification of the unlocking license and the verification of the response, the gate 32 makes unlocking or locking of the key (S54). ;COPYRIGHT: (C)2006,JPO&NCIPI

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(P2006-233475A)
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E05B 49/00	(2006.01)	E05B 49/00	K	2E250

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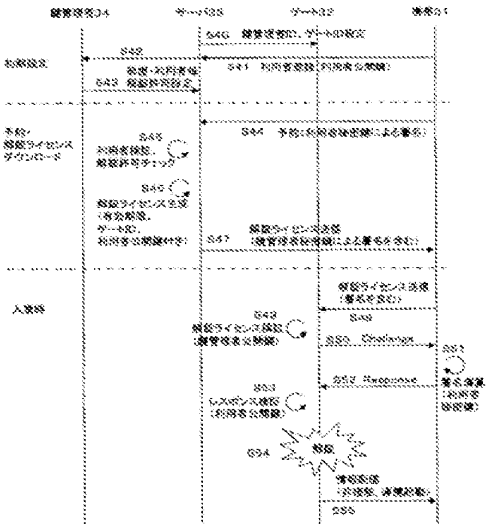
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最終頁に続く

(54)【発明の名称】鍵サービス方法、システムおよびそのプログラム

(57)【要約】
【課題】鍵サービスにおける従来の方式の問題点を解決する。
【解決手段】ゲート３２が、利用者が携帯する装置３１から鍵管理者の秘密鍵による署名を含む電子的な鍵である解錠ライセンスを受信する（Ｓ４８）。ゲート３２が、鍵管理者の公開鍵を用いた解錠ライセンスの署名の検証および解錠ライセンスの検証を行う（Ｓ４９）。ゲート３２が利用者が携帯する装置３１に対してチャレンジを送信し、利用者が携帯する装置３１がチャレンジに対して利用者の秘密鍵により署名演算を行いゲート３２にレスポンスを送信し、ゲート３２が利用者の公開鍵を用いてレスポンスを検証する（Ｓ５０～Ｓ５３）。解錠ライセンスの署名の検証および解錠ライセンスの検証およびレスポンスの検証に成功した場合に、ゲート３２は錠の解錠または施錠を行う（Ｓ５４）。
【選択図】　図２

図2



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【特許請求の範囲】
【請求項1】
錠の施錠・解錠を行う施錠・解錠装置が、利用者が携帯する装置から鍵管理者の秘密鍵による署名を含む電子的な鍵である解錠ライセンスを受信するステップと、
前記施錠・解錠装置が、前記鍵管理者の公開鍵を用いた前記解錠ライセンスの署名の検証および前記解錠ライセンスの検証を行うステップと、
前記施錠・解錠装置が、前記解錠ライセンスの署名の検証および前記解錠ライセンスの検証に成功した場合に、錠の解錠または施錠を行うステップと、
を有する鍵サービス方法。
【請求項2】
請求項１に記載の鍵サービス方法であって、
前記錠の解錠または施錠を行うステップの前に、
前記施錠・解錠装置が前記利用者が携帯する装置に対してチャレンジを送信し、前記利用者が携帯する装置が前記チャレンジに対して前記利用者の秘密鍵により署名演算を行い前記施錠・解錠装置にレスポンスを送信し、前記施錠・解錠装置が前記利用者の公開鍵を用いてレスポンスを検証するステップを有し、
前記錠の解錠または施錠を行うステップにおいて、前記解錠ライセンスの署名の検証および前記解錠ライセンスの検証および前記レスポンスの検証に成功した場合に、錠の解錠または施錠を行う鍵サービス方法。
【請求項3】
請求項１または２に記載の鍵サービス方法であって、
サーバが、利用者が携帯する装置から前記利用者の秘密鍵による署名を含む情報を受信するステップと、
前記サーバが、前記利用者の公開鍵を用いた前記利用者の検証および解錠許可の検証に成功した場合に、前記解錠ライセンスを前記利用者が携帯する装置に送信するステップと、
を有する鍵サービス方法。
【請求項4】
請求項１ないし３のうちいずれか１項に記載の鍵サービス方法であって、
前記利用者によるＰＩＮ入力が成功した後、前記施錠・解錠装置が、前記利用者が携帯する装置から前記解錠ライセンスを受信する鍵サービス方法。
【請求項5】
請求項４に記載の鍵サービス方法であって、
前記ＰＩＮ入力が必須の動作と、それを必須としない動作を切り替えるステップを有する鍵サービス方法。
【請求項6】
請求項１ないし５のうちいずれか１項に記載の鍵サービス方法であって、
前記利用者が携帯する装置はＴｙｐｅＢ　ＩＣチップ搭載携帯電話である鍵サービス方法。
【請求項7】
請求項１ないし６のうちいづれか１項に記載の鍵サービスで方法あって、
前記施錠・解錠装置と前記利用者が携帯する装置との間の通信を非接触通信で行う鍵サービス方法。
【請求項8】
請求項１ないし７のうちいずれか１項に記載の鍵サービス方法であって、
前記解錠または施錠を契機として、前記施錠・解錠装置が前記利用者が携帯する装置に情報を非接触通信または電子メールにより配信し、前記利用者が携帯する装置が配信された前記情報を画面に表示させる鍵サービス方法。
【請求項9】

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請求項１ないし８のうちいずれか１項に記載の鍵サービス方法を行う前記サーバ、前記施錠・解錠装置、および前記利用者が携帯する装置を有する鍵サービスシステム。
【請求項10】
請求項１ないし８のうちいずれか１項に記載の鍵サービス方法のステップをコンピュー
【発明の詳細な説明】プログラム。
【技術分野】
【0001】
公開鍵暗号を用いた認証情報（解錠ライセンス）により、利用者が携帯する装置、例えばＩＣチップ搭載携帯電話を用いてドアの解錠または施錠を行い、解錠または施錠を契機として情報配信を行う鍵サービス方法、システムおよびそのプログラムに関する。
【背景技術】
【0002】
従来の共通鍵暗号を用いた鍵サービスシステムのフローを図１に示す（非特許文献１）。図１において、１は利用者が携帯する装置、例えば携帯電話であり、２はゲート（ドアがわ装置）であり、３はサーバであり、４は鍵管理者である。第１の段階は初期設定の段階である。Ｓ１０で携帯電話１からサーバ３に対して利用者登録を行う。この時、携帯電話１は利用者ＩＤを送付する。Ｓ１１でサーバ３は鍵管理者４に対して設定画面の表示し、Ｓ１２で鍵管理者４はサーバ３に対して利用者毎にゲート２の解錠許可（サクセス権）の設定を行う。第２の段階は予約・解錠ライセンスのダウンロードの段階である。Ｓ１３で携帯電話１はサーバ３に対して予約を行う。この時、携帯電話１は利用者ＩＤを送付する。Ｓ１４でサーバ３は利用者を検証し、解錠許可をチェックする。許可の場合は、Ｓ１５で解錠ライセンスを発行する。解錠ライセンスにはゲートＩＤ、利用者ＩＤが含まれている。Ｓ１６でサーバ３から解錠ライセンスをゲート２にダウンロードし、Ｓ１７で携帯電話１が解錠ライセンスをダウンロードする。第３の段階は入室時の段階である。携帯電話１はゲート２に対して認証データを送信する。認証データには解錠ライセンスと利用者ＩＤが含まれている。Ｓ１９でゲート２は解錠ライセンスと利用者ＩＤを検証し、許可すべき時はＳ２０でドアを解錠する。Ｓ２１でゲート２は解錠情報（解錠ライセンス情報）をサーバ３に送信し、Ｓ２２でサーバ３はｉ－ｍｏｄｅ（登録商標）メールで情報を配信する。
【0003】
この方式においては、利用者ＩＤ（これはＩＣチップに固有である）およびゲートＩＤの組が、解錠のための認証情報（解錠ライセンス）となる。セキュリティを担保するため、この認証情報（解錠ライセンス）は共通鍵により暗号化され、各装置間で受け渡される。このため、認証情報（解錠ライセンス）を扱う各装置、すなわち、サーバ、ゲートおよび携帯（ＩＣチップ）は、共通の秘密鍵（共通鍵）を知っている必要があり、またこれら装置に対しては耐タンパ性が要求される（これらの装置では、認証情報（解錠ライセンス）を秘密の情報として保護しなければならない）。
【0004】
この従来方式は共通鍵を用いるため、以下の問題点がある。
（１）共通鍵が知られてしまうとシステム全体が破られたことになり、セキュリティ上の弱点となる。
（２）共通の秘密鍵、および認証情報（解錠ライセンス）といった秘密の情報を、原則として各ドアが持たなければならず、秘密情報を保護しなければならない装置の数が多くなる。
（３）解錠鍵（解錠ライセンス）（解錠のための認証情報）を発行するたび、認証情報（解錠ライセンス）を、原則として各ドアに適宜配送しなければならず、従って各ドアは常時オンラインである必要がある。
【0005】
各ドアで直接処理を行うのではなく、複数のドア群と接続されそれらをコントロールするドアサーバを用いることにより、上記問題点のうち（２），（３）は軽減することがで

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きる。しかしながら、この場合においても、ドアサーバは秘密情報を保護しなければならずかつ解錠鍵の配送を受けるため常時オンラインでなければならない。また、各ドアは任意の時点で解錠処理を行うためドアサーバとは常時接続されていなければならない。従って、ドアサーバを用いた場合でも、上記問題点は本質的には解消されない。

【0006】

図１のフローにおいて、ＩＣカードを用いた場合には、ＩＣカードリーダライタ装置を接続したＰＣ等の装置を用いることが必要であり、システム上要求される装置数が増える。また、ＩＣカードを用いた場合には、鍵発行というプロセスを経ずに運用するシステムも多い。この場合、解錠に用いる認証情報は利用者ＩＤ（ＩＣチップに固有）のみであり、ＩＣカードに対する鍵ダウンロードの処理は省略できる。一方、各ドアに対しては、鍵ダウンロードという形式ではなく解錠許可の設定を行うことになるが、このため各ドアの設定はより煩雑となり、かつまた認証情報と利用者ＩＤとが同一になるためセキュリティ的にもより脆弱となる。

【0007】

図１のフローにおいて情報配信の契機は解錠の成功であるが、その方式は（ｉモード）メールである。この場合、解錠からメール着信までにはタイムラグが存在し、かつまたネットワークの状態によっては情報配信が失敗する可能性があり、問題となる。鍵サービスとは異なるサービスで、非接触通信で直接ＩＣチップ搭載携帯電話に情報配信を行うシステムも存在する。しかしながらこの場合、従来システムでは配信できる情報量に制限があり、大抵の場合はＵＲＬなど実際に配信したい情報へのポインタを配信するのみである。

【0008】

【非特許文献1】株式会社ＫＥＳＡＫＡシステム、株式会社コネクトテクノロジーズ、伊藤忠テクノサイエンス株式会社、株式会社ＮＴＴドコモ九州、“「おサイフケータイＴＭ」をカギとして利用のマンション完成！　「ｋｅｓａｋａサービス」提供開始。”、[online]、［平成１７年１月２８日検索］、インターネット<http://www.kesaka.net/tm05.htm><http://www.kesaka.net/pf0404.htm><http://www.kesaka.net/pf04041.htm><http://www.kesaka.net/pf04042.htm><http://www.kesaka.net/pf04043.htm><http://www.kesaka.net/pfsample1.htm>

【発明の開示】

【発明が解決しようとする課題】

【0009】

本発明は、公開鍵暗号を用いることにより、鍵サービスにおける従来の方式の問題点を解決するものである。すなわち、公開鍵暗号を用いた方式により、下記を実現する。

・公開鍵暗号を用いることにより、共通の秘密鍵の漏洩にかかわるシステムのセキュリティ上の弱点を解消する。

・さらに、公開鍵暗号を用いた解錠鍵の方式を工夫することで、各ドア等の施錠・解錠装置が秘密情報を持つ必要を無くし、秘密情報を保護しなければならない装置の数を低減する。

・認証情報の各ドア等の施錠・解錠装置への事前の配送を不要とするような解錠鍵の方式を実現し、これにより各ドア等の施錠・解錠装置が常時オンラインである必要性を解消する。

【0010】

更に、ＩＣチップ搭載携帯電話を用いることにより、解錠鍵の書き換えおよび閲覧・行使を、特別な装置なしに行えるようにする。すなわち、例えば、ｉモード等によりネットワークアクセスが可能な携帯電話を用いることにより、ＩＣカード内の認証情報の書き換えおよび閲覧を携帯電話のみで行うことができる。これはＩＣカードを用いた場合を比べてシステム上要求される装置の種類が少なく済み利便性が高く、かつまた従来方式よりもセキュリティ的にも優れている。

【0011】

また、解錠の成功等を契機とし、ドア等の施錠・解錠装置の例えばＩＣカードリーダラ

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イタ装置から直接ＩＣチップ搭載携帯電話に非接触通信で情報配信を行うことにより、従来方式と比べてよりタイムラグが小さくかつ確実に、情報そのものの配信を行うことができる。

【課題を解決するための手段】

【0012】

第１の発明は、錠の施錠・解錠を行う施錠・解錠装置が、利用者が携帯する装置から鍵管理者の秘密鍵による署名を含む電子的な鍵である解錠ライセンスを受信するステップと、前記施錠・解錠装置が、前記鍵管理者の公開鍵を用いた前記解錠ライセンスの署名の検証および前記解錠ライセンスの検証を行うステップと、前記施錠・解錠装置が、前記解錠ライセンスの署名の検証および前記解錠ライセンスの検証に成功した場合に、錠の解錠または施錠を行うステップと、を有する鍵サービス方法である。第２の発明は、第１の発明において、前記錠の解錠または施錠を行うステップの前に、前記施錠・解錠装置が前記利用者が携帯する装置に対してチャレンジを送信し、前記利用者が携帯する装置が前記チャレンジに対して前記利用者の秘密鍵により署名演算を行い前記施錠・解錠装置にレスポンスを送信し、前記施錠・解錠装置が前記利用者の公開鍵を用いてレスポンスを検証するステップを有し、前記錠の解錠または施錠を行うステップにおいて、前記解錠ライセンスの署名の検証および前記解錠ライセンスの検証および前記レスポンスの検証に成功した場合に、錠の解錠または施錠を行う鍵サービス方法である。第３の発明は、第１または第２の発明において、サーバが、利用者が携帯する装置から前記利用者の秘密鍵による署名を含む情報を受信するステップと、前記サーバが、前記利用者の公開鍵を用いた前記利用者の検証および解錠許可の検証に成功した場合に、前記解錠ライセンスを前記利用者が携帯する装置に送信するステップと、を有する鍵サービス方法である。第４の発明は、第１～第３の発明において、前記利用者によるＰＩＮ入力が成功した後、前記施錠・解錠装置が、前記利用者が携帯する装置から前記解錠ライセンスを受信する鍵サービス方法である。第５の発明は、第４の発明において、前記ＰＩＮ入力が必須の動作と、それを必須としない動作を切り替えるステップを有する鍵サービス方法である。第６の発明は、第１～第５の発明において、前記利用者が携帯する装置はＴｙｐｅＢ　ＩＣチップ搭載携帯電話である鍵サービス方法である。第７の発明は、第１～第６の発明において、前記施錠・解錠装置と前記利用者が携帯する装置との間の通信を非接触通信で行う鍵サービス方法である。第８の発明は第１～第７の発明において、前記解錠または施錠を契機として、前記施錠・解錠装置が前記利用者が携帯する装置に情報を非接触通信または電子メールにより配信し、前記利用者が携帯する装置が配信された前記情報を画面に表示させる鍵サービス方法である。第９の発明は、第１～第８の発明の鍵サービス方法を行う前記サーバ、前記施錠・解錠装置、および前記利用者が携帯する装置を有する鍵サービスシステムである。第１０の発明は、第１～第８の発明の鍵サービス方法のステップをコンピュータに実行させるためのプログラムである。

【発明の効果】

【0013】

本発明により、公開鍵暗号を用いることで、鍵サービスにおける従来の方式の問題点を解決することができる。すなわち、下記が実現される。

・公開鍵暗号を用いることにより、共通の秘密鍵の漏洩にかかわるシステムのセキュリティ上の弱点を解消する。

・さらに、公開鍵暗号を用いた解錠鍵の方式を工夫することで、各ドア等の施錠・解錠装置が秘密情報を持つ必要を無くし、秘密情報を保護しなければならない装置の数を低減する。

・認証情報の各ドア等の施錠・解錠装置への事前の配送を不要とするような解錠鍵の方式を実現し、これにより各ドア等の施錠・解錠装置が常時オンラインである必要性を解消する。

【0014】

更に、例えば、ｉモード等によりネットワークアクセスが可能な携帯電話を用いること

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により、ＩＣカード内の認証情報の書き換えおよび閲覧を特別な装置なしに携帯電話のみで行うことができる。

【0015】

また、解錠の成功等を契機とし、ドア等の施錠・解錠装置の例えばＩＣカードリーダライタ装置から直接ＩＣチップ搭載携帯電話に非接触通信で情報配信を行うことにより、従来方式と比べてよりタイムラグが小さくかつ確実に、情報そのものの配信を行うことができる。

【発明を実施するための最良の形態】

【0016】

以下、本発明の実施形態について説明する。

本発明の鍵サービスシステムの実施形態のフローを図２に示す。図２において、３１は利用者が携帯する装置、例えばＴｙｐｅＢ　ＩＣチップ搭載携帯電話であり（以下、「ＩＣチップ搭載携帯電話３１」という。）、３２はドアの解錠、施錠を行うゲート（ドアがわ装置）であり、３３はサーバであり、３４は鍵管理者である。図２の携帯３１は本実施形態では「ＩＣチップ搭載携帯電話３１」として説明するが、これに限定されるわけではなく、利用者が携帯する装置であれば、携帯型のテレビ、ラジオ、音楽再生装置、鞄、ハンドバッグ、サイフ、免許証、証明書、カード等の利用者が携帯するものであってもよく、また、衣服に取り付けたり、電子鍵として専用のものであってもよい。本実施形態においてはゲート３２をドアがわ装置すなわちドアの錠の施錠、解錠を行う装置として説明するが、これに限定されるわけではなく、ゲート３２は金庫、鞄、ハンドバック、机、キャビネット、ロッカー、自動車、建物、その他の錠を用いる物において、錠の施錠・解錠を行う施錠・解錠装置である。

【0017】

第１段階は初期設定の段階である。Ｓ４０でサーバ３３は鍵管理者ＩＤとゲートＩＤをゲート（ドアがわ装置）３２に設定する。Ｓ４１でＩＣチップ搭載携帯電話３１が利用者登録を行う。利用者登録には利用者の公開鍵が含まれている。Ｓ４２でサーバ３３は鍵管理者３４に対して設定画面の表示し、Ｓ４３で鍵管理者３４はサーバ３３に利用者毎のゲート（部屋）の解錠許可（アクセス権）を設定する。

【0018】

第２段階は予約・解錠ラインセンスのダウンロードの段階である。Ｓ４４でＩＣチップ搭載携帯電話３１はサーバ３３に対して予約を送信する。予約には利用者の秘密鍵による署名が含まれている。なお、予約の代わりに、変更や削除の情報を送信することもできる。Ｓ４５でサーバ３３は利用者を検証し、解錠許可をチェックする。許可の場合はＳ４６で電子的な鍵である解錠ライセンスを生成する。解錠ライセンスは有効期限、ゲートＩＤ、利用者公開鍵付きである（サーバ３３はＳ４１で利用者公開鍵を取得している）。Ｓ４７でサーバ３３は解錠ライセンスをＩＣチップ搭載携帯電話３１に送信する。解錠ライセンスには鍵管理者の秘密鍵による署名が含まれている。

【0019】

第３の段階は利用者の入出時である。Ｓ４８でＩＣチップ搭載携帯電話３１は解錠ライセンスを送信する。解錠ライセンスは鍵管理者秘密鍵による署名を含む。Ｓ４９で、ゲート（ドアがわ装置）３２は、解錠ライセンスの署名検証と解錠ライセンスの検証を行う。すなわち、ゲート（ドアがわ装置）３２は、取得した解錠ライセンスに施されている鍵管理者秘密鍵による署名を鍵管理者公開鍵によって検証する。次に、ゲート（ドアがわ装置）３２は、解錠ライセンスをパーズし、必要な情報を取り出す。取り出された情報のうち、対象のゲートＩＤおよび有効期限をチェックし、自己のゲートＩＤおよび現在時刻が条件に合致するかを確認する。解錠ライセンスの署名検証と解錠ライセンスの検証が成功すれば、ゲート（ドアがわ装置）３２はＳ５０でチャレンジを携帯電話３１に送信する。携帯電話３１は利用者の秘密鍵を用いて署名演算し、Ｓ５２でレスポンスをゲート（ドアがわ装置）３２に送信する。Ｓ５３でゲート（ドアがわ装置）３２は利用者公開鍵を用いてレスポンスを検証し、成功すればＳ５４で解錠する。Ｓ５５でゲート（ドアがわ装置）３

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２は非接触、連携起動によりＩＣチップ搭載携帯電話３１に情報を配信する。

【0020】

本実施形態における解錠鍵（解錠ライセンス）は、対象のゲートＩＤ、有効期限、利用者の公開鍵およびその他付帯データを一組とし、その一組に対して鍵管理者秘密鍵による署名を行ったものである。解錠鍵（解錠ライセンス）は、利用者からの依頼（部屋の利用予約等）に基づき、鍵管理者が生成する。解錠鍵生成に先立ち、利用者の公開鍵は鍵管理者に知らされているものとする（図２のフローにおいては、利用者登録時（Ｓ４１）にサーバに登録される）。生成された解錠鍵（解錠ライセンス）は、利用者に送られる（Ｓ４７）。利用者は、入室時に解錠鍵（解錠ライセンス）をドアがわ装置に送り（Ｓ４８）、認証等必要な処理を行ってすべて成功すれば解錠がなされる（Ｓ５４）。入室時の認証プロセスは以下の手順となる。

１．解錠鍵（解錠ライセンス）の署名検証：ゲート（ドアがわ装置）３２は、取得した解錠鍵（解錠ライセンス）に施されている、鍵管理者秘密鍵による署名を検証する。署名検証には鍵管理者公開鍵が必要であるが、これは予め鍵管理者によってドアがわ装置３２に設定されているものとする。

２．解錠鍵（解錠ライセンス）の検証：ゲート（ドアがわ装置）３２は、解錠鍵（解錠ライセンス）をパーズし、必要な情報を取り出す。取り出された情報のうち、対象のゲートＩＤおよび有効期限をチェックし、自己のゲートＩＤおよび現在時刻が条件に合致するかを確認する。

３．利用者の認証：ゲート（ドアがわ装置）３２は、利用者に対してチャレンジを送る。利用者のＩＣチップ（ＩＣチップ搭載携帯電話３１内）は、チャレンジに対して利用者秘密鍵により署名演算を行い、結果をドアがわ装置３２に返す。ドアがわ装置３２は、解錠鍵（解錠ライセンス）から取得した利用者公開鍵を用いてレスポンスを検証する。

なお、上記１、２は図２のＳ４９で行われ、上記３は図２のＳ５０～Ｓ５３で行われる。

【0021】

上記の方式において、秘密に保持しなければならない情報は、通常の公開鍵暗号と同じく、鍵管理者秘密鍵および利用者秘密鍵のみである。従って、秘密情報を保持する機器はサーバおよび利用者が持つＩＣチップのみであり、従来方式のようにドアがわ機器に秘密情報を保持する必要はない。

【0022】

本実施形態において、解錠時には鍵管理者の鍵ペアによる解錠鍵（解錠ライセンス）の検証が行われるため（図２のＳ４９参照）、第三者が解錠鍵（解錠ライセンス）を改竄したとしても改竄された解錠鍵は無効となる。また、万一鍵管理者の秘密鍵が漏洩したとしても、それにより影響を被るのは当該鍵管理者に係るドアのみであり、従来方式のように共通の秘密鍵が漏洩した時点でシステムに対する任意の攻撃が可能となる訳ではなく、よりセキュリティが高い。また、解錠時には利用者の鍵ペアによる利用者認証が行われるため（図２のＳ５０～Ｓ５３参照）、解錠鍵（解錠ライセンス）が第三者に渡ったとしても第三者による解錠鍵の使用は阻止される。従来方式では共通の秘密鍵を知っている（システムに参加している）第三者がＩＤを偽装できれば不正に入手した解錠鍵の使用が可能となるため、本方式はよりセキュリティが高い。さらに、万一利用者の秘密鍵が漏洩したとしても、それにより影響を蒙るのは当該利用者のみであり、従来方式のように共通の秘密鍵が漏洩した時点でシステムに対する任意の攻撃が可能となる訳ではない。

【0023】

本実施形態において、解錠時の認証プロセスにおいてゲート（ドアがわ装置）３２で必要となる情報は、事前に設定された鍵管理者の公開鍵および解錠前に利用者から送られる解錠鍵（解錠ライセンス）に含まれる情報のみである。すなわち、従来方式のように、発行された解錠鍵と利用者が持つ解錠鍵（解錠ライセンス）とをドアがわ装置で照合する必要はなく、したがって解錠鍵（解錠ライセンス）を発行する度にドアがわ装置を設定したり、あるいは解錠処理を行う度にサーバ等に認証情報を確認したりする必要がない。つまり、ドアがわ装置は常時オンラインである必要はない。

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【0024】
本実施形態においてはＩＣチップ搭載携帯電話を用いるため、ＩＣカード内の認証情報の書き換えおよび閲覧を、特別な装置を用いることなく携帯電話のみで行うことができる。

【0025】
本実施形態においては、解錠を契機として、ドアがわ装置のＩＣカードリーダライタ装置から直接ＩＣチップ搭載携帯電話に非接触通信で情報配信が行われる。従来方式は解錠通知を一旦サーバに送り、サーバから情報配信を行うため、ドアがわ装置は常時オンラインでなければならず、かつ情報配信にはタイムラグが存在した。一般に、配信されるべき情報の更新頻度は一日毎あるいは数時間毎などさほど頻繁ではないため、本方式ではドアがわ装置は常時オンラインである必要はない。また、情報配信は直接行われるため、従来方式と比べてよりタイムラグが小さくかつ確実に、情報そのものの配信を行うことができる。更に、本方式においてはＩＣチップ搭載携帯電話を用いるため、配信された情報はその場で携帯電話のディスプレイを用いて閲覧することが可能である。

【0026】
図３－１に、本実施形態のシステム構成概要図を示す。３０１はＴｙｐｅＢ　ＩＣチップ搭載携帯電話（以下、「ＩＣチップ搭載形態電話３０１」というが、利用者が携帯する装置であればどのようなものでもよい。）であり、図２の携帯３１に対応する。３０２はドアの解錠、施錠を行うドアがわ端末であり、図２のゲート（ドアがわ装置）３２に対応する。３０３は解錠ライセンス管理／情報配信サーバであり、図２のサーバ３３に対応する。

【0027】
解錠ライセンス管理／情報配信サーバ３０３は、解錠ライセンス（解錠鍵）の発行および管理を行う解錠ライセンス管理サーバ３１０、配信情報の設定・管理およびドアがわ端末３０２への配送を行う配信情報配信サーバ３２０、利用者の登録・管理を行いかつ利用者に対するＷｅｂ　Ｕ／Ｉを提供する利用者管理・Ｗｅｂ　Ｕ／Ｉ３３０からなる。これら三つの部分は本実施形態では単純のため一個のサーバ装置内に置かれるものとして扱うが、それぞれ別個のサーバ装置に置かれたとしても機能的に全く問題はない。

【0028】
ＩＣチップ搭載携帯電話３０１とドアがわ端末３０２はＩＳＯ／ＩＥＣ１４４４３（非接触型ＩＣカードやＲＦＩＤの通信規格の一つ）で非接触通信を行い、ＩＣチップ搭載携帯電話３０１と解錠ライセンス管理／情報配信サーバ３０３はｉ－ｍｏｄｅ網を介してｓｍｔｐ、ｈｔｔｐｓのプロトコルで通信を行い、ドアがわ端末３０２と解錠ライセンス管理／情報配信サーバ３０３はネットワーク接続により通信を行う。なお、本実施形態においてはＩＣチップ搭載携帯電話３０１とドアがわ端末３０２間の非接触通信としてＩＳＯ／ＩＥＣ１４４４３を用いているが、これに限定するものではなく、非接触通信は、電気的に非接触で、近距離の通信であればどのようなものでもよい。また、本実施形態においてはＩＣチップ搭載携帯電話３０１と解錠ライセンス管理／情報配信サーバ３０３間の通信網としてｉ－ｍｏｄｅ網を用いているが、それ以外の通信網であってもよい。

【0029】
図３－２に解錠ライセンス管理／情報配信サーバ３０３の詳細を示す。解錠ライセンス管理／情報配信サーバ３０３は、解錠ライセンス管理サーバ３１０と配信情報配信サーバ３２０と利用者管理・Ｗｅｂ　Ｕ／Ｉ３３０を有する。

【0030】
利用者管理・Ｗｅｂ　Ｕ／Ｉ３３０は、利用者の登録・管理を行いかつ利用者に対するＷｅｂ　Ｕ／Ｉを提供する。利用者管理・Ｗｅｂ　Ｕ／Ｉ３３０は、利用者登録機能３３１、利用者認証機能３３２、利用者管理機能３３３、Ｗｅｂ　Ｕ／Ｉ３３４を有する。利用者登録機能３３１はシステムを利用できるようにするため、住所・氏名・メールアドレス・役職・クレジット情報など、必要な情報をもって利用者を登録する。利用者認証機能３３２は利用者がサーバにアクセスする際に必要となる認証のための機能を提供する。利

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用者管理機能３３３は、登録された利用者の情報の管理を行う。Ｗｅｂ　Ｕ／Ｉは、利用者および管理者に対して、Ｗｅｂまたはそれに準じるユーザインタフェースを提供する。

【0031】

解錠ライセンス管理サーバ３１０は、解錠ライセンス（解錠鍵）の発行および管理を行う。解錠ライセンスサーバ３１０は、部屋情報登録・管理機能３１１、部屋・予約情報検索機能３１２、予約処理機能３１３、ネガリスト設定・配布機能３１５、ｉアプリ・カードＡＰダウンロード機能３１６を有する。部屋情報登録・管理機能３１１は、提供する各部屋（ドア）に関する情報を登録・管理する。部屋・予約情報検索機能３１２は、提供する各部屋およびそれらに対する予約情報を検索する。予約処理機能３１３は、予約・変更・削除を行う。解錠ライセンスの発行は、主として利用者からのリクエストに基づく。発行に先立つ利用者からのリクエストは、（部屋の）予約として処理される（たとえば会議室の予約・管理システムに適用した場合や、ウィークリーマンション・ホテル等の予約・部屋提供システムに適用した場合などを想定すれば理解し易い）。そういった予約を受け付けたり、変更・削除をおこなったりする機能である。解錠ライセンス生成・ダウンロード機能３１４は、予約に基づき、解錠ライセンスを生成・発行し、それを利用者がダウンロードできるようにする。ネガリスト設定・配布機能３１５は、ネガリストを設定し、配布する。利用者が携帯電話を紛失したなどの場合、拾われた携帯電話による不正使用の防止策として、申請に基づき、当該利用者の権限を停止する必要がある。このとき、既に発行・ダウンロードされた解錠ライセンスを無効化するため、ネガリストを生成して配布する必要がある。ｉアプリ・カードＡＰダウンロード機能３１６は、電子キーｉアプリ３６１および電子キーカードＡＰ３５１をダウンロード配布する機能である。

【0032】

配信情報配信サーバ３２０は、配信情報の設定・管理およびドアがわ端末３０２への配送を行う。配信情報配信サーバ３２０は、配信情報設定・登録機能３２１、配信情報配布機能３２２、メール情報配信機能３２３、ｉアプリ・カードＡＰダウンロード機能３２４を有する。配信情報設定・登録機能３２１は、情報配信のための配信情報の設定および登録を行う。なお、配信情報は、配信されるべき情報の本体と、それに対する配信条件との組からなる。配信情報配布機能３２２は、設定・登録された配信情報を各ドアがわ端末に配布する。メール情報配信機能３２３は、情報配信をメール経由で行う場合に、ドアがわ端末３０２から解錠通知を受け取り、それに基づき配信されるべき情報および配信先を検索・決定し、メールで情報配信を行う。なお本実施形態では情報配信はドアがわ端末３０２から直接、非接触経由で行うことが基本であるが、既存システムとの整合性その他の理由でメール経由で情報配信を行いたい場合に用いられる機能である。ｉアプリ・カードＡＰダウンロード機能３２４は、情報配信ｉアプリ３６７および情報配信カードＡＰ３５４をダウンロード配布する機能である。

【0033】

図３－１のＩＣチップ搭載携帯電話３０１は、ｍｉｎｉＳＤ形状のＩＣチップを搭載可能であり、かつそれへのｉアプリからのアクセス手段、および非接触経由でのＩＣチップへのアクセスに必要となるアンテナ・給電等の機能を備えた携帯電話である。３５０がＩＣチップであり（ＩＣチップはｍｉｎｉＳＤ形状のものが望ましいが、他の形状のＩＣチップでもよい）、３６０がｉアプリである。

【0034】

図３－３にＩＣチップ搭載携帯電話３０１の詳細を示す。ＩＣチップ搭載携帯電話はｉアプリ３６０とＩＣチップ３５０を有する。ｉアプリ３６０は電子キーｉアプリ３６１と情報配信ｉアプリ３６７を有する。ＩＣチップ３５０は電子キーカードＡＰ３５１と情報配信ＡＰ３５４を有する。

【0035】

電子キーｉアプリ３６１は、ＩＣチップ内の解錠ライセンスの更新・表示を行うｉアプリである。解錠ライセンスダウンロード・管理機能３６２は、解錠ライセンス管理サーバ３１０にアクセスし、解錠ライセンスをダウンロードし電子キーカードＡＰ３５１内に保

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存する。また、保存された解錠ライセンスの管理を行う。解錠ライセンス表示機能３６３は、電子キーカードＡＰ３５１内に保存された解錠ライセンスの情報を携帯電話のディスプレイに表示する機能である。動作モード変更機能３６４は、解錠時に利用者によるＰＩＮ入力を必要とするか否かの、動作モードを変更する機能である（動作モードに関しては後述）。ＰＩＮ（暗証番号）入力・設定機能３６５は、利用者によるＰＩＮ入力を必要とするモードの際に、ＰＩＮを入力し、また設定する機能である。電子キーカードＡＰパーソナライズ機能３６６は、ダウンロードされた電子キーカードＡＰ３５１を使用可能な状態にし、利用者個々の情報を保存してパーソナライズする機能である。

【0036】

情報配信ｉアプリ３６７は、配信された情報の管理・表示を行うｉアプリである。情報配信ｉアプリ３６７は配信情報管理・表示機能３６８を有する。配信情報管理・表示機能３６８は、配信された情報の管理および携帯電話のディスプレイへの表示を行う。

【0037】

電子キーカードＡＰ３５１は、ＩＣチップ３５０内で、解錠ライセンスその他必要となる情報を保持し、かつ認証に必要な署名演算等を行う。電子キーカードＡＰ３５１は解錠ライセンス等保持機能３５２と認証機能３５３を有する。解錠ライセンス等保持機能３５２は、ダウンロードされた解錠ライセンス、その他必要となる情報を保持する機能である。認証機能３５３は、ドアがお端末３０２との間で認証を行うため、署名演算等を行う機能である。なお、同様の認証機能をサーバとの認証に対して利用することも可能である。

【0038】

情報配信カードＡＰ３５４は、ＩＣチップ３５０内で、配信される情報を取得・保持する機能である。情報配信カードＡＰ３５４は、配信情報取得・保持機能３５５を有する。配信情報取得・保持機能３５５は、配信される情報を取得・保持する機能である。

【0039】

図３－１のドアがお端末３０２は、制御端末３７０およびドアゲート３８０からなり、部屋のドアに対応する。

【0040】

ドアゲート３８０は、電気錠３８１と電気錠コントローラ３８２、非接触ＩＣカードリーダライタ３８３を組み込んだドアである。電気錠コントローラ３８２は制御端末３７０からの指示に応じて電気錠３８１の解錠・施錠等のコントロールを行う。非接触ＩＣカードリーダライタ３８３は、制御端末３７０による制御に従い、非接触でＩＣチップ搭載携帯電話３０１のＩＣチップ３５０と通信を行う。なお、後述するＰＩＮ入力のため、ドアゲート３８０に１０キー入力装置を組み込む場合がある（１０キー入力装置は、制御端末３７０から制御を行う）。また、用途に応じて、表示機能や音源出力機能も組み込むこともあり得る。

【0041】

制御端末３７０は、解錠ライセンス管理／情報配信サーバ３０３から配信された、あるいは予め設定された情報に基づき、ドアゲート３８０に組み込まれた各種装置を制御する。制御端末３７０はゲート端末ＡＰ３７１と情報配信ＡＰ３７６を有する。

【0042】

図３－４にドアがお端末３０２の制御端末３７０の詳細を示す。制御端末３７０は、ゲート端末ＡＰ３７１と情報配信ＡＰ３７６を有する。

【0043】

ゲート端末ＡＰ３７１はドアゲート３８０を制御するアプリである。ゲート端末ＡＰ３７１は、解錠ライセンス取得・検証機能３７２、解錠機能３７３、ネガリスト取得設定機能３７４、動作モード設定・ＰＩＮ入力取得・検証機能３７５を有する。解錠ライセンス取得・検証機能３７２は、ドアゲート３８０のＩＣカードリーダライタ装置３８３を用いて、利用者がかざすＩＣチップ搭載携帯電話３０１内の電子キーカードＡＰ３５１から解錠ライセンスの取得を行い、取得した解錠ライセンスの署名検証・解錠ライセンス内の情報の検証および利用者の認証を行う。解錠機能３７３は、認証プロセスが正常に終了した

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場合に、ドアゲート３８０の電気錠コントローラ３８２を用いて電気錠３８１の解錠を行う機能である。なお、本実施形態では単純のため一貫して解錠に関してのみ述べるが、実際の動作としては解錠のみならず、施錠も同様に可能である。ネガリスト取得・設定機能３７４は、解錠ライセンス管理／情報配信サーバ３０３から配布されるネガリストを取得・保存し、解錠ライセンス内の情報の検証時に、合致するものがあった場合は認証プロセスを不成功とする機能である。動作モード設定・ＰＩＮ入力取得・検証機能３７５は、解錠時に利用者によるＰＩＮ入力を必要とするか否かの、動作モードを変更する機能である（動作モードに関しては後述）。ＰＩＮ入力を必要とする動作モードの場合、ＰＩＮ入力の取得は、ドアゲート３８０に組み込まれた１０キーから行う場合と、予め利用者がＩＣチップ搭載携帯電話３０１に入力しておいたものを、ドアゲートに組み込まれたＩＣカードリーダライタ装置３８３を用いて取得する場合がある。取得したＰＩＮは、ＩＣカードリーダライタ装置３８３を経由し、ＩＣチップ搭載携帯電話３０１内の電子キーカードＡＰ３５１により、検証を行う。

【0044】

情報配信ＡＰ３７６は、情報配信を行うアプリである。情報配信ＡＰ３７６は情報配信・情報配信依頼機能３７７と配信情報取得・保存機能３７８を有する。情報配信・情報配信依頼機能３７７は、解錠を契機とし、予め設定された情報に基づき、配信されるべき情報を検索・決定し、ドアゲート３８０のＩＣカードリーダライタ装置３８３を用いて非接触通信により情報配信を行い、ＩＣチップ搭載携帯電話３０１内の情報配信カードＡＰ３５４に対して配信する情報を書き込む機能である。なお、情報配信をメール経由で行う場合は、解錠通知を解錠ライセンス管理／情報配信サーバ３０３に送る。配信情報取得・保存機能３７８は、配信されるべき情報を配信情報配信サーバ３２０から取得し、保存する機能である。

【0045】

以下、実施例について説明する。

（実施例１）

実施例１は解錠ライセンスフォーマットの実施例である。

（実施例１、１）

図４に解錠ライセンスフォーマット例１を示す。

【0046】

これは、解錠ライセンス管理／情報配信サーバ３０３（以下、単に「サーバ３０３」という。）にて生成し、ＩＣチップ３５０内に格納する解錠ライセンスのフォーマット例である。サーバ３０３では、新規予約や既存予約の変更・削除など、利用者に係わる予約に何らかの変更がある度、当該利用者の解錠ライセンスを生成し直す。その際、当該利用者に係わる予約のうち、有効期限が切れていないものをすべてリストアップし、それらのライセンス情報（図中では、ライセンス１情報、ライセンス２情報、等々）を並べ、利用者ＩＤ、利用者公開鍵等の利用者の情報を付け、その全体にサーバ署名を行い当該利用者向けの更新された解錠ライセンスとする。

【0047】

ここで、利用者クラスは利用者の属するグルーピングのことであり、解錠許可あるいは情報配信の条件設定の際に利用される。また、時間帯は解錠を許可する時間を開始－終了時間の組で指定するのではなく、一日をいくつかのゾーンに切った時間帯の指定で行う際に用いる。なお、図中のＢｙｔｅの行は、ある実装を仮定した際に各フィールドで用いられるバイト数の見積もりであり、参考情報である。

【0048】

また、ライセンス付帯情報は、解錠処理そのものには用いられないが、ＩＣチップ３５０内の解錠ライセンスの情報を、Ｉアプリが人間に可読な状態で表示する際に用いられるものであり、解錠ライセンスとセットで生成・更新される。

【0049】

本実施例においては、利用者ひとりに対して解錠ライセンスは常にひとつであり、利用

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者に係わる予約に変更があった場合は解錠ライセンス全体が更新される。このため、予約に変更があった時の更新量が大きくなる反面、ｉアプリ・カードＡＰにおいて、解錠ライセンスの管理を特別に行う必要はない。

【0050】

（実施例１．２）

図５に解錠ライセンスフォーマット例２を示す。

これは、サーバ３０３にて生成し、ＩＣチップ３５０内に格納する解錠ライセンスのフォーマット例である。実施例１．１と異なり、解錠ライセンスは個々の予約に対応する、個々の解錠ライセンス（図中では解錠ライセンス１、解錠ライセンス２等）のリストからなる。また、ライセンス付帯情報に関しても同様である。個々の解錠ライセンスのフォーマットは実施例１．１から容易に類推できるものであるので、説明は省略する。

【0051】

本実施例においては、個々の予約に対応して独立な解錠ライセンスが存在するため、利用者に係わる予約に変更があった場合でも対応する解錠ライセンスのみを更新・削除すれば良い、このため、予約に変更があった時の更新量が小さく済む反面、ｉアプリ・カードＡＰにおいて、解錠ライセンスの管理を行う必要がある。

【0052】

（実施例２）

実施例２は予約画面等の実施例である。

（実施例２．１）

実施例２．１はウィークリーマンションサービスへ適用した例である。

図６に本実施例をウィークリーマンションサービスに適用した場合の、利用者から見た画面遷移を示す。図６に示されているのは、ログイン・利用者認証から、部屋予約・申込を経て電子キー（解錠ライセンス）ダウンロードに至る一連の流れの部分である。

【0053】

本実施例の携帯利用電子キーサービスは様々な分野に利用可能であるが、多くの場合、解錠ライセンスの生成・発行・解錠の部分のみではサービスとしての意味をなさず、部屋を貸す、予約するといった行為があってはじめて意味が出てくる。その一例として、ウィークリーマンションのサービスに適用した場合を記述したのが本実施例である。

【0054】

これら画面はサーバ３０３にて生成され、利用者はＩＣチップ搭載携帯電話３０１のｉモードブラウザを用いてこれにアクセスする。電子キー（解錠ライセンス）ダウンロードは、ブラウザでリンクをクリックすることにより、ＩＣチップへのアクセス手段を持つ電子キーｉアプリが起動し、それによりなされる。

【0055】

以下、図６を用いて説明する。利用者はＩＣチップ搭載携帯電話３０１のｉアプリまたはブックマークからサーバ３０３に接続する。画面１０１は、個人用トップページ画面である。「ログイン」を押下すると、ログイン確認画面１０２が表示される。ここで、「ＯＫ」を押下すると、サーバ３０３はＩＣチップ搭載携帯電話３０１の認証処理を行い（図２のＳ４４、Ｓ４５に対応する）、認証が正常に行われると、予約メニュー画面１０３が表示される。「部屋検索・申込」を押下すると、部屋検索画面１０４が表示され、予約期間を指定した後、「検索」を押下すると、部屋検索結果表示画面１０５が表示される。部屋を選択すると、部屋情報画面１０６が表示され、「ＯＫ」を押下すると、部屋申込画面１０７が表示され、「申込む」を押下すると、部屋申し込み完了画面１０８が表示され、解錠ライセンスが生成される（図２のＳ４６に対応する）。「電子キーダウンロードへ」を押下すると、予約確認・変更メニュー画面１０９が表示され、「電子キーダウンロード」を押下すると、ｉアプリ起動確認画面００８が表示される。「Ｙｅｓ」を押下すると、ｉアプリ起動中画面００９、ＩＣカードデータ書き込み中画面０１０が表示され、電子キー（解錠ライセンス）が保存されると、ＩＣカードデータ書き込み終了画面１１０が表示される（図２のＳ４７に対応する）。

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【0056】
（実施例２．２）
実施例２．２は会議室予約サービスへ適用した例である。図７に会議室予約サービスに適用した場合の、利用者から見た画面遷移を示す。図７に示されているのは、部屋予約・申込の部分（上の図）と、行った予約に対して参加者を登録・削除する部分（下の図）である。部屋予約・申込の部分（上の図）は実施例２．１と基本的には同じであるが、予約単位が実施例２．１の場合は日付であったのに対し、ここでは時間帯になっている。
【0057】
図７の上の図は、会議室の予約を行う場合の携帯電話のブラウザの表示画面を示したものである。６０１は予約メニュー画面であり、「予約する」を押下すると、予約日付指定画面６０２が表示され、日付を指定して「ＯＫ」を押下すると、予約状況表示画面６０３が表示され、時間を選択すると、予約確認画面６０４が表示され、「ＯＫ」を押下すると予約完了画面６０５が表示される。ここで、「電子キーダウンロードへ」を押下すると、図６の画面１０９～１１０と同様に電子キー（解錠ライセンス）を携帯電話にダウンロードできる。
【0058】
図７の下の図は、会議室の予約確認、変更を行う場合の携帯電話のブラウザの表示画面を示したものである。６０１は予約メニュー画面であり、「予約確認・変更」を押下すると、予約確認画面６０７が表示され、会議室を選択すると、参加者登録予定変更・削除メニュー画面６０６が表示され、「参加者登録・削除」を押下すると、参加者登録・削除メニュー画面６１２が表示される。ここで、「追加」を押下すると、参加者が追加され、参加者登録完了画面６１３が表示される。参加者登録・削除メニュー画面６１２で、「削除」を押下すると、参加者が削除され、参加者削除完了画面６１４表示される。参加者として追加・削除された人の携帯電話に対して、その旨メール通知（電子キーダウンロード用ＵＲＬを含む）が行われる。追加された参加者は、通知されたメールの「電子キーダウンロード」（電子キーダウンロード用ＵＲＬへのリンク）を押下することにより、電子キー（解錠ライセンス）を自分の携帯電話にダウンロードすることができる。
【0059】
図７の下の図に示す、行った予約に対して参加者を登録・削除する部分は実施例２．１にはない部分であり、予約した会議室（すなわち会議）に参加する人を予約者が指定し、参加者に対して合鍵を提供できるようにするものである。ここで、会議室予約サービスという性格上、利用者は基本的には予めすべて登録されており、かつその素性（役職、部署等）は利用者間で既知と想定して良いため、参加者登録にあたって予約者により特別に参加者の認証を行う必要はない。また、合鍵は実際には、登録された参加者が当該予約を行ったのと同様であるとみなすことで、新たに当該参加者に対して解錠ライセンスを発行することにより実現される。すなわち、合鍵という特別な仕組みを用意する必要はない。
【0060】
（実施例３）
実施例３はＰＩＮ（暗証番号）認証に関するものである。
セキュリティ上の観点からは、解錠ライセンスの行使に先立ち、行使する人物がＩＣチップを保持する人物と同一であることの認証を行った方が望ましい場合がある。この目的で、解錠ライセンスを行使する前に、ＰＩＮ認証を行い、それによりＩＣチップ３５０を保持する人物と行使する人物とが同一である（すなわち本人しか知らないＰＩＮを知っている）ことを確認するプロセスを付加することができる。
【0061】
また、ＰＩＮ入力を必須とするか不要とするかは、利用者により電子キー１アプリ３６１からモード切り替えにより切り替えることも可能である。サービスの形態によっては、利用者にモード切り替えを許さず、サービス提供者が予めいづれかのモードに固定してサービスを提供することも可能である。
【0062】

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（実施例３．１）

図８にＰＩＮ（暗証番号）認証方式の実現例１を示す。図８（Ａ）にＰＩＮ必要モードの解錠時のフローを示し、図８（Ｂ）にＰＩＮ不要モードの解錠時のフローを示し、図８（Ｃ）にＰＩＮ必要モードに設定するフローを示し、図８（Ｄ）にＰＩＮ不要モードに設定するフローを示し、図８（Ｅ）にＰＩＮ必要モードでＰＩＮを入力するフローを示す。

【0063】

図８（Ｆ）に、ＩＣチップ搭載携帯電話３０１（図３－１参照）のＩＣチップ３５０の電子キーカードＡＰ３５１内の関連ファイルの模式図を示す。電子キーカードＡＰ３５１はそれ自体がファイルであり、図８（Ａ）～（Ｅ）の最初のステップの「Ｓｅｌｅｃｔ Ｆｉｌｅ」は電子キーカードＡＰ３５１を選択するステップである。電子キーカードＡＰ３５１の内部に「電子キー」、「ＰＩＮ（ＩＥＦ）」、「ＰＩＮ（ＥＦ）」の3つのファイルがある。「ＰＩＮ（ＩＥＦ）」は、ＰＩＮを保持しておくファイルである。このファイルへのＰＩＮの保存は、利用者によりＰＩＮの初期設定がなされた時点で行なわれ、その後は（利用者によりＰＩＮが変更されない限り）変更されない。また、セキュリティ上の要件から、外部からのこのファイルの読み出しはできないようになっている。このファイルは、ＰＩＮ認証のために用いられるものである。すなわち、ＩＣカードに対してＰＩＮが入力されたとき、入力されたＰＩＮが、ＰＩＮ（ＩＥＦ）に保持されているＰＩＮと合致するかをカード内で検証し、ＯＫ／ＮＧを返すために用いられる。「電子キー」は、電子キー（解錠ライセンス）を格納するファイルである。このファイルには、ＰＩＮ（ＩＥＦ）によるＰＩＮの照合が成功しない限り、読み出しはできないとする属性が付けられている（ＰＩＮ（ＩＥＦ）が電子キーに重なるように図示したのは、そのような関連があるとの意味である）。ＰＩＮ認証を行なうためには、上記のようにＩＣカードに対して利用者がＰＩＮを入力する必要があるが、このとき、利用者が入力したＰＩＮをそのまま、ＰＩＮ（ＩＥＦ）による認証に用いるのではなく、一旦「ＰＩＮ（ＥＦ）」に格納する。ＰＩＮ（ＥＦ）は外部からの読み出しが可能であり、認証においては、ドアがわ端末３０２がＰＩＮ（ＥＦ）に保持されたＰＩＮを読み出し、それをもって、ＩＣカードに対してＰＩＮ認証を要求する。

図８（Ａ）はＰＩＮ必要モードの解錠時のフローであり、ＩＣチップ搭載携帯電話３０１（図３－１参照）のＩＣチップ３５０の電子キーカードＡＰ３５１内では、電子キー（解錠ライセンス）を保持するファイルに対し、ＰＩＮ（ＩＥＦ）によるＰＩＮの照合が成功しない限り、読み出しはできないとする属性が付けられている。ＰＩＮ入力を必要とするモードに設定する際には、図８（Ｃ）に示すように、解錠ライセンスを保持するファイルの属性を、ＰＩＮ照合がなければ読み出し不可と設定しておけば良い（Ｍａｎａｇｅ Ａｔｔｒｉｂｕｔｅ（電子キー））。念のためこの時用いたＰＩＮ（ＥＦ）は消去する（Ｕｐｄａｔｅ Ｒｅｃｏｒｄ）。

【0064】

図８（Ｅ）に示すように、利用者（ユーザ）は、解錠ライセンスの行使前に電子キーｉアプリ３６１からＰＩＮ入力を行い（Ｖｅｒｉｆｙ（ＰＩＮ））、入力されたＰＩＮはＩＣチップ３５０の電子キーカードＡＰ３５１内のＰＩＮ（ＥＦ）ファイル（図８（Ｆ）参照）に保持される。

【0065】

利用者がＩＣチップ搭載携帯電話３０１をドアがわ端末３０２にかざした時、ドアがわ端末３０２では、図８（Ａ）に示すように、まずＰＩＮ（ＥＦ）ファイルを読み取り（Ｒｅａｄ Ｒｅｃｏｒｄ）、読み取られたＰＩＮを用いて、ＩＣチップ３５０に対し認証を行う（Ｖｅｒｉｆｙ（ＰＩＮ））。ＰＩＮ認証が成功すれば、解錠ライセンスが読み取り可能になるため、以降の解錠のための認証プロセス（解錠処理）に進むことができる。ただしこのとき、ＰＩＮの再利用を防ぐため、ＰＩＮ（ＥＦ）の内容はＰＩＮ認証の成否に関わらず、消去しておかなければならない（Ｕｐｄａｔｅ Ｒｅｃｏｒｄ）。なお、上記において、ＰＩＮ（ＥＦ）を用いる理由は、一般に、認証・ファイル属性指定用のＰＩＮ（ＩＥＦ）は、セキュリティ上読み取り不可でなければならないためである。

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【0066】
この方式において、ＰＩＮ入力を不要とするモードに設定する際には、図８（Ｄ）に示すように、利用者は電子キーｉアプリ３６１からＰＩＮ入力を行い（Ｖｅｒｉｆｙ（ＰＩＮ））、解錠ライセンスを保持するファイルに対する属性を、ＰＩＮ照合がなくても読み出し可能と設定しておけば良い（Ｍａｎａｇｅ　Ａｔｔｒｉｂｕｔｅ（電子キー））。これにより、ドアがわ端末３０２はＰＩＮ認証に関する処理をすることなく、解錠のための認証プロセスを行うことができる（図８（Ｂ）参照）。また、ドアがわ端末３０２は現在のモードを知らずとも、ＰＩＮ入力が必須か不要かのモードを自動判別することも可能である。すなわち、まず解錠のための認証プロセスの冒頭で行う解錠ライセンスの読み出しを行うことにより、それが成功した場合はＰＩＮが不要なモードであり、失敗した場合は読み出しに制限がかかっているためＰＩＮ入力が必要なモードであると判断できる。
【0067】
上記においては、ＰＩＮ入力はＩＣチップ搭載携帯電話３０１の電子キーｉアプリ３６１から行われるものとしていたが、ドアがわ端末３０２に組み込んだ１０キーを用いてＰＩＮ入力を行うことも可能である。この場合のフローはｉアプリから行う場合とほぼ同様であり、ＰＩＮを電子キーカードＡＰから読み出す代わりに、１０キーから取得すれば良い。
【0068】
このとき、ドアがわ端末３０２はＰＩＮ入力がｉアプリからなされるか１０キーからなされるかを、予め知らずとも自動的に判別することができる。すなわち、１０キー入力およびＩＣカードリーダライタをセンスしておき、１０キー入力があった後一定の時間内にＩＣカードリーダライタにＩＣチップ搭載携帯電話がかざされたことを感知した場合は、１０キーからのＰＩＮ入力であり、そうではなく先にＩＣカードリーダライタでＩＣチップ搭載携帯電話を感知した場合は、ｉアプリからのＰＩＮ入力がなされていると判定すれば良い。
【0069】
（実施例３．２）
図９にＰＩＮ認証方式の実現例２を示す。図９（Ａ）にＰＩＮ必要モードの解錠時のフローを示し、図９（Ｂ）にＰＩＮ必要モードに設定するフローを示し、図９（Ｃ）にＰＩＮ不要モードに設定するフローを示し、図９（Ｄ）にＰＩＮ必要モードでＰＩＮを入力するフローを示す。
【0070】
図９（Ｅ）に、電子キーカードＡＰ３５１内の関連ファイルの模式図を示す。図９（Ｅ）は図８（Ｆ）とほぼ同様である。異なる点は、図８（Ｆ）ではＰＩＮ（ＥＦ）が利用者から入力されたＰＩＮのみを保持するのに対して、図９（Ｅ）では「ＰＩＮ＋ＭｏｄｅＢｉｔ（ＥＦ）」となっており、利用者から入力されたＰＩＮに加えて、現在のモードを表すビット（すなわちＰＩＮ必要モードを示すフラグ）もあわせて保持される点である。このモードビットは、ＰＩＮ必要モードではＰＩＮの再利用を防ぐため「ＰＩＮ＋ＭｏｄｅＢｉｔ（ＥＦ）」に保持されているＰＩＮを毎回消去する必要があるのに対し、ＰＩＮ不要モードでは消去しないため、現在のモードがいづれであるかをドアがわ端末３０２が知るために用いられる。
【0071】
実施例３．１同様、電子キーカードＡＰ３５１内では、電子キー（解錠ライセンス）を保持するファイルに対し、ＰＩＮ（ＩＥＦ）によるＰＩＮの照合が成功しない限り、読み出しはできないとする属性が付けられている（図９（Ｂ）にＰＩＮ必要モードに設定するフローが示されている）。図９（Ｄ）に示すように、解錠ライセンスの行使前に利用者が電子キーｉアプリ３６１からＰＩＮ入力を行い、入力されたＰＩＮが電子キーカードＡＰ３５１内のＰＩＮ（ＥＦ）ファイルに保持されるのも実施例３．１と同様であるが、このとき、ＰＩＮ（ＥＦ）には現在のモードを表すビット（すなわちＰＩＮ必要モードを示すフラグ）もあわせて保持される（図９（Ｅ）参照）。

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【0072】
利用者がＩＣチップ搭載携帯電話３０１をドアがわ端末３０２にかざした時、図９（Ａ）に示すように、実施例３．１同様、ドアがわ端末３０２ではまずＰＩＮ（ＥＦ）ファイルを読み取り（Ｒｅａｄ　Ｒｅｃｏｒｄ）、読み取られたＰＩＮを用いて、ＩＣチップに対し認証を行う（Ｖｅｒｉｆｙ（ＰＩＮ））。ＰＩＮ認証が成功すれば、解錠ライセンスが読み取り可能になるため、以降の解錠のための認証プロセス（解錠処理）に進むことができる。このとき、ＰＩＮの再利用を防ぐため、ＰＩＮ（ＥＦ）の内容はＰＩＮ認証の成否に関わらず、消去しておかなければならないが、この処理は実施例３．１とはことなり、現在のモードがＰＩＮ必要モードである時のみである（現在のモードはＰＩＮ（ＥＦ）に保持されているビットから知ることが出来る）。
【0073】
この方式において、ＰＩＮ入力を不要とするモードに設定する際には、図８（Ｃ）に示すように、利用者にＰＩＮを入力させ、それが正しいものであることを確認した後、正しいＰＩＮと、ＰＩＮ不要モードを表すフラグとをＰＩＮ（ＥＦ）に保持しておく。これにより、ドアがわ端末３０２は常に正しいＰＩＮを取得することができ、従って実効上は利用者が改めてＰＩＮ入力を行うことなく、解錠のための認証プロセスを行うことができる。このとき、ドアがわ端末３０２は予め現在のモードを知る必要がなく処理を行うことができるが、ＰＩＮ（ＥＦ）のＰＩＮを消去するか否かを判断するためには、ＰＩＮを読み取ると同時に現在のモードも読み取り、動作を変える必要がある。
【0074】
上記においては、ＰＩＮ入力はＩＣチップ搭載携帯電話３０１の電子キー１アプリ３６１から行われるものとしていたが、ドアがわ端末３０２に組み込んだ１０キーを用いてＰＩＮ入力を行うことも、実施例３．１同様、可能である。
【0075】
（実施例４）
図１０に配信情報の形式を、会議室予約の場合の例で示す。図において、一行がひとつの配信情報の単位を表し、ひとつの配信情報単位は、複数の配信条件とひとつの配信情報から構成される。
【0076】
配信条件は、利用者（クラス）、ゲート（クラス）、時間、解錠回数、配信回数からなり、これらに対する条件がアンド条件で判定される。ここで表中の「＊」はドントケア条件（すなわち任意の場合にマッチする）を示す。利用者（クラス）の欄には、特定の利用者（図中では「▲さん」）あるいは利用者クラス（グループ化された利用者。図中では「一般職」）を記述することができる。ゲート（クラス）に関しても同様である。時間の欄では、ここでは時間帯を複数書くことができる（オア条件。なお、ウィークリーマンションの場合などは時間帯ではなく、開始－終了日時の組を複数書くことになる）。解錠回数、配信回数は、当該ドアまたは当該情報に対する解錠または情報配信の回数をカウントしておき、それが特定の値または範囲になった時情報を配信することを示す。このような条件指定を評価し、合致する行（複数合致することがあるが、その場合すべて）の配信情報内容を、対象の情報配信内容とする。
【0077】
ドアがわ端末３０２には予めこの表形式が配布されており、解錠が行われる度に条件判定を行い、配信されるべき情報内容を決定する（メール経由での情報配信を行う場合は、解錠通知をもとにサーバにて条件判定を行う）。
【0078】
配信情報内容には、利用者名や部屋名、予約時間帯などを含めることができる。配信情報内容の記載にあたっては、その部分を特定の文字列で示しておき、配信を行う際に実際の値に置換を行う。置換されるべき実際の値は、利用者名等予約に関わる情報であれば解錠ライセンスから取得することができる。また、部屋名などであれば、ドアがわ端末の固有情報として、個々のドアがわ端末において処理することが可能である。

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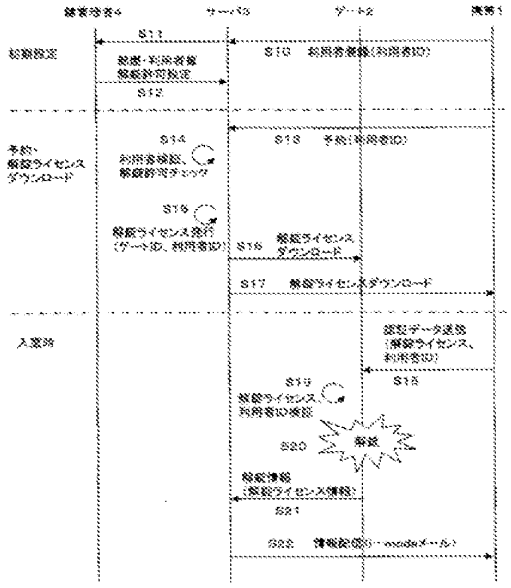
【0079】
（実施例５）
図１１に情報配信の画面例を示す。
図１１はウィークリーマンションの場合を例とし、配信された情報をｉアプリ画面で表示する際の例である。情報配信ｉアプリ３６７（図３－１参照）では、情報配信カードＡＰ３５４（図３－１参照）に書き込まれた情報を読み出し最新の配信情報を表示するが、このとき過去数回の配信情報も保持されており、必要に応じて読み出し・表示することができる。なお、ｉアプリを用いるため、テキスト情報のみならず、ハイパーリンクも配信情報に含めることが可能である。
【0080】
図１１においては、初回の解錠時と二回目以降とでは、実施例４に記載された配信条件の設定を用いて、異なる情報が配信される場合を想定している。また、図１１の「二回目以降」の部分では、一度に配信される情報量を加減できるようにすることを想定している。これは、情報配信の時間が配信される情報量に比例し、またＩＣチップの記憶容量には限りがあるため、実用時において最適なトレードオフをみつけられるようにとの配慮からである。図１１の例においては、フル～短縮の情報量の想定は、およそ３８４～１２８バイトである。情報配信量のコントロール方法としては、実施例４において複数行の情報配信単位を選択することができることを利用して、それぞれの行にプライオリティを付けておく方法（すなわち、必ず配信する、短縮では省略する、フルでのみ配信する、等）、あるいは、ひとつの情報配信単位での配信情報欄を更に細分しておく方法（すなわち必ず配信する部分、短縮では省略される部分、フルでのみ配信する部分、等）、などが考えられる。
【0081】
以上説明した実施形態および実施例の各装置はその機能または動作を実現する手段を有しており、その手段はハードウェアで構成しても、その一部または全部を記憶装置に記憶されたプログラムとそのプログラムを処理するＣＰＵで構成してもよい。
【0082】
以上、本発明者によってなされた発明を、前記実施形態、実施例に基づき具体的に説明したが、本発明は、前記実施形態、実施例に限定されるものではなく、その要旨を逸脱しない範囲において種々変更可能であることは勿論である。
【図面の簡単な説明】
【0083】
【図1】従来の共通鍵暗号を用いた鍵サービスのフロー
【図2】本発明の実施形態の鍵サービスのフロー
【図3-1】本発明の実施形態のシステム構成概要図
【図3-2】解錠ライセンス管理／情報配信サーバ３０３の詳細図
【図3-3】ＩＣチップ搭載携帯電話３０１の詳細図
【図3-4】ドアがわ端末３０２の制御端末３７０の詳細図
【図4】解錠ライセンスフォーマット例１（実施例１．１）
【図5】解錠ライセンスフォーマット例２（実施例１．２）
【図6】ウィークリーマンションサービスへ適用した時の予約画面遷移（実施例２．１）
【図7】会議室予約サービスへ適用した時の予約画面遷移（実施例２．２）
【図8】ＰＩＮ入力方式の実現例１（実施例３．１）
【図9】ＰＩＮ入力方式の実現例２（実施例３．２）
【図10】配信情報の形式例（実施例４）
【図11】情報配信画面例（実施例５）
【符号の説明】
【0084】
１…利用者が携帯する装置（携帯電話）、２…ゲート（ドアがわ装置）、３…サーバ、４…鍵管理者、３１…利用者が携帯する装置（ＩＣチップ搭載携帯電話）、３２…ゲート（

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ドアがお装置）、３３…サーバ、３４…鍵管理者、３０１…ＩＣチップ搭載携帯電話、３０２…ドアがお端末、３０３…解錠ライセンス管理／情報配信サーバ、３１０…解錠ライセンス管理サーバ、３２０…配信情報配信サーバ、３３０…利用者管理・Ｗｅｂ　Ｕ／Ｉ、３５０…ＩＣチップ、３５１…電子キーカードＡＰ、３５４…情報配信ＡＰ、３６０…ｉアプリ、３６１…電子キーｉアプリ、３６７…情報配信ｉアプリ、３７０…制御端末、３７１…ゲート端末ＡＰ、３７６…情報配信ＡＰ、３８０…ドアゲート、３８１…電気錠、３８２…電気錠コントローラ、３８３…非接触ＩＣカードリーダライタ

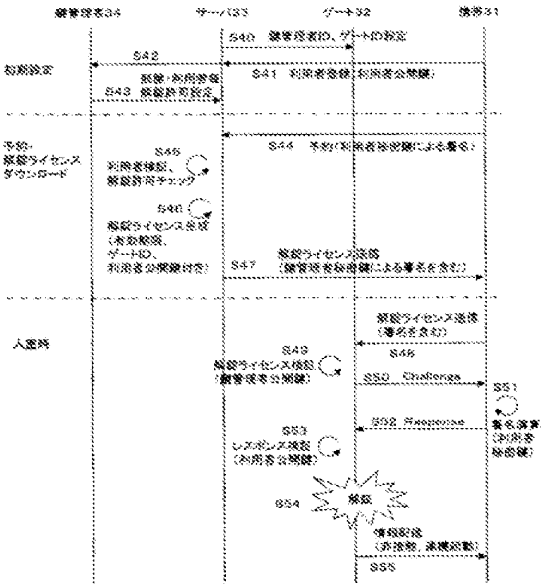
【図1】

図1



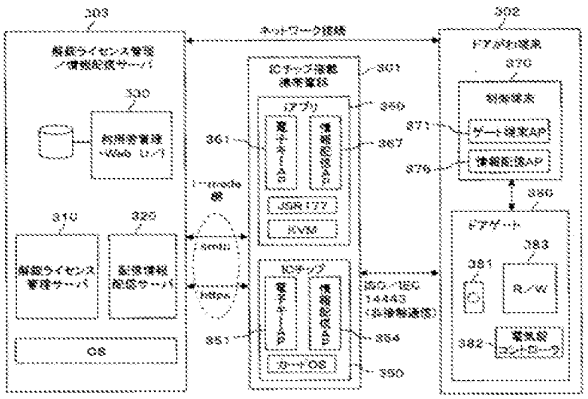
【図2】

図2



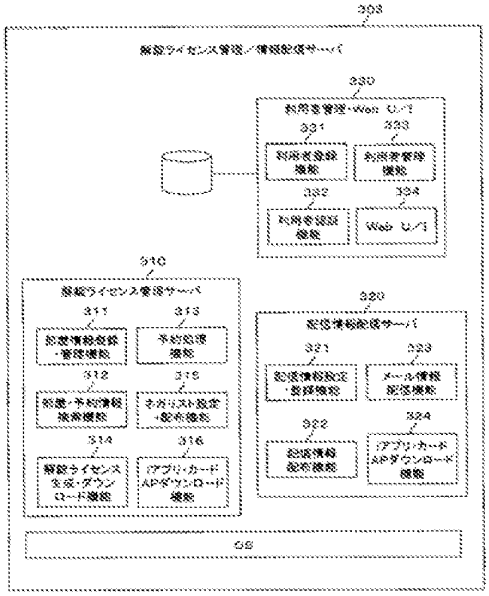
【図3-1】

図３－１



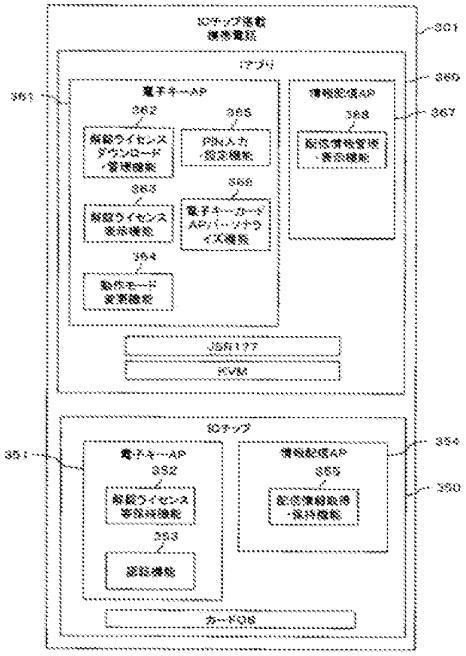
【図3-2】

図３－２



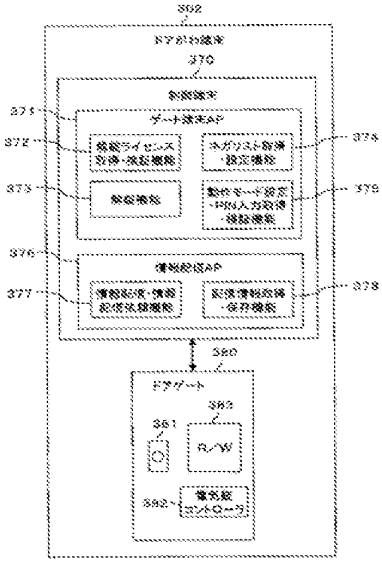
【図3-3】

図３－３



【図3-4】

図３－４



【図４】

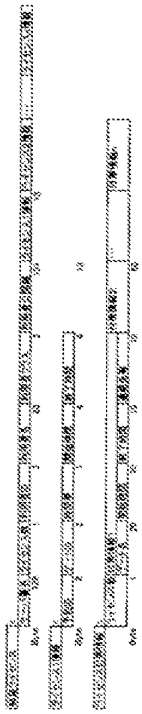
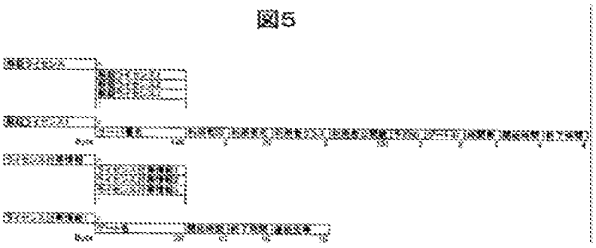


図４

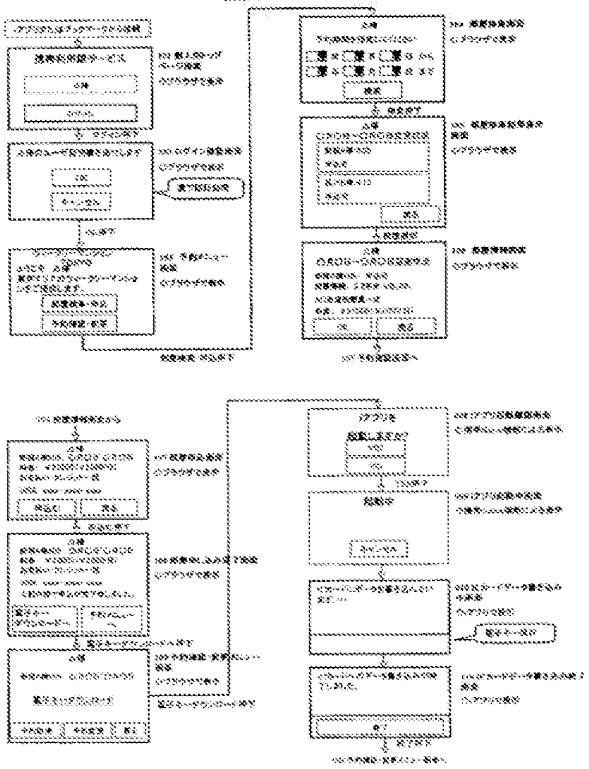
【図５】

図５



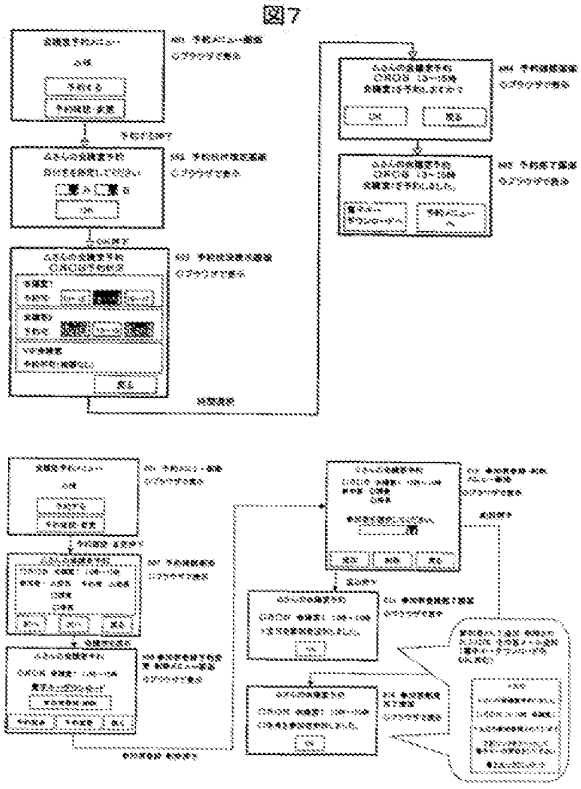
【図６】

図６



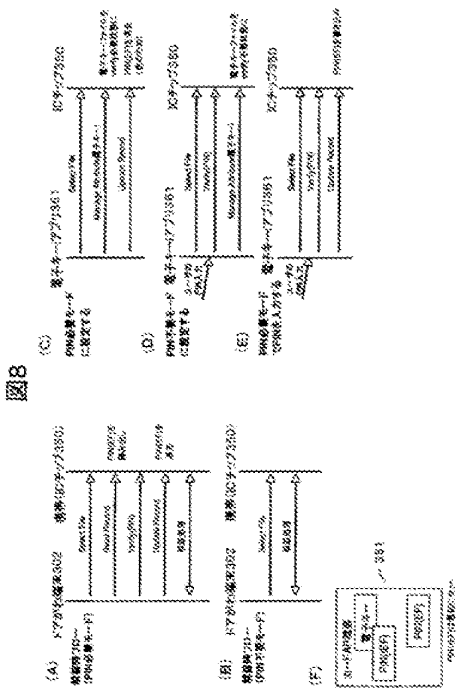
【図７】

図７

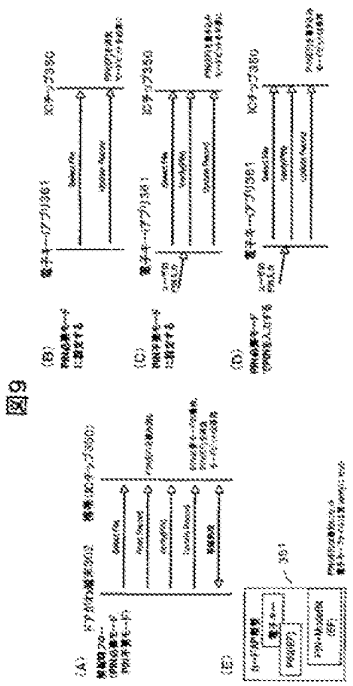


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【図８】

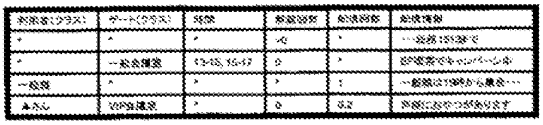


【図９】



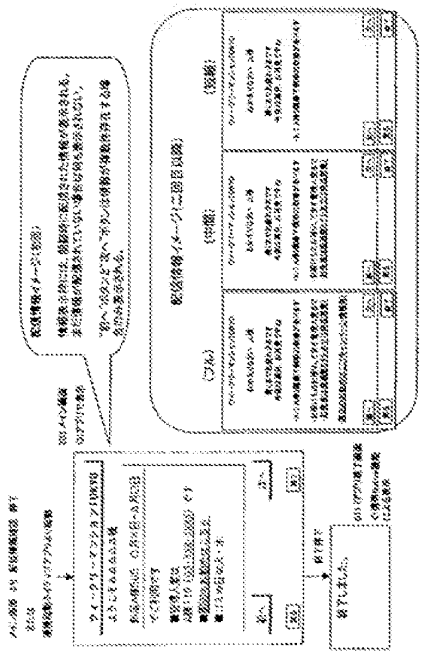
【図１０】

図１０



【図１１】

図１１



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GG06　GG13

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CLAIMS JP2006233475A

1.

13 A step in which a locking / unlocking device that locks / unlocks a lock receives an unlocking license, which is an electronic key including a signature by the key administrator's private key, from a device carried by the user, and the above-mentioned locking / unlocking The steps in which the unlocking device verifies the signature of the unlocking license and the unlocking license using the public key of the key administrator, and the locking / unlocking device is the signature of the unlocking license. A key service method comprising a step of unlocking or locking a lock when the verification and the verification of the unlocking license are successful.

2.

24 The key service method according to claim 1, wherein the locking / unlocking device transmits a challenge to the device carried by the user before the step of unlocking or locking the lock. A device carried by the user performs a signature operation on the challenge with the user's private key, sends a response to the lock / unlock device, and the lock / unlock device uses the user's public key. In the step of unlocking or locking the lock, if the signature of the unlocking license, the verification of the unlocking license, and the verification of the response are successful, the lock is used. A key service method for unlocking or locking.

3.

34 The key service method according to claim 1 or 2, wherein the server receives information including a signature by the user's private key from a device carried by the user, and the server is the user's. A key service method having a step of transmitting the unlocking license to a device carried by the user when the verification of the user and the verification of the

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unlocking permission using the public key are successful.

4.

42 The key service method according to any one of claims 1 to 3, and after the PIN input by the user is successful, the locking / unlocking device is released from the device carried by the user. A key service method for receiving a lock license.

5.

48 The key service method according to claim 4, further comprising a step of switching between an operation in which the PIN input is essential and an operation in which the PIN input is not essential.

6.

54 The key service method according to any one of claims 1 to 5, wherein the device carried by the user is a mobile phone equipped with a TypeB IC chip.

7.

59 The key service method according to any one of claims 1 to 6, wherein communication between the locking / unlocking device and the device carried by the user is performed by non-contact communication.

8.

65 The key service method according to any one of claims 1 to 7, wherein the locking / unlocking device transmits information to a device carried by the user in a non-contact communication with the unlocking or locking as an opportunity. Alternatively, a key service method of delivering the information by e-mail and displaying the information delivered by the device carried by the user on the screen.

9.

73 A key service system having the server, the locking / unlocking device, and the device carried by the user, which performs the key service method according to any one of claims 1 to 8.

10.

78 A program for causing a computer to perform the step of the key service method according to any one of claims 1 to 8.

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DESCRIPTION JP2006233475A

10 PROBLEM TO BE SOLVED: To solve a problem of a conventional method in a key service. SOLUTION: A gate 32 receives an unlocking license which is an electronic key including a signature by a key manager's private key from a device 31 carried by a user (S48). The gate 32 verifies the signature of the unlocking license and the unlocking license using the public key of the key manager (S49). The gate 32 transmits a challenge to the device 31 carried by the user, the device 31 carried by the user performs a signature operation on the challenge with the user's private key, sends a response to the gate 32, and the gate 32 Verify the response using the user's public key (S50-S53). When the signature of the unlocking license, the verification of the unlocking license, and the verification of the response are successful, the gate 32 unlocks or locks the lock (S54). [Selection diagram]

20 Key service methods, systems and their programs

[0001]

24 Using authentication information (unlocking license) using public key cryptography, the door is unlocked or locked using a device carried by the user, for example, a mobile phone equipped with an IC chip, and information is distributed when the unlocking or locking is triggered. Key service methods, systems and their programs.

[0002]

31 FIG. 1 shows a flow of a key service system using conventional common key cryptography (Non-Patent Document 1).

33 In FIG. 1, 1 is a device carried by a user, for example, a mobile phone, 2 is a gate (door river device), 3 is a server, and 4 is a key manager. The first stage is the initial setting stage. User registration is performed from the mobile phone 1 to the server 3 in S10. At this time, the mobile phone 1 sends the user ID. In S11, the server 3 displays the setting screen for the key manager 4, and in S12, the key manager 4 sets the unlock permission (success right) of the

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gate 2 for each user for the server 3. The second stage is the download stage of the reservation / unlock license. In S13, the mobile phone 1 makes a reservation to the server 3. At this time, the mobile phone 1 sends the user ID. In S14, the server 3 verifies the user and checks the unlocking permission. In the case of permission, an unlocking license will be issued in S15. The unlocking license includes a gate ID and a user ID. In S16, the unlocking license is downloaded from the server 3 to the gate 2, and in S17, the mobile phone 1 downloads the unlocking license. The third stage is the stage at the time of entering the room. The mobile phone 1 transmits the authentication data to the gate 2. The authentication data includes the unlock license and the user ID. Gate 2 verifies the unlocking license and the user ID in S19, and unlocks the door in S20 when it should be permitted. In S21, the gate 2 transmits the unlocking information (unlocking license information) to the server 3, and in S22, the server 3 distributes the information by i-mode (registered trademark) mail.

[0003]

53 In this method, a set of a user ID (which is unique to the IC chip) and a gate ID serves as authentication information (unlocking license) for unlocking. To ensure security, this authentication information (unlocking license) is encrypted with a common key and passed between each device. Therefore, each device that handles authentication information (unlocking license), that is, a server, a gate, and a mobile phone (IC chip) must know a common private key (common key), and for these devices. Is required to be tamper resistant (for these devices, the authentication information (unlocking license) must be protected as confidential information).

[0004]

64 Since this conventional method uses a common key, there are the following problems. (1) If the common key is known, the entire system will be broken, which is a weak point in security. (2) In principle, each door must have a common private key and secret information such as authentication information (unlocking license), and the number of devices that must protect the secret information increases. (3) Every time an unlocking key (unlocking license) (authentication information for unlocking) is issued, the authentication information (unlocking license) must be delivered to each door as appropriate in principle, and therefore each door. Must be online at all times.

[0005]

75 Of the above problems, (2) and (3) can be alleviated by using a door server that is connected to a plurality of door groups and controls them, instead of performing processing directly on each door. However, even in this case, the door server must always be online to protect the confidential information and receive the unlocking key. In addition, each door must be always connected to the door server because the unlocking process is performed at any time.

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Therefore, even when the door server is used, the above problem is not essentially solved.

[0006]

84 In the flow of FIG. 1, when an IC card is used, it is necessary to use a device such as a PC to which an IC card reader / writer device is connected, and the number of devices required on the system increases. In addition, when an IC card is used, many systems operate without going through the process of issuing a key. In this case, the authentication information used for unlocking is only the user ID (unique to the IC chip), and the key download process for the IC card can be omitted. On the other hand, for each door, unlocking permission is set instead of the key download format, but this makes the setting of each door more complicated, and the authentication information and the user ID are the same. Therefore, it becomes more vulnerable in terms of security.

[0007]

96 In the flow of FIG. 1, the trigger for information distribution is the success of unlocking, but the method is (i-mode) mail. In this case, there is a time lag between unlocking and receiving an e-mail, and information distribution may fail depending on the network condition, which is a problem. There is also a system that distributes information directly to a mobile phone equipped with an IC chip by non-contact communication, which is a service different from the key service. However, in this case, the conventional system has a limit on the amount of information that can be distributed, and in most cases, only a pointer to the information that is actually desired to be distributed such as a URL is distributed.

[0008]

107 KESAKA System Co., Ltd., Connect Technologies Co., Ltd., Itochu Techno Science Co., Ltd., NTT DoCoMo Kyushu Co., Ltd., "Osaifu-Keitai TM" is the key to completing the condominium! Started providing "kesaka service". , [Online], [Searched on January 28, 2005], Internet <http://www.kesaka.net/tm05.htm> <http://www.kesaka.net/pf0404.htm> <http //www.kesaka.net/pf04041.htm> <http://www.kesaka.net/pf04042.htm> <http://www.kesaka.net/pf04043.htm> <http://www. kesaka.net/pfsample1.htm >

[0009]

116 The present invention solves the problems of the conventional method in the key service by using public key cryptography. That is, the following is realized by a method using public key cryptography. -By using public key cryptography, the security weaknesses of the system related to the leakage of common private keys are eliminated. -Furthermore, by devising an unlocking key method using public key cryptography, it is no longer necessary for locking / unlocking devices such as doors to have confidential information, and the number of devices

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that must protect confidential information can be reduced. Reduce. -Realize an unlocking key method that does not require prior delivery of authentication information to each door, etc., so that the locking / unlocking device for each door, etc. must be online at all times. Eliminate sex.

[0010]

129 Furthermore, by using a mobile phone equipped with an IC chip, the unlocking key can be rewritten, viewed and exercised without a special device. That is, for example, by using a mobile phone that can access the network in i-mode or the like, the authentication information in the IC card can be rewritten and viewed only by the mobile phone. Compared with the case of using an IC card, this requires fewer types of devices on the system, is more convenient, and is also superior in security to the conventional method.

[0011]

138 In addition, when unlocking is successful, information is distributed directly from a locking / unlocking device such as a door, for example, an IC card reader / writer device, to a mobile phone equipped with an IC chip by non-contact communication, as compared with the conventional method. The information itself can be delivered with less time lag and more reliably.

[0012]

146 According to the first invention, a locking / unlocking device that locks / unlocks a lock receives an unlocking license, which is an electronic key including a signature by a key manager's private key, from a device carried by a user. The step, the step in which the locking / unlocking device verifies the signature of the unlocking license using the public key of the key manager and the verification of the unlocking license, and the locking / unlocking device is said. It is a key service method having a step of unlocking or locking a lock when the verification of the signature of the unlocking license and the verification of the unlocking license are successful.

154 In the second invention, in the first invention, before the step of unlocking or locking the lock, the locking / unlocking device transmits a challenge to the device carried by the user, and the use A device carried by a person performs a signature operation on the challenge with the user's private key, sends a response to the lock / unlock device, and the lock / unlock device uses the user's public key. It has a step of verifying the response, and when the verification of the signature of the unlocking license, the verification of the unlocking license, and the verification of the response are successful in the step of unlocking or locking the lock, the lock is unlocked. It is a key service method for locking or locking. A third aspect of the invention is the step in which the server receives information including a signature by the user's private key from a device carried by the user in the first or second invention, and

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the server is the user's. It is a key service method having a step of transmitting the unlocking license to a device carried by the user when the verification of the user and the verification of the unlocking permission using the public key are successful. The fourth invention is the key in the first to third inventions, in which the lock / unlock device receives the unlock license from the device carried by the user after the PIN input by the user is successful. It is a service method. A fifth invention is a key service method according to a fourth invention, which comprises a step of switching between an operation in which the PIN input is essential and an operation in which the PIN input is not essential. A sixth invention is a key service method in which the device carried by the user is a mobile phone equipped with a TypeB IC chip in the first to fifth inventions. A seventh invention is a key service method in the first to sixth inventions, in which communication between the locking / unlocking device and the device carried by the user is performed by non-contact communication. In the eighth aspect of the invention, in the first to seventh inventions, triggered by the unlocking or locking, the locking / unlocking device delivers information to the device carried by the user by non-contact communication or e-mail. This is a key service method for displaying the information distributed by the device carried by the user on the screen. A ninth invention is a key service system including the server, the locking / unlocking device, and the device carried by the user, which performs the key service method of the first to eighth inventions. The tenth invention is a program for causing a computer to execute the steps of the key service method of the first to eighth inventions.

[0013]

187 According to the present invention, by using public key cryptography, it is possible to solve the problems of the conventional method in the key service. That is, the following is realized. -By using public key cryptography, the security weaknesses of the system related to the leakage of common private keys are eliminated. -Furthermore, by devising an unlocking key method using public key cryptography, it is no longer necessary for locking / unlocking devices such as doors to have confidential information, and the number of devices that must protect confidential information can be reduced. Reduce. -Realize an unlocking key method that does not require prior delivery of authentication information to each door, etc., so that the locking / unlocking device for each door, etc. must be online at all times. Eliminate sex.

[0014]

199 Further, for example, by using a mobile phone having network access in i-mode or the like, it is possible to rewrite and browse the authentication information in the IC card only with the mobile phone without a special device.

[0015]

205 In addition, by using the success of unlocking as an opportunity to distribute information

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directly from a lock / unlock device such as a door, for example, an IC card reader / writer device, to a mobile phone equipped with an IC chip by non-contact communication, compared with the conventional method. The information itself can be delivered with less time lag and more reliably.

[0016]

213 Hereinafter, embodiments of the present invention will be described.

214 The flow of the embodiment of the key service system of the present invention is shown in FIG.

216 In FIG. 2, 31 is a device carried by a user, for example, a mobile phone equipped with a TypeB IC chip (hereinafter, referred to as "IC chip-equipped mobile phone 31"), and 32 is a gate (door) for unlocking and locking the door. It is a door device), 33 is a server, and 34 is a key administrator. The mobile phone 31 in FIG. 2 will be described as an "IC chip-equipped mobile phone 31" in the present embodiment, but the present invention is not limited to this, and any device carried by the user can be a portable TV, radio, or music. It may be carried by a user such as a playback device, a bag, a handbag, a wallet, a license, a certificate, a card, etc., or may be attached to clothes or dedicated as an electronic key. In the present embodiment, the gate 32 will be described as a door door device, that is, a device for locking and unlocking the door, but the gate 32 is not limited to this, and the gate 32 is a safe, a bag, a handbag, a desk, and a cabinet. , Lockers, automobiles, buildings, and other lock / unlock devices that lock / unlock locks.

[0017]

231 The first stage is the initial setting stage. In S40, the server 33 sets the key administrator ID and the gate ID in the gate (door river device) 32. In S41, the mobile phone 31 equipped with an IC chip registers as a user. The user registration includes the user's public key. In S42, the server 33 displays the setting screen to the key manager 34, and in S43, the key manager 34 sets the unlock permission (access right) of the gate (room) for each user on the server 33.

[0018]

230 The second stage is the reservation / unlock license download stage. In S44, the IC chip-equipped mobile phone 31 transmits a reservation to the server 33. The reservation includes a signature with the user's private key. Instead of making a reservation, you can also send change or deletion information. In S45, the server 33 verifies the user and checks the unlocking permission. In the case of permission, S46 generates an unlocking license which is an electronic key. The unlock license has an expiration date, a gate ID, and a user public key (the server 33 has acquired the user public key in S41). In S47, the server 33 transmits the unlocking license to the mobile phone 31 equipped with the IC chip. The unlock license includes a signature with the key administrator's private key.

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[0019]

251 The third stage is when the user enters and exits. In S48, the mobile phone 31 equipped with an IC chip transmits an unlocking license. The unlock license includes a signature with the key administrator private key. In S49, the gate (door river device) 32 verifies the signature of the unlocking license and verifies the unlocking license. That is, the gate (door river device) 32 verifies the signature by the key manager private key given to the acquired unlocking license with the key manager public key. Next, the gate (door river device) 32 parses the unlocking license and retrieves the necessary information. Of the retrieved information, the target gate ID and expiration date are checked, and it is confirmed whether the own gate ID and the current time meet the conditions. If the signature verification of the unlocking license and the verification of the unlocking license are successful, the gate (door river device) 32 transmits the challenge to the mobile phone 31 in S50. The mobile phone 31 performs a signature calculation using the user's private key, and transmits a response to the gate (door river device) 32 in S52. In S53, the gate (door river device) 32 verifies the response using the user public key, and if successful, unlocks in S54. In S55, the gate (door river device) 32 distributes information to the IC chip-equipped mobile phone 31 by non-contact and cooperative activation.

[0020]

270 The unlocking key (unlocking license) in this embodiment is a set of the target gate ID, expiration date, user's public key, and other incidental data, and the set is signed by the key manager's private key. I went there. The unlocking key (unlocking license) is generated by the key manager based on the request from the user (room usage reservation, etc.). Prior to the unlocking key generation, it is assumed that the user's public key is informed to the key administrator (in the flow of FIG. 2, it is registered in the server at the time of user registration (S41)). The generated unlocking key (unlocking license) is sent to the user (S47). When the user enters the room, the unlocking key (unlocking license) is sent to the door-to-door device (S48), and if all necessary processing such as authentication is performed and all are successful, the unlocking is performed (S54). The authentication process at the time of entering the room is as follows. 1. Verification of signature of unlocking key (unlocking license): The gate (door river device) 32 verifies the signature of the acquired unlocking key (unlocking license) by the key administrator private key. A key administrator public key is required for signature verification, and it is assumed that the door is set in the door device 32 by the key administrator in advance. 2. Verification of unlocking key (unlocking license): The gate (door river device) 32 parses the unlocking key (unlocking license) and retrieves necessary information. Of the retrieved information, the target gate ID and expiration date are checked, and it is confirmed whether the own gate ID and the current time meet the conditions. 3. User authentication: The gate (door river device) 32 sends a challenge to the user. The user's IC chip (inside the mobile phone 31 equipped with the IC

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chip) performs a signature operation on the challenge with the user's private key, and returns the result to the door-to-door device 32. The door-gawa device 32 verifies the response using the user public key obtained from the unlock key (unlock license). The above 1 and 2 are performed in S49 of FIG. 2, and the above 3 is performed in S50 to S53 of FIG.

[0021]

297 In the above method, the only information that must be kept secret is the key administrator private key and the user private key, as in the case of ordinary public key cryptography. Therefore, the device that holds the secret information is only the IC chip that the server and the user have, and it is not necessary to hold the secret information in the device with the door as in the conventional method.

[0022]

305 In the present embodiment, since the unlocking key (unlocking license) is verified by the key pair of the key administrator at the time of unlocking (see S49 in FIG. 2), a third party obtains the unlocking key (unlocking license). Even if it is tampered with, the tampered unlock key will be invalid. In addition, even if the private key of the key administrator is leaked, only the door related to the key administrator is affected by it, and when the common private key is leaked as in the conventional method, the system is affected. It does not allow arbitrary attacks and is more secure. In addition, since user authentication is performed by the user's key pair at the time of unlocking (see S50 to S53 in FIG. 2), even if the unlocking key (unlocking license) is passed to a third party, it is unlocked by the third party. The use of lock keys is blocked. In the conventional method, if a third party who knows the common private key (participating in the system) can disguise the ID, the unlocking key obtained illegally can be used, so this method has higher security. Furthermore, even if a user's private key is leaked, only the user will be affected by it, and any attack on the system is possible when the common private key is leaked as in the conventional method. It does not mean that.

[0023]

322 In the present embodiment, the information required by the gate (door door device) 32 in the authentication process at the time of unlocking is the public key of the key administrator set in advance and the unlocking key sent from the user before unlocking. Only the information contained in (unlocking license). That is, unlike the conventional method, it is not necessary to collate the issued unlocking key with the unlocking key (unlocking license) held by the user with the door-to-door device, and therefore the unlocking key (unlocking license) is used. It is not necessary to set the door-to-door device each time it is issued, or to confirm the authentication information with the server or the like every time the unlocking process is performed. That is, the doorway device does not have to be online at all times.

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[0024]

334 Since a mobile phone equipped with an IC chip is used in this embodiment, the authentication information in the IC card can be rewritten and viewed only by the mobile phone without using a special device.

[0025]

340 In the present embodiment, when the lock is unlocked, information is distributed directly from the IC card reader / writer device of the door-to-door device to the mobile phone equipped with the IC chip by non-contact communication.

343 In the conventional method, the unlock notification is once sent to the server and the information is distributed from the server. Therefore, the door-to-door device must always be online, and there is a time lag in the information distribution. In general, the frequency of updating the information to be delivered is not so frequent, such as every day or every few hours, so the door-to-door device does not need to be online at all times in this method. Further, since the information is delivered directly, the information itself can be delivered reliably with a smaller time lag as compared with the conventional method. Further, since a mobile phone equipped with an IC chip is used in this method, the distributed information can be viewed on the spot using the display of the mobile phone.

[0026]

355 FIG. 3-1 shows a schematic diagram of the system configuration of this embodiment. Reference numeral 301 denotes a typeB IC chip-equipped mobile phone (hereinafter, referred to as "IC chip-mounted form telephone 301", but any device may be used as long as it is a device carried by the user.), Corresponding to the mobile phone 31 of FIG. Reference numeral 302 denotes a door door terminal for unlocking and locking the door, which corresponds to the gate (door door device) 32 of FIG. Reference numeral 303 denotes an unlocking license management / information distribution server, which corresponds to the server 33 of FIG.

[0027]

366 The unlocking license management / information distribution server 303 is an unlocking license management server 310 that issues and manages an unlocking license (unlocking key), and distributes that sets and manages distribution information and delivers it to the doorway terminal 302. It includes an information distribution server 320, and a user management / Web U / I 330 that registers / manages users and provides Web U / I to users. In the present embodiment, these three parts are treated as being placed in one server device for the sake of simplicity, but there is no functional problem even if they are placed in separate server devices.

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[0028]

377 The IC chip-equipped mobile phone 301 and the door-to-door terminal 302 perform non-contact communication using ISO / IEC14443 (one of the communication standards for non-contact IC cards and RFID), and unlock license management with the IC chip-equipped mobile phone 301. The information distribution server 303 communicates with the smtp and https protocols via the i-mode network, and the doorway terminal 302 and the unlock license management / information distribution server 303 communicate with each other via a network connection. In the present embodiment, ISO / IEC14443 is used as the non-contact communication between the mobile phone 301 equipped with the IC chip and the door terminal 302, but the non-contact communication is not limited to this, and the non-contact communication is electrically performed. Any non-contact, short-range communication may be used. Further, in the present embodiment, the i-mode network is used as the communication network between the mobile phone 301 equipped with the IC chip and the unlocking license management / information distribution server 303, but other communication networks may be used.

[0029]

394 FIG. 3-2 shows the details of the unlocking license management / information distribution server 303. The unlocking license management / information distribution server 303 includes an unlocking license management server 310, a distribution information distribution server 320, and user management / Web U / I 330.

[0030]

401 User Management / Web U / I330 registers and manages users and provides Web U / I to users. The user management / Web U / I 330 has a user registration function 331, a user authentication function 332, a user management function 333, and a Web U / I 334. The user registration function 331 registers a user with necessary information such as an address, a name, an e-mail address, a job title, and credit information so that the system can be used. The user authentication function 332 provides a function for authentication required when the user accesses the server. The user management function 333 manages the information of the registered users. The Web U / I provides users and administrators with a Web or similar user interface.

[0031]

413 The unlocking license management server 310 issues and manages an unlocking license (unlocking key). The unlocking license server 310 has a room information registration / management function 311, a room / reservation information search function 312, a

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reservation processing function 313, a negativeist setting / distribution function 315, and an i-appli / card AP download function 316. The room information registration / management function 311 registers / manages information regarding each room (door) to be provided. The room / reservation information search function 312 searches each room to be provided and reservation information for them. The reservation processing function 313 makes a reservation / change / deletion. Issuance of unlocking license is mainly based on the request from the user. Requests from users prior to issuance are processed as (room) reservations (for example, when applied to a conference room reservation / management system, or when applied to a weekly condominium / hotel reservation / room provision system, etc.) It is easy to understand if you assume. It is a function that accepts such reservations and makes changes / deletions. The unlocking license generation / download function 314 generates / issues an unlocking license based on a reservation so that the user can download it. The negativeist setting / distribution function 315 sets and distributes negativeists. If a user loses his or her mobile phone, it is necessary to suspend the authority of the user based on the application as a measure to prevent unauthorized use by the picked up mobile phone. At this time, in order to invalidate the unlocking license that has already been issued / downloaded, it is necessary to generate and distribute a negative list. The i-appli / card AP download function 316 is a function for downloading and distributing the electronic key i-appli 361 and the electronic key card AP351.

[0032]

438 The distribution information distribution server 320 sets and manages distribution information and delivers it to the door-to-door terminal 302. The distribution information distribution server 320 has a distribution information setting / registration function 321, a distribution information distribution function 322, an email information distribution function 323, and an i-appli / card AP download function 324. The distribution information setting / registration function 321 sets and registers distribution information for information distribution. The distribution information consists of a main body of information to be distributed and a set of distribution conditions for the main body of the information. The distribution information distribution function 322 distributes the set / registered distribution information to each door-to-door terminal. The mail information delivery function 323 receives an unlock notification from the door-gawa terminal 302 when the information is delivered via mail, searches and determines the information to be delivered and the delivery destination based on the notification, and delivers the information by mail. Do. In this embodiment, information distribution is basically performed directly from the door-gawa terminal 302 via non-contact, but it is used when it is desired to distribute information via e-mail for consistency with the existing system or other reasons. It is a function. The i-appli / card AP download function 324 is a function for downloading and distributing the information distribution i-appli 367 and the information distribution card AP354.

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[0033]

450 The mobile phone 301 equipped with an IC chip shown in FIG. 3-1 can mount a miniSD-shaped IC chip, and is required for access means from the i-appli to the IC chip and access to the IC chip via non-contact. It is a mobile phone equipped with functions such as an antenna and power supply. 350 is an IC chip (the IC chip is preferably a miniSD shape, but an IC chip of another shape may be used), and 360 is an i-appli.

[0034]

467 FIG. 3-3 shows the details of the mobile phone 301 equipped with an IC chip. A mobile phone equipped with an IC chip has an i-appli 360 and an IC chip 350. The i-appli 360 has an electronic key i-appli 361 and an information distribution i-appli 367. The IC chip 350 has an electronic key card AP351 and an information distribution AP354.

[0035]

474 The electronic key i-appli 361 is an i-appli that updates and displays the unlocking license in the IC chip. The unlocking license download / management function 362 accesses the unlocking license management server 310, downloads the unlocking license, and stores it in the electronic key card AP351. It also manages stored unlocking licenses. The unlocking license display function 363 is a function of displaying the unlocking license information stored in the electronic key card AP351 on the display of the mobile phone. The operation mode change function 364 is a function for changing the operation mode depending on whether or not a PIN input by the user is required at the time of unlocking (the operation mode will be described later). The PIN (Personal Identification Number) input / setting function 365 is a function for inputting and setting a PIN in a mode that requires a PIN input by a user. The electronic key card AP personalization function 366 is a function of making the downloaded electronic key card AP 351 available and storing and personalizing the information of each user.

[0036]

490 The information distribution i-appli 367 is an i-appli that manages and displays the distributed information. The information distribution i-appli 367 has a distribution information management / display function 368. The distribution information management / display function 368 manages the distributed information and displays it on the display of the mobile phone.

[0037]

498 The electronic key card AP351 holds an unlocking license and other necessary information in the IC chip 350, and performs signature operations and the like necessary for authentication.

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The electronic key card AP351 has an unlocking license holding function 352 and an authentication function 353. The unlocking license holding function 352 is a function for holding the downloaded unlocking license and other necessary information. The authentication function 353 is a function for performing a signature calculation or the like in order to authenticate with the door-to-door terminal 302. It is also possible to use the same authentication function for authentication with the server.

[0038]

509 The information distribution card AP354 is a function of acquiring and holding the information to be distributed in the IC chip 350. The information distribution card AP354 has a distribution information acquisition / holding function 355. The distribution information acquisition / retention function 355 is a function for acquiring / retaining the distributed information.

[0039]

517 The door-to-door terminal 302 of FIG. 3-1 includes a control terminal 370 and a door gate 380, and corresponds to a room door.

[0040]

522 The door gate 380 is a door incorporating an electric lock 381, an electric lock controller 382, and a non-contact IC card reader / writer 383.

524 The electric lock controller 382 controls unlocking / locking of the electric lock 381 in response to an instruction from the control terminal 370. The non-contact IC card reader / writer 383 communicates with the IC chip 350 of the mobile phone 301 equipped with the IC chip in a non-contact manner under the control of the control terminal 370. A 10-key input device may be incorporated in the door gate 380 for PIN input, which will be described later (the 10-key input device is controlled from the control terminal 370). In addition, a display function and a sound source output function may be incorporated depending on the application.

[0041]

535 The control terminal 370 controls various devices incorporated in the door gate 380 based on the information distributed from the unlocking license management / information distribution server 303 or set in advance. The control terminal 370 has a gate terminal AP371 and an information distribution AP376.

[0042]

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542 FIG. 3-4 shows the details of the control terminal 370 of the doorway terminal 302. The control terminal 370 has a gate terminal AP371 and an information distribution AP376.

[0043]

547 The gate terminal AP371 is an application that controls the door gate 380. The gate terminal AP371 has an unlocking license acquisition / verification function 372, an unlocking function 373, a negativeist acquisition setting function 374, and an operation mode setting / PIN input acquisition / verification function 375. The unlocking license acquisition / verification function 372 uses the IC card reader / writer device 383 of the door gate 380 to acquire the unlocking license from the electronic key card AP351 in the mobile phone 301 equipped with the IC chip held by the user. Verification of the signature of the unlocking license • Verification of the information in the unlocking license and authentication of the user. The unlocking function 373 is a function of unlocking the electric lock 381 by using the electric lock controller 382 of the door gate 380 when the authentication process is normally completed. In this embodiment, since it is simple, only unlocking is consistently described, but in actual operation, not only unlocking but also locking is possible in the same manner. The negativeist acquisition / setting function 374 acquires / saves the negativeist distributed from the unlocking license management / information distribution server 303, and fails the authentication process if there is a match when verifying the information in the unlocking license. It is a function that makes it successful. The operation mode setting / PIN input acquisition / verification function 375 is a function for changing the operation mode depending on whether or not the PIN input by the user is required at the time of unlocking (the operation mode will be described later). In the case of the operation mode that requires the PIN input, the PIN input is acquired from the 10 keys built in the door gate 380, or the one input by the user in the IC chip-equipped mobile phone 301 in advance to the door gate. It may be acquired by using the IC card reader / writer device 383 incorporated in the above. The acquired PIN is verified by the electronic key card AP351 in the mobile phone 301 equipped with the IC chip via the IC card reader / writer device 383.

[0044]

574 The information distribution AP376 is an application that distributes information. The information distribution AP 376 has an information distribution / information distribution request function 377 and a distribution information acquisition / storage function 378. The information distribution / information distribution request function 377 searches and determines the information to be distributed based on the preset information, and uses the IC card reader / writer device 383 of the door gate 380 for non-contact communication. This is a function for distributing information by means of the above and writing information to be distributed to the information distribution card AP354 in the mobile phone 301 equipped with an IC chip. When the information is distributed via e-mail, the unlock notification is sent to the unlock license management / information distribution server 303. The distribution

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information acquisition / storage function 378 is a function of acquiring information to be distributed from the distribution information distribution server 320 and storing it.

[0045]

589 Hereinafter, examples will be described. (Example 1) Example 1 is an example of an unlocking license format. (Example 1.1) FIG. 4 shows an unlocking license format example 1.

[0046]

594 This is referred to as an unlocking license management / information distribution server 303 (hereinafter, simply referred to as "server 303". This is an example of the unlocking license format generated in () and stored in the IC chip 350. The server 303 regenerates the unlocking license of the user every time there is some change in the reservation related to the user such as a new reservation or a change / deletion of the existing reservation. At that time, among the reservations related to the user, all the reservations that have not expired are listed, and the license information (license 1 information, license 2 information, etc. in the figure) is arranged, and the user ID , User information such as user public key is attached, and the server is signed on the whole to make an updated unlocking license for the user.

[0047]

606 Here, the user class is a grouping to which the user belongs, and is used when unlocking permission or setting conditions for information distribution. In addition, the time zone is used when the time for permitting unlocking is not specified by the set of start-end time, but by specifying the time zone in which the day is divided into several zones. The Byte line in the figure is an estimate of the number of bytes used in each field when a certain implementation is assumed, and is reference information.

[0048]

615 In addition, the license incidental information is not used for the unlocking process itself, but the unlocking license information in the IC chip 350 is used. It is used when the I-appli is displayed in a human-readable state, and is generated and updated together with the unlocking license.

[0049]

622 In this embodiment, there is always one unlocking license for each user, and if there is a change in the reservation related to the user, the entire unlocking license is renewed. Therefore, while the amount of renewal when the reservation is changed becomes large, it is not necessary to manage the unlocking license specially in the i-appli card AP.

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[0050]

629 (Example 1.2) FIG. 5 shows an unlocking license format example 2. This is an example of an unlocking license format generated by the server 303 and stored in the IC chip 350. Unlike Example 1.1, the unlocking license consists of a list of individual unlocking licenses (unlocking license 1, unlocking license 2, etc. in the figure) corresponding to individual reservations. The same applies to the license incidental information. Since the format of each unlocking license can be easily inferred from Example 1.1, the description thereof will be omitted.

[0051]

639 In this embodiment, since there is an independent unlocking license corresponding to each reservation, even if the reservation related to the user is changed, only the corresponding unlocking license needs to be updated / deleted. Therefore, while the amount of renewal when the reservation is changed can be small, it is necessary to manage the unlocking license in the i-appli card AP.

[0052]

647 (Example 2) Example 2 is an example of a reservation screen or the like. (Example 2.1) Example 2.1 is an example applied to the weekly condominium service. FIG. 6 shows the screen transition seen from the user when this embodiment is applied to the weekly condominium service. What is shown in FIG. 6 is a series of flow from login / user authentication to room reservation / application and electronic key (unlocking license) download.

[0053]

656 The mobile electronic key service of this embodiment can be used in various fields, but in many cases, the generation, issuance, and unlocking of the unlocking license do not make sense as a service, and the room is rented. The meaning comes out only when there is an act such as making a reservation. As an example, this embodiment describes a case where it is applied to the service of a weekly condominium.

[0054]

664 These screens are generated by the server 303, and the user accesses them using the i-mode browser of the mobile phone 301 equipped with an IC chip. The electronic key (unlocking license) download is performed by clicking the link on the browser to activate the electronic key i-appli having the means of accessing the IC chip.

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[0055]

671 This will be described below with reference to FIG. The user connects to the server 303 from the i-appli or bookmark of the mobile phone 301 equipped with the IC chip. The screen 101 is a personal top page screen. When "Login" is pressed, the login confirmation screen 102 is displayed. Here, when "OK" is pressed, the server 303 performs the authentication process of the mobile phone 301 equipped with the IC chip (corresponding to S44 and S45 in FIG. 2), and when the authentication is normally performed, the reservation menu screen 103 is displayed. Will be done. When "Room search / application" is pressed, the room search screen 104 is displayed, and after specifying the reservation period, when "Search" is pressed, the room search result display screen 105 is displayed. When a room is selected, the room information screen 106 is displayed, when "OK" is pressed, the room application screen 107 is displayed, and when "apply" is pressed, the room application completion screen 108 is displayed and an unlocking license is generated. (Corresponding to S46 in FIG. 2). When "To electronic key download" is pressed, the reservation confirmation / change menu screen 109 is displayed, and when "Electronic key download" is pressed, the i-appli startup confirmation screen 008 is displayed. When "Yes" is pressed, the i-appli startup screen 009 and the IC card data writing screen 010 are displayed, and when the electronic key (unlocking license) is saved, the IC card data writing end screen 110 is displayed (Corresponds to S47 in FIG. 2).

[0056]

692 (Example 2.2) Example 2.2 is an example applied to the conference room reservation service. FIG. 7 shows the screen transition seen from the user when applied to the conference room reservation service. Shown in FIG. 7 is a room reservation / application part (upper figure) and a part for registering / deleting participants for the reservation made (lower figure). The room reservation / application part (above figure) is basically the same as in Example 2.1, but when the reservation unit is Example 2.1, it was a date, but here it is a time zone. It has become.

[0057]

702 The upper figure of FIG. 7 shows a display screen of a mobile phone browser when making a reservation for a conference room. 601 is the reservation menu screen. When "Reserve" is pressed, the reservation date designation screen 602 is displayed, when the date is specified and "OK" is pressed, the reservation status display screen 603 is displayed, and when the time is selected, the reservation status display screen 603 is displayed. , The reservation confirmation screen 604 is displayed, and when "OK" is pressed, the reservation completion screen 605 is displayed. Here, when "To electronic key download" is pressed, the electronic key (unlocking license) can be downloaded to the mobile phone in the same manner as the

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screens 109 to 110 of FIG.

[0058]

714 The figure below FIG. 7 shows the display screen of the browser of the mobile phone when confirming or changing the reservation of the conference room. Reference numeral 601 is a reservation menu screen. When "Reservation confirmation / change" is pressed, the reservation confirmation screen 607 is displayed, and when a conference room is selected, the participant registration schedule change / deletion menu screen 606 is displayed, and "participant registration" is displayed. When "Delete" is pressed, the participant registration / deletion menu screen 612 is displayed. Here, when "Add" is pressed, the participant is added and the participant registration completion screen 613 is displayed. When "Delete" is pressed on the participant registration / deletion menu screen 612, the participant is deleted and the participant deletion completion screen 614 is displayed. An email notification (including the URL for downloading the electronic key) will be sent to the mobile phone of the person who was added or deleted as a participant. The added participant can download the electronic key (unlocking license) to his / her mobile phone by pressing the "electronic key download" (link to the URL for electronic key download) in the notified email. it can.

[0059]

731 The part shown in the lower figure of FIG. 7 in which participants are registered / deleted for the reservation made is not in Example 2.1, and a person who participates in the reserved conference room (that is, the conference) is reserved. It allows the person to specify and provide the master key to the participants. Here, due to the nature of the conference room reservation service, all users are basically registered in advance, and it can be assumed that their features (position, department, etc.) are known among users, so participant registration. There is no need for the reservation person to specially authenticate the participants. In addition, the master key is actually realized by issuing a new unlocking license to the participant by regarding it as if the registered participant made the reservation. That is, there is no need to prepare a special mechanism called a master key.

[0060]

744 (Example 3) Example 3 relates to PIN (Personal Identification Number) authentication. From the viewpoint of security, it may be desirable to authenticate that the person exercising the unlocking license is the same as the person holding the IC chip before exercising the unlocking license. For this purpose, before exercising the unlocking license, PIN authentication is performed so that the person holding the IC chip 350 and the person exercising it are the same (that is, knowing the PIN that only the person knows). You can add a confirmation process.

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[0061]

754 Further, it is possible for the user to switch whether the PIN input is required or not by switching the mode from the electronic key i-appli 361. Depending on the form of the service, it is possible for the service provider to fix the mode to one of the modes in advance and provide the service without allowing the user to switch the mode.

[0062]

761 (Example 3.1) FIG. 8 shows an embodiment 1 of a PIN (Personal Identification Number) authentication method. FIG. 8A shows the flow when unlocking the PIN required mode, FIG. 8B shows the flow when unlocking the PIN unnecessary mode, and FIG. 8C shows the flow for setting the PIN required mode. 8 (D) shows a flow for setting the PIN unnecessary mode, and FIG. 8 (E) shows a flow for inputting a PIN in the PIN required mode.

[0063]

769 FIG. 8 (F) shows a schematic diagram of related files in the electronic key card AP351 of the IC chip 350 of the IC chip-mounted mobile phone 301 (see FIG. 3-1). The electronic key card AP351 is itself a file, and the "Select File" in the first step of FIGS. 8A to 8E is a step of selecting the electronic keycard AP351. Inside the electronic key card AP351, there are three files, "electronic key", "PIN (IEF)", and "PIN (EF)". The "PIN (IEF)" is a file that holds a PIN. The PIN is saved in this file when the user has made the initial settings for the PIN, and is not changed thereafter (unless the PIN is changed by the user). Also, due to security requirements, this file cannot be read from the outside. This file is used for PIN authentication. That is, when a PIN is input to the IC card, it is used to verify in the card whether the input PIN matches the PIN held in the PIN (IEF) and return OK / NG. .. The "electronic key" is a file that stores the electronic key (unlocking license). This file has an attribute that it cannot be read unless the PIN verification by PIN (IEF) is successful (PIN (IEF) is shown so as to overlap the electronic key. It means that there is). In order to perform PIN authentication, the user needs to input the PIN to the IC card as described above. At this time, the PIN input by the user is used as it is for PIN (IEF) authentication. Instead, it is temporarily stored in "PIN (EF)". The PIN (EF) can be read from the outside, and in the authentication, the door terminal 302 reads the PIN held in the PIN (EF), and with this, the IC card is requested to perform PIN authentication. FIG. 8A shows a flow at the time of unlocking the PIN required mode, and the electronic key (unlocking license) in the electronic key card AP351 of the IC chip 350 of the mobile phone 301 equipped with the IC chip (see FIG. 3-1). The file holding the above is given an attribute that it cannot be read unless the PIN verification by PIN (IEF) is successful. When setting to a mode that requires PIN input, as shown in FIG. 8C, the attribute of the file holding the unlock license may be set to be unreadable without PIN verification (as shown in FIG. 8C). Manage Property (electronic key).

793 Just in case, the PIN (EF) used at this time is deleted (Update Record).

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[0064]

797 As shown in FIG. 8 (E), the user (user) inputs a PIN from the electronic key i-appli 361 (Verify (PIN)) before exercising the unlocking license, and the input PIN is the IC chip 350. It is held in a PIN (EF) file (see FIG. 8F) in the electronic key card AP351.

[0065]

803 When the user holds the IC chip-equipped mobile phone 301 over the door-to-door terminal 302, the door-to-door terminal 302 first reads a PIN (EF) file (Read Record) as shown in FIG. 8 (A). The read PIN is used to authenticate the IC chip 350 (Verify (PIN)).

806 If the PIN authentication is successful, the unlocking license becomes readable, and the subsequent authentication process (unlocking process) for unlocking can proceed. However, at this time, in order to prevent the reuse of the PIN, the contents of the PIN (EF) must be deleted regardless of the success or failure of the PIN authentication (Update Record). The reason for using the PIN (EF) in the above is that, in general, the PIN (IEF) for authentication / file attribute specification must be unreadable for security reasons.

[0066]

815 In this method, when setting to a mode that does not require PIN input, as shown in FIG. 8 (D), the user inputs PIN from the electronic key i-appli 361 (Verify (PIN)) and unlocks. The attribute to the file that holds the license may be set to be readable without PIN verification (Manage Attribute (electronic key)). As a result, the doorway terminal 302 can perform the authentication process for unlocking without performing the processing related to PIN authentication (see FIG. 8B). Further, the door-gawa terminal 302 can automatically determine whether the PIN input is required or not, without knowing the current mode. That is, by first reading the unlock license performed at the beginning of the authentication process for unlocking, if it succeeds, the mode does not require a PIN, and if it fails, reading is restricted. It can be determined that the mode requires PIN input.

[0067]

828 In the above, the PIN input is performed from the electronic key i-appli 361 of the mobile phone 301 equipped with the IC chip, but it is also possible to perform the PIN input using the 10 keys incorporated in the door-to-door terminal 302. The flow in this case is almost the same as that performed from the i-appli, and instead of reading the PIN from the electronic key card AP, it may be obtained from the 10 keys.

[0068]

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836 At this time, the door-to-door terminal 302 can automatically determine whether the PIN input is made from the i-appli or the 10-key pad without knowing in advance. That is, if the 10-key input and the IC card reader / writer are sensed and it is detected that the IC chip-equipped mobile phone is held over the IC card reader / writer within a certain period of time after the 10-key input is performed, 10 If the PIN is input from the key and the IC card reader / writer detects the mobile phone equipped with the IC chip first, it may be determined that the PIN is input from the i-appli.

[0069]

846 (Example 3.2) FIG. 9 shows a implementation example 2 of the PIN authentication method. FIG. 9A shows the flow when unlocking the PIN required mode, FIG. 9B shows the flow for setting the PIN required mode, and FIG. 9C shows the flow for setting the PIN required mode. FIG. 9D shows a flow for inputting a PIN in the PIN required mode.

[0070]

853 FIG. 9E shows a schematic diagram of the related files in the electronic key card AP351. FIG. 9 (E) is almost the same as FIG. 8 (F). The difference is that in FIG. 8 (F), the PIN (EF) holds only the PIN input by the user, whereas in FIG. 9 (E), it is "PIN + ModeBit (EF)", which means that the user. In addition to the PIN input from, the bit indicating the current mode (that is, the flag indicating the PIN required mode) is also retained. This mode bit needs to erase the PIN held in "PIN + ModeBit (EF)" every time in the PIN-required mode to prevent reuse of the PIN, whereas it is not erased in the PIN-required mode, so the current mode It is used by the door terminal 302 to know which one it is.

[0071]

864 Similar to Example 3.1, in the electronic key card AP351, an attribute is added to the file holding the electronic key (unlocking license) so that the file cannot be read unless the PIN verification by the PIN (IEF) is successful. (Fig. 9 (B) shows the flow for setting the PIN required mode). As shown in FIG. 9D, the user inputs a PIN from the electronic key i-appli 361 before exercising the unlocking license, and the input PIN is retained in the PIN (EF) file in the electronic key card AP351. This is the same as in Example 3.1, but at this time, the PIN (EF) also holds a bit indicating the current mode (that is, a flag indicating the PIN required mode) (FIG. 9 (E)). reference).

[0072]

875 When the user holds the IC chip-equipped mobile phone 301 over the door-to-door terminal 302, as shown in FIG. 9A, the door-to-door terminal 302 first displays the PIN (EF) file as in Example 3.1. Read (Read Record), and the read PIN is used to authenticate the IC chip (Verify

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(PIN)). If the PIN authentication is successful, the unlocking license becomes readable, and the subsequent authentication process (unlocking process) for unlocking can proceed. At this time, in order to prevent the reuse of the PIN, the contents of the PIN (EF) must be deleted regardless of the success or failure of the PIN authentication. but this process is different from that of the 3.1 embodiment and is currently used. Only when the mode is a PIN required mode (the current mode can be known from the bits held in the PIN (EF)).

[0073]

887 In this method, when setting to a mode that does not require PIN input, as shown in FIG. 8C, the user is asked to input a PIN, and after confirming that it is correct, the correct PIN is used. And a flag indicating the PIN unnecessary mode are held in the PIN (EF). As a result, the doorway terminal 302 can always obtain the correct PIN, and therefore, effectively, the user can perform the authentication process for unlocking without having to input the PIN again. At this time, the door-to-door terminal 302 can perform processing without knowing the current mode in advance, but in order to determine whether or not to delete the PIN (EF) PIN, at the same time as reading the PIN. You also need to read the current mode and change the behavior.

[0074]

899 In the above, the PIN input is performed from the electronic key i-appli 361 of the mobile phone 301 equipped with the IC chip, but the PIN input can also be performed using the 10 keys incorporated in the door-gawa terminal 302. As with .1, it is possible.

[0075]

905 (Example 4) FIG. 10 shows the format of the distribution information as an example in the case of a conference room reservation.

907 In the figure, one line represents one unit of distribution information, and one distribution information unit is composed of a plurality of distribution conditions and one distribution information.

[0076]

913 The distribution condition includes a user (class), a gate (class), a time, the number of unlocks, and the number of distributions, and the conditions for these are determined by the and condition. Here, "<*>" in the table indicates a don't care condition (that is, it matches in any case). In the user (class) column, a specific user ("▲" in the figure) or a user class (grouped users). In the figure, "general occupation") can be described. The same applies to the gate (class). In the time column, you can write multiple time zones here (or condition. In the case of a weekly condominium, you will need to write multiple start-end date and time pairs, not

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the time zone). The number of unlocking and the number of distributions indicate that the number of times of unlocking or information distribution for the door or the information is counted, and the information is distributed when it reaches a specific value or range. Such condition specification is evaluated, and the distribution information content of the matching line (there may be multiple matches, but all of them) is set as the target information distribution content.

[0077]

929 This table format is distributed in advance to the door-gawa terminal 302, and each time the lock is unlocked, the condition is judged to determine the information content to be delivered (when the information is delivered via e-mail, the information is to be delivered. Condition judgment is performed on the server based on the unlock notification).

[0078]

936 The content of the distribution information can include a user name, a room name, a reservation time zone, and the like.

938 When describing the content of the distribution information, the part is indicated by a specific character string, and the actual value is replaced when the distribution is performed. The actual value to be replaced can be obtained from the unlocking license as long as the information is related to the reservation such as the user name. Further, if it is a room name or the like, it is possible to process each door-to-door terminal as unique information of the door-to-door terminal.

[0079]

947 (Example 5) FIG. 11 shows an example of an information distribution screen. FIG. 11 shows an example of a weekly condominium and an example of displaying the distributed information on the i-appli screen. The information distribution i-appli 367 (see Fig. 3-1) reads the information written on the information distribution card AP354 (see Fig. 3-1) and displays the latest distribution information, but at this time, the distribution information of the past several times is also displayed. It is retained and can be read and displayed as needed. Since the i-appli is used, not only text information but also hyperlinks can be included in the distribution information.

[0080]

958 In FIG. 11, it is assumed that different information is distributed between the first unlocking and the second and subsequent times by using the setting of the distribution conditions described in the fourth embodiment. Further, in the "second and subsequent times" part of FIG. 11, it is assumed that the amount of information delivered at one time can be adjusted.

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This is because the information distribution time is proportional to the amount of information to be distributed, and the storage capacity of the IC chip is limited, so that the optimum trade-off can be found in practical use. In the example of FIG. 11, the assumed amount of information from full to shortened is approximately 384 to 128 bytes. As a method of controlling the amount of information distribution, a method of giving priority to each line by utilizing the fact that the information distribution unit of a plurality of lines can be selected in the fourth embodiment (that is, always distributes, omitted in shortening). Or, the method of further subdividing the distribution information column for each information distribution unit (that is, the part that is always distributed, the part that is omitted in the abbreviation, the part that is distributed only in full) , Etc.), etc. are possible.

[0081]

975 Each device of the embodiment and the embodiment described above has a means for realizing the function or operation, and even if the means is configured by hardware, a program in which a part or the whole thereof is stored in the storage device. And a CPU that processes the program.

[0082]

982 Although the invention made by the present inventor has been specifically described above based on the above-described embodiments and examples, the present invention is not limited to the above-described embodiments and examples and does not deviate from the gist thereof. Of course, various changes can be made in.

[0083]

989 Flow of key service using conventional common key encryption Key service flow of the embodiment of the present invention System configuration outline diagram of the embodiment of the present invention Detailed view of unlocking license management / information distribution server 303 Mobile phone 301 equipped with an IC chip Detailed view Detailed view of the control terminal 370 of the doorway terminal 302 Unlocking license format example 1 (Example 1.1) Unlocking license format example 2 (Example 1.2) Reservation screen transition when applied to the weekly mansion service (Example 2.1) Reservation screen transition when applied to a conference room reservation service (Example 2.2) Realization example 1 of PIN input method (Example 3.1) Realization example 2 of PIN input method (Example 2.2) 3.2) Example of distribution information format (Example 4) Example of information distribution screen (Example 5)

1000 Explanation of symbols

[0084]

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1004 1 ... Device carried by the user (mobile phone), 2 ... Gate (door device), 3 ... Server, 4 ... Key manager, 31 ... Device carried by the user (mobile phone with IC chip), 32 ... Gate (door river device), 33 ... server, 34 ... key manager, 301 ... IC chip-equipped mobile phone, 302 ... door river terminal, 303 ... unlock license management / information distribution server, 310 ... unlock license Management server, 320 ... Distribution information distribution server, 330 ... User management / Web U / I, 350 ... IC chip, 351 ... Electronic key card AP, 354 ... Information distribution AP, 360 ... i-appli, 361 ... Electronic key i-appli 376 ... Information distribution i-appli, 370 ... Control terminal, 371 ... Gate terminal AP, 376 ... Information distribution AP, 380 ... Door gate, 381 ... Electric lock, 382 ... Electric lock controller, 383 ... Non-contact IC card reader / writer

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International Application Number:	
Confirmation Number:	6616
Title of Invention:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
First Named Inventor/Applicant Name:	Masato ENDO
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1	Information Disclosure Statement (IDS) Form (SB08)	115628-0000058-IDS.pdf	1034442 19cf73ede9f4e2d558cb2f32468529b83ab382e0	no	4

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Warnings:					
Information:					
3	Foreign Reference	JP2006233475A.pdf	12286033 cbecd3d0c573d19b836744c0544fdda4994109e3	no	50
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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

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(54) **ELECTRONIC KEY SYSTEM, AND LOCK-SIDE TERMINAL AND PORTABLE TERMINAL EMPLOYED IN SAME**

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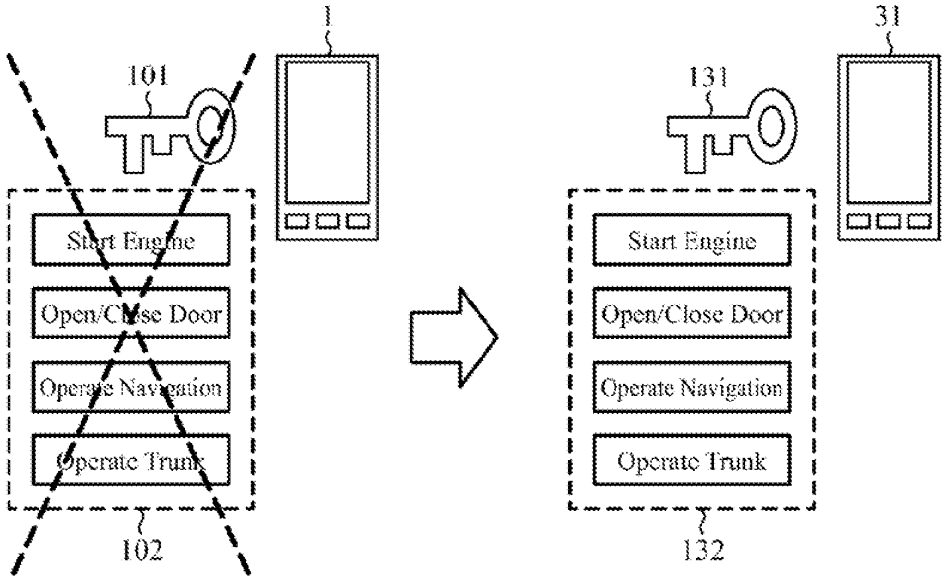
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(57) **ABSTRACT**

An electronic key system includes a lock-side terminal that is mounted in a locked object and capable of at least locking and unlocking the locked object, and a portable terminal capable of sending and receiving the electronic key to and from the lock-side terminal mounted in the locked object and the other portable terminals, and when receiving a request from the one portable terminal, the lock-side terminal generates the electronic key at random, and sends the randomly generated electronic key to the one portable terminal.



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出　願　人 Applicant(s):	トヨタ自動車株式会社

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【書類名】明細書
【発明の名称】鍵情報管理装置、鍵情報管理方法、鍵情報管理プログラム
【技術分野】
【０００１】
本発明は、鍵情報管理装置等に関する。
【背景技術】
【０００２】
例えば、サーバから送信される鍵情報を携帯端末で受信し、携帯端末を電子キーとして利用可能な鍵情報管理システムが開示されている（特許文献１等参照）。
【先行技術文献】
【特許文献】
【０００３】
【特許文献１】特開２００６―１１８１２２号公報
【発明の概要】
【発明が解決しようとする課題】
【０００４】
車両を時限的に解錠可能な鍵情報が当該車両の常用的なユーザ以外の他者の携帯端末に配信されることにより、車両の常用的なユーザに提供される様々なサービスが想定されうる。例えば、常用的なユーザによる車両の利用のない時間帯に、当該車両を一時的に借りたい人の携帯端末に時限的に車両の解錠及び起動が可能な鍵情報が配信されることにより提供される、個人間（Ｃ２Ｃ：Consumer to Consumer）での車両の貸し借りを支援するカーシェアサービス（以下、「Ｃ２Ｃカーシェアサービス」と称する）がある。また、例えば、配送業者の配達員の携帯端末に車両のトランクを時限的に解錠可能な鍵情報が配信されることにより提供される車両のトランクを荷物の配送先として指定可能な配送サービス（以下、「トランク配送サービス」と称する）がある。
【０００５】
しかしながら、例えば、ＶＩＮ（Vehicle Index Number）等の車両を特定するための情報をサービス提供業者に登録するだけで各種サービスが利用可能な場合、車両の常用的なユーザがあるサービスを利用すると、サービス提供業者の第三者が登録された車両を特定するための情報を知り得る。そのため、悪意の第三者によって、車両を特定するための情報が悪用され、他のサービスへの無断登録がなされたり、無断登録されたサービスを通じた車両の無断利用がなされたりする可能性がある。
【０００６】
そこで、上記課題に鑑み、悪意の第三者による車両を利用するサービスへの無断登録や無断登録されたサービスを通じた車両の無断利用を抑制することが可能な鍵情報管理装置等を提供することを目的とする。
【課題を解決するための手段】
【０００７】
上記目的を達成するため、本発明の一実施形態では、
携帯端末が車両に向けて所定の送信信号を送信することにより前記車両を解錠又は起動させるための鍵情報を携帯端末に配信する鍵情報配信部と、
前記車両のユーザが前記車両を利用した所定のサービスを利用するために、前記サービスに関連する外部装置が、所定の要求信号を送信することにより、前記車両のユーザ以外の前記サービスに関連する第三者の携帯端末に前記鍵情報を前記鍵情報配信部から配信させる権限を登録する登録部と、を備える、
鍵情報管理装置が提供される。
【０００８】
本実施形態によれば、鍵情報管理装置は、Ｃ２Ｃカーシェアサービスやトランク配送サービス員等のサービスに関連する外部装置が、車両の借主や配達員等のサービスに関連する第三者の携帯端末に鍵情報を配信させる権限を自ら管理することができる。そのため、

例えば、外部装置が鍵情報を配信させるためのＩＤやパスワード等の認証情報が漏えいした場合であっても、当該ＩＤやパスワードは、あるサービスに固有のものであるため、当該認証情報によって、新たなサービスの利用登録を行うことはできない。また、鍵情報管理装置は、通常、車両１０Ａのユーザ以外のアクセスが制限される場合が多く、そもそも、悪意の第三者が鍵情報管理装置に対してサービスの利用登録を行わせるのは困難である。従って、鍵情報管理装置は、悪意の第三者による車両を利用するサービスへの無断登録や無断登録されたサービスを通じた車両の無断利用を抑制することができる。

【０００９】

また、上述した実施形態において、

前記登録部は、前記権限を、更に、前記車両のオーナユーザに対応する固有情報と紐付けて登録してもよい。

【００１０】

本実施形態によれば、鍵情報管理装置は、外部装置が車両のユーザ以外のサービスに関連する第三者の携帯端末に鍵情報を配信させる権限を、オーナユーザだけが通常知り得るオーナユーザに対応する固有情報と、更に、紐づけて管理することができる。従って、サービスの利用登録の際、オーナユーザに対応する固有情報が必要になるため、鍵情報管理装置は、オーナユーザ以外の車両のユーザ（例えば、オーナユーザの家族や親しい友人等）による車両を利用するサービスへの無断登録等を抑制することができる。

【００１１】

また、上述した実施形態において、

前記オーナユーザに対応する固有情報を伴う端末からの要求に応じて、前記オーナユーザに対応する固有情報に紐づけられた前記権限に対応する前記サービスに関する情報を該端末に送信する送信部を更に備えてもよい。

【００１２】

本実施形態によれば、鍵情報管理装置は、オーナユーザに対応する固有情報を伴う端末からの要求、つまり、オーナユーザの端末からの要求に応じて、利用登録されたサービスに関する情報をオーナユーザの端末に送信することができる。そのため、オーナユーザは、端末のディスプレイ等に表示される利用登録されたサービスに関する情報（例えば、利用登録されたサービスの一覧やサービスに利用される車両の利用スケジュール等）を把握することができる。従って、鍵情報管理装置は、利用登録されているサービスに関する情報をオーナユーザに一元的に把握させることができる。

【００１３】

また、上述した実施形態において、

前記登録部は、前記車両のユーザごとの前記権限を前記オーナユーザに対応する固有情報と紐付けて記憶し、

前記送信部は、前記オーナユーザに対応する固有情報を伴う端末からの要求に応じて、前記オーナユーザに対応する固有情報に紐付けられた前記権限ごとの前記オーナユーザ以外の前記車両のユーザに関する情報を該端末に送信してもよい。

【００１４】

本実施形態によれば、鍵情報管理装置は、オーナユーザの端末からの要求に応じて、利用登録されたサービスを利用するオーナユーザ以外の車両のユーザに関する情報をオーナユーザの端末に送信することができる。そのため、オーナユーザは、端末のディスプレイ等に表示される利用登録されたサービスを利用するオーナユーザ以外の車両のユーザに関する情報（例えば、各種サービスの利用者一覧や全利用者に亘る車両の利用スケジュール等）を把握することができる。従って、鍵情報管理装置は、利用登録されているサービスの利用者（オーナユーザ以外の車両のユーザ）に関する情報をオーナユーザに一元的に把握させることができる。

【００１５】

また、本発明の他の実施形態は、鍵情報管理方法及び鍵情報管理プログラムにより実現されうる。

【発明の効果】
【００１６】
上述の実施形態によれば、悪意の第三者による車両を利用するサービスへの無断登録や無断登録されたサービスを通じた車両の無断利用を抑制することが可能な鍵情報管理装置等を提供することができる。
【図面の簡単な説明】
【００１７】
【図１】認証キー管理システムの全体構成の一例を示す図である。
【図２】認証キー管理システムにおける車両の施解錠に関する構成の一例を中心に示す図である。
【図３】認証キー管理システムにおけるキーシェアサービスに関する構成の一例を中心に示す図である。
【図４】認証キー管理システムにおけるトランク配送サービスに関する構成の一例を中心に示す図である。
【図５】認証キー管理システムにおけるＣ２Ｃカーシェアサービスに関する構成の一例を中心に示す図である。
【図６】認証キー管理システムにおけるＢ２Ｃカーシェアサービスに関する構成の一例を中心に示す図である。
【図７】センタサーバによるサービス利用登録処理の一例を概略的に示すフローチャートである。
【図８】ユーザ・サービス登録情報ＤＢの一例を模式的に示す図である。
【図９】センタサーバによるサービス利用状況情報提供処理の一例を概略的に示すフローチャートである。
【図１０】オーナユーザの携帯端末のディスプレイに表示されるサービス利用状況画像の具体例を示す図である。
【発明を実施するための形態】
【００１８】
以下、図面を参照して発明を実施するための形態について説明する。
【００１９】
［鍵情報管理システムの全体構成］
図１は、本実施形態に係る鍵情報管理システムの全体構成の一例を示す図である。
【００２０】
認証キー管理システム１は、車両１０と、携帯端末２０と、センタサーバ３０と、サービス管理サーバ４０を含む。
【００２１】
車両１０は、所定の通信規格に従い、携帯端末２０と比較的近距離（車室内と車室外との間で通信可能な程度の距離）での無線通信（以下、「近接通信」と称する）を行うことができる。車両１０は、携帯端末２０からの送信信号（後述する認証要求、施錠要求、及び、解錠要求）に基づき、ドアの施解錠及びその起動（イグニッションオン）が行われる対象である。車両１０のドアには、乗降用のドアだけでなく、トランク（荷室）にアクセスする荷物用のドア（例えば、トランクリッド、バックドア等）が含まれうる。また、車両１０のイグニッションオン（ＩＧ―ＯＮ）には、エンジンを主動力源とする車両１０におけるエンジンの始動の他、電動モータを主動力源とする車両１０における電動モータへの電源ＯＮが含まれうる。以下、本実施形態では、車両１０は、後述するエンジン１１７を主動力源とし、車両１０の起動（ＩＧ―ＯＮ）は、エンジン１１７の始動に対応し、車両１０の停止（ＩＧ―ＯＦＦ）は、エンジン１１７の停止に対応する前提で説明を進める。
【００２２】
また、車両１０は、所定の通信ネットワーク（例えば、多数の基地局を末端とする携帯電話網やインターネット網等）を通じて、センタサーバ３０と通信可能に接続される。車

両１０は、後述の如く、センタサーバ３０に位置情報を送信する。
【００２３】
車両１０は、個人所有の車両１０Ａと、Ｂ２Ｃカーシェアサービスの提供事業者が所有する車両１０Ｂを含む。
【００２４】
携帯端末２０は、所定の通信ネットワーク（例えば、多数の基地局を末端とする携帯電話網やインターネット網等）を通じて、センタサーバ３０と通信可能に接続される。携帯端末２０は、センタサーバ３０から配信される認証用鍵情報（鍵情報の一例。以下、「認証キー」と称する）を取得すると共に、ユーザによる所定操作に応じて、取得した認証キーを比較的近距離の無線通信で車両１０に送信することにより、車両１０を解錠したり、施錠したりすることができる。携帯端末２０は、例えば、汎用の携帯電話、スマートフォン、タブレット端末であってよく、後述の如く、内蔵の処理装置２３にインストールされる所定のアプリケーションプログラム（以下、「キーアプリ」と称する）を起動させることにより上述した機能が実現されてよい。また、携帯端末２０は、センタサーバ３０から認証キーを取得し、取得した認証キーを用いて、車両１０のドアの解錠及び車両１０の起動に特化した携帯型の専用端末であってもよい。携帯端末２０は、車両１０Ａに対応する携帯端末２０Ａａ～２０Ａｄと、車両１０Ｂに対応する携帯端末２０Ｂを含む。
【００２５】
携帯端末２０Ａａは、車両１０Ａの常用的なユーザ（以下、「常用ユーザ」と称する）のうちの所有者（オーナユーザ）が所持する携帯端末である。また、携帯端末２０Ａａは、携帯端末２０Ａｂと比較的近距離の無線通信で双方向に通信可能であってもよい。
【００２６】
携帯端末２０Ａｂは、車両１０Ａのオーナユーザ以外の常用ユーザ（例えば、オーナユーザの家族やオーナユーザの親しい友人等を含む。以下、「子ユーザ」と称する）が所持する携帯端末である。
【００２７】
尚、子ユーザには、車両１０Ａを運転しない、或いは、運転することができないユーザ（例えば、オーナユーザの１８歳未満の子供等）が含まれてよい。例えば、後述するトランク配送サービスだけを利用する場合、常用ユーザは、車両１０Ａを運転する必要が無いからである。
【００２８】
携帯端末２０Ａｃは、後述するトランク配送サービスを提供する事業者（以下、単に「配送事業者」と称する）の配達員が所持する。携帯端末２０Ａｃは、所定の通信ネットワーク（例えば、多数の基地局を末端とする携帯電話網やインターネット網等）を通じて、センタサーバ３０及び後述する配送管理サーバ５０と通信可能に接続される。
【００２９】
携帯端末２０Ａｄは、後述するＣ２Ｃカーシェアサービスにおける車両１０Ａの借主が所持する携帯端末である。携帯端末２０Ａｄは、所定の通信ネットワーク（例えば、多数の基地局を末端とする携帯電話網やインターネット網等）を通じて、センタサーバ３０及び後述するＣ２Ｃカーシェア管理サーバ７０と通信可能に接続される。
【００３０】
携帯端末２０Ｂは、後述するＢ２Ｃカーシェアサービスにおける車両１０Ｂの借主が所持する携帯端末である。携帯端末２０Ｂは、所定の通信ネットワーク（例えば、多数の基地局を末端とする携帯電話網やインターネット網等）を通じて、センタサーバ３０及び後述するＢ２Ｃカーシェア管理サーバ８０と通信可能に接続される。
【００３１】
センタサーバ３０は、車両１０、携帯端末２０、及び、サービス管理サーバ４０と通信可能に接続される。
【００３２】
センタサーバ３０（鍵情報管理装置の一例）は、車両１０の認証キーの発行を管理する

。例えば、センタサーバ３０は、所定の条件に応じて、認証キーを発行し、携帯端末２０に配信する。

【００３３】

また、センタサーバ３０は、車両１０からその位置情報を取得する。これにより、センタサーバ３０は、車両１０の位置を把握することができる。

【００３４】

また、センタサーバ３０は、車両１０Ａのオーナユーザを含む複数の常用ユーザの間で、車両１０Ａを共用するカーシェアリングサービスを運用する。具体的には、センタサーバ３０は、車両１０Ａの認証キーを、オーナユーザを含む予め登録された複数人の常用ユーザのそれぞれが自己の携帯端末２０（携帯端末２０Ａａ，２０Ａｂ）に取得可能な認証キーのシェアリングサービス（キーシェアサービス）を運用する。

【００３５】

また、センタサーバ３０は、車両１０Ａを利用するサービス（キーシェアサービス、トランク配送サービス、Ｃ２Ｃカーシェアサービス等）を車両１０Ａの常用ユーザが利用するための登録処理（利用登録処理）を行う。具体的には、センタサーバ３０は、車両１０Ａの常用ユーザが車両１０Ａを利用したサービスを利用するために、後述するキーシェア管理部３２７やサービス管理サーバ４０が、後述する認証キー手配要求を送信することにより、所定の携帯端末２０に認証キーを配信させる権限（以下、「認証キー手配権限」と称する）を登録する。

【００３６】

また、センタサーバ３０は、後述するトランク配送サービス、Ｃ２Ｃカーシェアサービス等による複数のサービス（即ち、複数の事業者）に亘る車両１０Ａの利用状況を管理する。

【００３７】

サービス管理サーバ４０は、車両１０を利用して提供される各種サービスを運用管理する。サービス管理サーバ４０は、トランク配送サービスに対応する配送管理サーバ５０及びＥＣ（Electronic Commerce）サーバ６０と、Ｃ２Ｃカーシェアサービスに対応するＣ２Ｃカーシェア管理サーバ７０と、Ｂ２Ｃカーシェアサービスに対応するＢ２Ｃカーシェア管理サーバ８０を含む。

【００３８】

尚、トランク配送サービスには、後述するＥＣサイトで発注された商品を配送対象とする配送サービスと、ＥＣサイトで発注された商品以外を配送対象とする配送サービスが含まれうる。後者のトランク配送サービスは、例えば、配送管理サーバ５０から車両１０Ａの常用ユーザに対して、電子メールやＳＮＳ（Sorcial Networking Service）のアカウントや携帯端末２０Ａａ，２０Ａｂで起動される特定のアプリケーションプログラムを通じて、自宅宛ての荷物が配送予定である旨の通知があった場合に、常用ユーザが配送先を車両１０Ａのトランクに変更することができるサービスである。以下、本実施形態では、前者のトランク配送サービスを中心に説明を行うが、後述するトランク配送サービスに関連する各構成の動作は、適宜、後者のトランク配送サービスにおける各構成の動作に援用可能である。

【００３９】

配送管理サーバ５０は、所定の通信ネットワークを通じて、携帯端末２０Ａｃ及びセンタサーバ３０と通信可能に接続され、荷物の受付から車両１０Ａのトランクに荷物を配送するまでのトランク配送サービスに関連する物流システムの運用管理を行う。

【００４０】

尚、配送管理サーバ５０を運営する配送事業者は、トランク配送サービスだけでなく、トランクを荷物の集荷元として指定可能な集荷サービス（以下、「トランク集荷サービス」と称する）を車両１０Ａの常用ユーザに提供してもよい。つまり、配送管理サーバ５０は、トランク配送サービスに代えて、或いは、加えて、トランク集荷サービスの運用管理を行ってもよい。この場合、集荷対象の荷物は、ＥＣサーバ６０に対応するＥＣサイトの

運営事業者（或いはＥＣサイトの出店店舗）に返品される商品（即ち、ＥＣサイトで購入された商品）であってもよいし、ＥＣサイトと関係ない配達用の荷物であってもよい。また、トランク集荷サービスは、顧客から商品を一時的に預かる形態のサービスを提供する事業者（例えば、クリーニング等の事業者）が車両１０Ａの常用ユーザから荷物を預かる際の集荷サービスとして実現されてもよい。この場合、クリーニング事業者等によって、配送管理サーバ５０と同様、サービス管理サーバ４０に含まれうる、トランク集荷サービスを運営管理する集荷管理サーバが設けられてよい。つまり、配送管理サーバ５０に代えて、或いは、加えて、当該集荷管理サーバが設けられてよい。また、顧客から所定の物品（廃品や買い取りを希望する古本等の物品）を回収する形態のサービスを提供する事業者（例えば、廃品回収事業者や古物買い取り事業者等）によって、トランクを回収対象の物品の回収元として指定可能な回収サービス（以下「トランク回収サービス」と称する）が車両１０Ａの常用ユーザに提供されてもよい。この場合、廃品回収事業者等によって、配送管理サーバ５０と同様、サービス管理サーバ４０に含まれうる、トランク回収サービスを運営管理する回収管理サーバが設けられてよい。つまり、配送管理サーバ５０に代えて、或いは、加えて、当該回収管理サーバが設けられてよい。

【００４１】

ＥＣサーバ６０は、所定の通信ネットワークを通じて、センタサーバ３０及び配送管理サーバ５０と通信可能に接続され、商品やサービスを販売する所定のウェブサイト（ＥＣサイト）を運用する。具体的には、ＥＣサーバ６０は、予め登録された車両１０Ａの常用ユーザ及び配送事業者（配送管理サーバ５０に対応する配送事業者）を対象として、ＥＣサイトの注文画面に、配送先の選択肢として車両１０Ａのトランクを表示させる。これにより、車両１０Ａの常用ユーザは、自身が自宅に不在の場合であっても、購入した商品を、車両１０Ａのトランクに配送してもらうことができる。

【００４２】

Ｃ２Ｃカーシェア管理サーバ７０は、携帯端末２０Ａｄ及びセンタサーバ３０と通信可能に接続され、オーナユーザによる車両１０Ａの貸し出し可能な日時の登録受付、車両１０Ａを借りたい人からの利用予約の受付、車両１０Ａの認証キーの手配等のＣ２Ｃカーシェアサービスの運用管理を行う。また、Ｃ２Ｃカーシェア管理サーバ７０は、個人所有の車両１０Ａの車室内やトランクを一時的な荷物置き場や荷物の配達先等として貸し出す態様のＣ２Ｃトランクシェアサービスを運営管理してもよい。

【００４３】

Ｂ２Ｃカーシェア管理サーバ８０は、携帯端末２０Ｂ及びセンタサーバ３０と通信可能に接続され、車両１０Ｂの利用予約の受付、車両１０Ｂの駐車位置、車両１０Ｂの認証キーの手配等のＢ２Ｃカーシェアサービスの運用管理を行う。また、Ｂ２Ｃカーシェア管理サーバ８０は、車両１０Ｂの車室内やトランクを一時的な荷物置き場や荷物の配達先として貸し出す態様のＢ２Ｃトランクシェアサービスを運営管理してもよい。

【００４４】

尚、サービス管理サーバ４０には、Ｂ２Ｃカーシェア管理サーバ８０に代えて、或いは、加えて、ある会社の社用車である車両１０を利用予約の対象とし、当該会社の社員を借主とするカーシェアサービス（社用車利用管理サービス）を運用する社用車利用管理サーバが含まれてもよい。このとき、社用車である車両１０の遊休時間帯が存在する場合、Ｃ２Ｃカーシェア管理サーバ７０は、社用車である車両１０を借用対象とするＣ２Ｃカーシェアサービスを運用してもよい。また、配送管理サーバ５０及びＥＣサーバ６０は、ある会社に配送される荷物の配達先を当該会社の社用車である車両１０のトランクに指定可能なトランク配送サービスを運用してもよい。

【００４５】

［車両の施解錠及び起動に関する構成の詳細］

次に、図２を参照して、認証キー管理システム１における車両１０の施解錠及び起動に関する構成について説明する。

【００４６】

図２は、認証キー管理システム１における車両１０の施解錠及び起動に関する構成の一例を中心に示す図である。車両１０は、施解錠・起動装置１１と、キーユニット１２と、ＧＰＳモジュール１３と、ＤＣＭ（Data Communication Module）１４を含む。

【００４７】

施解錠・起動装置１１は、車両１０に取り付けられ、キーユニット１２からＲＦ（Radio Frequency：高周波）帯（例えば、３００ＭＨｚ～３ＧＨｚ）の電波（以下、「ＲＦ電波」と称する）として送信される施錠信号及び解錠信号に応じて、車両１０のドアの解錠及び施錠を行う。また、施解錠・起動装置１１は、車両１０の車室内に設けられる起動スイッチ（不図示）の押下操作をトリガとして、キーユニットとの間でのＬＦ（Low Frequency：低周波）帯（例えば、３０Ｈｚ～３００ｋＨｚ）の電波（以下、「ＬＦ電波」と称する）及びＲＦ電波によるやり取りに応じて、車両１０を起動させる。施解錠・起動装置１１は、ＬＦ電波送信機１１１と、ＲＦ電波受信機１１２と、照合ＥＣＵ（Electronic Control Unit）１１３と、ボディＥＣＵ１１４と、ドアロックモータ１１５と、エンジンＥＣＵ１１６と、車両１０の駆動力源であるエンジン１１７を含む。

【００４８】

尚、施解錠・起動装置１１は、車両１０に搭載される補機バッテリ（不図示）から供給される電力で作動する。

【００４９】

ＬＦ電波送信機１１１は、例えば、車室内のセンターコンソールやドアハンドルに内蔵され、照合ＥＣＵ１１３の制御下において、ＬＦ電波を送信する。

【００５０】

ＲＦ電波受信機１１２は、例えば、車両１０の荷室のトリム内に設けられ、照合ＥＣＵ１１３の制御下において、ＲＦ電波を受信する。

【００５１】

照合ＥＣＵ１１３は、キーユニット１２との間での信号のやり取りに基づき、車両１０のドアの施解錠及び車両１０の起動を制御する電子制御ユニットである。照合ＥＣＵ１１３は、任意のハードウェア、ソフトウェア、或いは、これらの組み合わせにより実現される。例えば、照合ＥＣＵ１１３は、ＣＰＵ（Central Processing Unit）と、ＲＡＭ（Random Access Memory）と、ＲＯＭ（Read Only Memory）と、補助記憶装置と、ＲＴＣ（Real Time Clock）と、通信用のインターフェースを含むマイクロコンピュータを中心に構成される。そして、照合ＥＣＵ１１３は、ＲＯＭや補助記憶装置に格納される各種プログラムをＣＰＵ上で実行することにより各種制御処理を実現する。以下、後述するキーＥＣＵ１２４についても同様である。

【００５２】

照合ＥＣＵ１１３は、ＲＦ電波受信機１１２によって、キーユニット１２からＲＦ電波として送信される解錠信号及び施錠信号を受信する。

【００５３】

また、照合ＥＣＵ１１３は、解錠信号或いは施錠信号を受信した場合、解錠信号或いは施錠信号に含まれる鍵情報（以下、「内部鍵情報」と称する）に基づき、解錠信号或いは施錠信号の送信元（キーユニット１２）の認証を行う。照合ＥＣＵ１１３は、例えば、補助記憶装置等の内部メモリに予め登録される内部鍵情報と、解錠信号或いは施錠信号に含まれる内部鍵情報とが一致する場合、認証成功と判断し、一致しない場合、認証失敗と判断する。

【００５４】

また、例えば、照合ＥＣＵ１１３は、ＬＦ電波送信機１１１からキーユニット１２に向けて、内部メモリの内部鍵情報を利用して所定の方法で作成された”チャレンジ”を含むＬＦ電波を送信し、ＲＦ電波受信機１１２により受信される、キーユニット１２から返信された”レスポンス”に基づき、チャレンジレスポンス認証を行ってもよい。

【００５５】

そして、照合ＥＣＵ１１３は、認証が成功した場合、ＣＡＮ（Controller Area Networ

k）等の車載ネットワークを通じて、ボディＥＣＵ１１４に解錠指令（解錠信号の受信時）或いは施錠指令（施錠信号の受信時）を送信する。

【００５６】

尚、後述の如く、解錠信号では、車両１０のドアの一部だけが解錠対象として指定される場合がある。この場合、照合ＥＣＵ１１３は、解錠指令において、解錠対象のドアを指定する。これにより、ボディＥＣＵ１１４は、指定される一部のドアに対応するドアロックモータ１１５だけを作動させ、一部のドアだけを解錠させることができる。

【００５７】

また、照合ＥＣＵ１１３は、上述の起動スイッチが押下操作された場合、ＬＦ電波送信機１１１及びＲＦ電波受信機１１２によるキーユニット１２との信号のやり取りによりキーユニット１２の認証を行う。

【００５８】

例えば、照合ＥＣＵ１１３は、ＬＦ電波送信機１１１からキーユニット１２に向けて内部鍵情報の返信を要求するＬＦ帯のリクエスト信号を送信する。そして、照合ＥＣＵ１１３は、ＲＦ電波受信機１１２によりキーユニット１２から内部鍵情報を含むレスポンス信号が受信された場合、ドアの施解錠の場合と同様、内部メモリに予め登録される内部鍵情報と、レスポンス信号に含まれる内部鍵情報との一致性に基づき、認証成功或いは認証失敗を判断する。

【００５９】

また、例えば、照合ＥＣＵ１１３は、ドアの施解錠の場合と同様、チャレンジレスポンス認証を行ってもよい。

【００６０】

そして、照合ＥＣＵ１１３は、認証が成功した場合、ＣＡＮ等の車載ネットワークを通じて、エンジンＥＣＵ１１６にエンジン１１７の始動指令を送信する。

【００６１】

ボディＥＣＵ１１４は、一対一の通信線等により通信可能に接続されるドアロックモータ１１５の作動制御を行う電子制御ユニットである。ボディＥＣＵ１１４は、照合ＥＣＵ１１３からの解錠指令に応じて、ドアロックモータ１１５に解錠動作を行わせる制御指令を出力する。また、ボディＥＣＵ１１４は、照合ＥＣＵ１１３からの施錠指令に応じて、ドアロックモータ１１５に施錠動作を行わせる制御指令を出力する。

【００６２】

ドアロックモータ１１５は、ボディＥＣＵ１１４からの制御指令に応じて、車両１０のドアを解錠及び施錠する既知の電動アクチュエータである。

【００６３】

エンジンＥＣＵ１１６は、エンジン１１７を駆動制御する電子制御ユニットである。具体的には、エンジンＥＣＵ１１６は、エンジン１１７に搭載される、スタータやインジェクタ等の各種アクチュエータを駆動制御する。エンジンＥＣＵ１１６は、照合ＥＣＵ１１３から始動指令が入力された場合、エンジン１１７のスタータやインジェクタ等の各種アクチュエータに制御指令を出力し、エンジン１１７を始動させる。

【００６４】

キーユニット１２は、車両１０の車室内に配置され、携帯端末２０から送信される解錠要求及び施錠要求のそれぞれに応じて、施解錠・起動装置１１にＲＦ電波として解錠信号及び施錠信号を送信する。また、キーユニット１２は、車両１０の車室内に設けられる起動スイッチが押下操作された際に、施解錠・起動装置１１から送信されるＬＦ帯の信号に応じて、施解錠・起動装置１１との間で信号のやり取りを行う。キーユニット１２は、ＬＦ電波受信機１２１、ＲＦ電波送信機１２２、通信機器１２３、キーＥＣＵ１２４を含む。

【００６５】

尚、キーユニット１２は、車両１０のそれぞれのシートに着座したユーザから視認しにくい位置（例えば、グローブボックスやセンタコンソールボックスの内部等）配置されて

よい。また、キーユニット１２は、車両１０に固定されていてもよいし、固定されていなくてもよい。また、キーユニット１２は、内蔵のボタン電池等により作動してもよいし、車両１０に搭載される補機バッテリから供給される電力で作動してもよい。

【００６６】

ＬＦ電波受信機１２１は、キーＥＣＵ１２４の制御下において、ＬＦ電波を受信する。

【００６７】

ＲＦ電波送信機１２２は、キーＥＣＵ１２４の制御下において、ＲＦ電波を送信する。

【００６８】

通信機器１２３は、キーＥＣＵ１２４による制御下において、携帯端末２０との間で近接通信を行う任意のデバイスである。通信機器１２３は、例えば、ＢＬＥ（Bluetooth（登録商標） Low Energy）通信規格に準拠して携帯端末２０と通信を行うＢＬＥ通信モジュールであってよい。また、以下、通信機器１２３で採用される通信規格がＢＬＥ通信に準拠する前提で説明を進める。

【００６９】

尚、通信機器１２３は、通信可能距離が非常に短い近距離通信規格、例えば、ＮＦＣ（Near Field Communication）規格等に準拠した通信デバイスであってもよい。この場合、通信機器１２３は、車両１０の車室外のボディ表面に近い位置（例えば、ドアハンドルの内部）等に内蔵されてよい。これにより、通信機器１２３による通信可能な距離が非常に短い場合であっても、キーユニット１２（キーＥＣＵ１２４）は、車室外の携帯端末２０と通信することができる。

【００７０】

キーＥＣＵ１２４は、携帯端末２０から受信する解錠要求及び施錠要求のそれぞれに応じて、施解錠・起動装置１１に対して、施錠信号及び解錠信号を送信する制御処理を行う電子制御ユニットである。

【００７１】

キーＥＣＵ１２４は、通信機器１２３を通じて、携帯端末２０からキーユニット１２と対応付けられた認証キーを含む認証要求を受信する。

【００７２】

また、キーＥＣＵ１２４は、携帯端末２０からキーユニット１２と対応付けられた認証キーを含む認証要求が受信された場合、当該認証キーに基づき、携帯端末２０の認証を行う。キーＥＣＵ１２４は、当該認証が成功した場合、補助記憶装置等の内部メモリに記憶される内部鍵情報を利用可能な状態に復元する。当該内部鍵情報は、例えば、アクセス不可の状態であったり、暗号化された状態であったり等により、施解錠・起動装置１１における認証用途として利用できない状態で記憶される。そのため、キーＥＣＵ１２４は、携帯端末２０の認証が成功した場合、当該鍵情報をアクセス可能な状態に変更するための内部メモリのアクセス権の変更を行ったり、認証キーに基づき、暗号化された内部鍵情報を復号したり等する。これにより、キーＥＣＵ１２４は、施解錠・起動装置１１に対して、通常アクセス不可である内部鍵情報にアクセスして内部鍵情報を含む解錠信号或いは施錠信号を送信したり、復号された内部鍵情報を含む解錠信号或いは施錠信号を送信したりすることができる。そのため、施解錠・起動装置１１は、解錠信号及び施錠信号に含まれる内部鍵情報に基づき、適切な認証を行うことできる。また、仮に、悪意の第三者がキーユニット１２を不正に入手するような事態が発生しても、キーユニット１２内の内部鍵情報は、アクセス不可になっていたり、暗号化されていたり等するため、車両１０の盗難の発生を抑制することができる。

【００７３】

また、キーＥＣＵ１２４は、通信機器１２３を通じて、携帯端末２０から解錠要求及び施錠要求を受信する。キーＥＣＵ１２４は、携帯端末２０の認証が成功し（具体的には、携帯端末２０の認証が成功した後に、ＢＬＥ通信が確立された状態継続しており）、且つ、携帯端末２０から解錠要求或いは施錠要求を受信した場合、ＲＦ電波送信機１２２を通じて、施解錠鍵情報を含む解錠信号或いは施錠信号を施解錠・起動装置１１に送信する。

【００７４】
これにより、施解錠・起動装置１１における認証処理の後、車両１０のドアの解錠或いは施錠が実現される。
【００７５】
また、キーＥＣＵ１２４は、上述の如く、車両１０の車室内に設けられる起動スイッチが押下操作された際に、施解錠・起動装置１１から送信されるＬＦ帯の信号に応じて、施解錠・起動装置１１との間で信号のやり取りを行う。
【００７６】
例えば、キーＥＣＵ１２４は、ＬＦ電波受信機１２１により施解錠・起動装置１１から上記リクエスト信号が受信された場合、ＲＦ電波送信機１２２を通じて、内部メモリ等に格納される内部鍵情報を含むレスポンス信号を施解錠・起動装置１１に向けて送信する。
【００７７】
また、例えば、キーＥＣＵ１２４は、ＬＦ電波受信機１２１により施解錠・起動装置１１から”チャレンジ”を含むＬＦ電波が受信された場合、内部鍵情報に基づく”レスポンス”を生成し、ＲＦ電波送信機１２２を通じて、施解錠・起動装置１１に送信する。
【００７８】
これにより、施解錠・起動装置１１における認証処理の後、エンジン１１７の始動が実現される。
【００７９】
また、認証キーには、センタサーバ３０により付与される車両１０を施解錠又は起動させる機能に関する権限が規定されうる。
【００８０】
例えば、認証キーが車両１０のドアのうちの一部のドアだけを解錠させる権限しか有さない場合、キーＥＣＵ１２４は、ＲＦ電波送信機１２２を通じて、解錠させるドアを指定する情報を含む解錠信号をキーユニット１２に送信する。これにより、上述の如く、車両１０の一部のドアだけが解錠さうれる。
【００８１】
また、例えば、認証キーがエンジン１１７を起動させる権限を有さない場合、キーＥＣＵ１２４は、ＬＦ電波受信機１２１によって、起動スイッチの押下操作に基づく施解錠・起動装置１１からのＬＦ帯の信号が受信されても、施解錠・起動装置１１とのやり取りを行わないようにするとよい。これにより、認証キーの権限に応じて、エンジン１１７の起動を禁止することができる。
【００８２】
ＧＰＳモジュール１３は、車両１０の上空の３以上、好ましくは、４以上の衛星から送信されるＧＰＳ信号を受信し、車両１０の位置を測位する。ＧＰＳモジュール１３は、一対一の通信線やＣＡＮ等の車載ネットワークを通じてＤＣＭ１４等と通信可能に接続され、測位された車両１０の位置情報は、ＤＣＭ１４等に入力される。
【００８３】
ＤＣＭ１４は、所定の通信ネットワークを通じて、センタサーバ３０と双方向で通信を行う通信デバイスである。ＤＣＭ１４は、予め規定されたタイミングで、或いは、センタサーバ３０からの要求等に応じて、ＧＰＳモジュール１３から入力される車両１０の現在の位置情報をセンタサーバ３０に送信する。また、ＤＣＭ１４は、予め規定されたタイミングで、或いは、センタサーバ３０からの要求等に応じて、ＣＡＮ等の車載ネットワークを通じて取得されうる各種車両情報（例えば、認証キーに基づき車両１０のドアの解錠或いは車両１０の起動が行われた旨の情報等）をセンタサーバ３０に送信する。
【００８４】
携帯端末２０は、通信機器２１と、通信機器２２と、処理装置２３と、タッチパネルディスプレイ（以下、単に「ディスプレイ」と称する）２４を含む。
【００８５】
通信機器２１は、通信機器１２３と同じ通信規格により、携帯端末２０との間で近接通

信を行う任意のデバイスである。通信機器２１は、上述の如く、本実施形態の場合、例えば、ＢＬＥ通信モジュールである。

【００８６】

通信機器２２は、所定の通信ネットワークを通じて、センタサーバ３０、サービス管理サーバ４０等と通信を行う任意のデバイスである。通信機器２２は、例えば、ＬＴＥ（Long Term Evolution）、４Ｇ（4th Generation）、５Ｇ（5th Generation）等の通信規格に対応する移動通信モジュールである。

【００８７】

処理装置２３は、携帯端末２０における各種制御処理を行う。処理装置２３は、その機能が任意のハードウェア、ソフトウェア、或いは、これらの組み合わせにより実現されてよく、例えば、ＣＰＵと、ＲＡＭと、ＲＯＭと、補助記憶装置と、ＲＴＣと、通信用の各種インターフェース等を含む。処理装置２３は、例えば、ＲＯＭや補助記憶装置に格納される一以上のプログラムをＣＰＵ上で実行することにより実現される機能部として、通信処理部２３１と、通信処理部２３２と、認証キー取得部２３３と、認証要求部２３４と、施解錠要求部２３５を含む。また、処理装置２３は、例えば、補助記憶装置内の記憶領域として実現される記憶部２３０を含み、記憶部２３０に各種データを保存する（記憶させる）処理は、ＲＯＭや補助記憶装置に格納される所定のプログラムにより実現される。

【００８８】

通信処理部２３１は、通信機器２１を用いて、キーユニット１２と双方向で近接通信を行い、各種信号の送受信を行う。

【００８９】

通信処理部２３２は、通信機器２２を用いて、所定の通信ネットワークに接続し、センタサーバ３０やサービス管理サーバ４０等との間で、データ信号や制御信号等の各種信号を送受信する。

【００９０】

認証キー取得部２３３は、例えば、ディスプレイ２４に表示される所定のＧＵＩ（Graphical User Interface）に対するユーザの所定の操作に応じて、センタサーバ３０から認証キーを取得し、取得した認証キーを記憶部２３０に保存する。以下、携帯端末２０に対する各種操作は、上記キーアプリの動作と連動してディスプレイ２４に表示されるＧＵＩに対する操作で行われる前提で説明を進める。

【００９１】

例えば、携帯端末２０Ａａの認証キー取得部２３３は、通信処理部２３２を介して、センタサーバ３０に、認証キー取得要求を送信する。これにより、センタサーバ３０は、認証キー取得要求を受信し、正規の認証キー取得要求であると判定すると、認証キーを発行する。そして、当該認証キー取得部２３３は、通信処理部２３２を介して、センタサーバ３０から配信される認証キーを取得する。

【００９２】

また、例えば、携帯端末２０Ａｂの認証キー取得部２３３は、携帯端末２０Ａａからセンタサーバ３０に送信されるキーシェア要求（後述）に応じて、センタサーバ３０から携帯端末２０Ａｂに配信される認証キーを、通信処理部２３２を介して、取得する。

【００９３】

尚、携帯端末２０Ａｂの認証キー取得部２３３は、通信処理部２３２を介して、自ら認証キー取得要求をセンタサーバ３０に送信してもよい。この場合、センタサーバ３０は、携帯端末２０Ａｂから認証キー取得要求を受信した場合、オーナユーザの携帯端末２０Ａａに対して認証キーの配信を許可するか否かの問い合わせを行うとよい。

【００９４】

また、例えば、携帯端末２０Ａｃ，２０Ａｄ，２０Ｂの認証キー取得部２３３は、それぞれ、配送管理サーバ５０，Ｃ２Ｃカーシェア管理サーバ７０、Ｂ２Ｃカーシェア管理サーバ８０に認証キーの取得を要求する認証キー取得要求を送信する。これにより、配送管理サーバ５０，Ｃ２Ｃカーシェア管理サーバ７０、Ｂ２Ｃカーシェア管理サーバ８０は、

認証キー取得要求の受信に応じて、センタサーバ３０に認証キー手配要求を送信すると共に、センタサーバ３０は、認証キー手配要求の受信に応じて、認証キーを発行する。そして、当該認証キー取得部２３３は、通信処理部２３２を介して、センタサーバ３０から配信される認証キーを取得する。

【００９５】

尚、携帯端末２０Ａｃ，２０Ａｄ，２０Ｂの認証キー取得部２３３は、通信処理部２３２を通じて、センタサーバ３０に認証キー取得要求を送信してもよい。この場合、センタサーバ３０は、配送管理サーバ５０，Ｃ２Ｃカーシェア管理サーバ７０、Ｂ２Ｃカーシェア管理サーバ８０に対する問い合わせを行うことにより、正規の認証キー取得要求であるか否かを判定してよい。

【００９６】

認証要求部２３４は、通信処理部２３１を介して、車両１０のドアを施解錠するための遠隔操作部としての携帯端末２０の認証を要求する認証要求を車両１０のキーユニット１２に送信する。例えば、認証要求部２３４は、認証キーに対応するキーユニットを発見した場合、具体的には、通信処理部２３１によりキーユニット１２に対応するアドバタイジングパケットが受信された場合に、認証要求をキーユニット１２に送信してよい。また、例えば、認証要求部２３４は、ユーザによる所定の操作に応じて、認証要求をキーユニット１２に送信してもよい。

【００９７】

施解錠要求部２３５は、ユーザによる所定の操作に応じて、認証キーを含む解錠要求或いは認証キーを含む施錠要求を、通信処理部２３１を介して、キーユニット１２に送信する。これにより、認証要求部２３４による認証要求が送信される前に、解錠要求或いは施錠要求がキーユニット１２に送信された場合であっても、キーユニット１２における認証処理に基づく車両１０のドアの施解錠が実現されうる。例えば、ディスプレイ２４の操作画面としてのＧＵＩには、車両１０の解錠を要求する解錠ボタンと、車両１０の施錠を要求する施錠ボタンが描画され、施錠ボタンがタッチ操作されることにより、施錠要求が送信され、解錠ボタンがタッチ操作されることにより、解錠要求が送信されてよい。また、施錠要求及び解錠要求は、携帯端末２０に設けられるハードウェアによる所定の操作部に対する操作により送信されてもよい。

【００９８】

例えば、認証キー取得部２３３、認証要求部２３４、及び、施解錠要求部２３５の機能は、処理装置２３のＲＯＭや補助記憶装置等にインストールされる所定のアプリケーションプログラムが起動されることによって、ユーザが利用可能になる態様であってよい。以下、処理装置２３の認証キー取得部２３３、認証要求部２３４、及び施解錠要求部２３５の機能は、処理装置２３（補助記憶装置やＲＯＭ）にインストール済の上記キーアプリを起動させることによりユーザが利用可能になる前提で説明を進める。

【００９９】

センタサーバ３０は、通信機器３１と、処理装置３２を含む。

【０１００】

尚、センタサーバ３０の機能は、複数のサーバにより分担して実現されてもよい。以下、配送管理サーバ５０、ＥＣサーバ６０、Ｃ２Ｃカーシェア管理サーバ７０、及び、Ｂ２Ｃカーシェア管理サーバ８０についても同様である。

【０１０１】

通信機器３１は、所定の通信ネットワークを通じて、車両１０、携帯端末２０、及び、サービス管理サーバ４０のそれぞれと双方向で通信を行う任意のデバイスである。

【０１０２】

処理装置３２は、センタサーバ３０における各種制御処理を行う。処理装置３２は、その機能が任意のハードウェア、ソフトウェア、或いは、これらの組み合わせにより実現されてよく、例えば、ＣＰＵと、ＲＡＭと、ＲＯＭと、補助記憶装置と、ＲＴＣと、所定の通信インターフェース等を含む一又は複数のサーバコンピュータを中心に構成される。以

下、配送管理サーバ５０、ＥＣサーバ６０、Ｃ２Ｃカーシェア管理サーバ７０、及び、Ｂ２Ｃカーシェア管理サーバ８０の後述する処理装置５２，６２，７２，８２についても同様である。処理装置３２は、例えば、ＲＯＭや補助記憶装置に保存される一以上のプログラムをＣＰＵ上で実行することにより実現される機能部として、通信処理部３２１と、条件判定部３２２と、認証キー発行部３２３を含む。また、処理装置３２は、例えば、サーバコンピュータの補助記憶装置やサーバコンピュータに接続される外部記憶装置等に規定される記憶領域として実現される記憶部３２０を含み、記憶部３２０に各種データが保存（記憶）される処理は、ＲＯＭや補助記憶装置に格納されるプログラムにより実現される。以下、後述する記憶部５２０，６２０，７２０，８２０についても同様である。

【０１０３】

通信処理部３２１は、通信機器３１を制御し、車両１０、携帯端末２０、及び、サービス管理サーバ４０のそれぞれとの間での制御信号や情報信号等の各種信号のやり取りを行う。

【０１０４】

条件判定部３２２は、通信処理部３２１により受信される、携帯端末２０からの認証キー取得要求或いはサービス管理サーバ４０からの認証キー手配要求の受信に応じて、正規の認証キー取得要求或いは認証キー手配要求であるかを判定する。

【０１０５】

認証キー発行部３２３（鍵情報配信部の一例）は、条件判定部３２２により認証キー取得要求或いは認証キー手配要求が正規であると判定された場合に、発行すべき認証キーの仕様を特定し、特定した仕様に対応する認証キーを発行する。例えば、認証キー発行部３２３は、認証キーによる施解錠の対象となる車両１０或いは当該車両１０に対応するキーユニット１２等を特定する。また、例えば、認証キー発行部３２３は、認証キーが有効な（利用可能な）期間、利用可能な回数に関する認証キーの権限を特定する。また、例えば、認証キー発行部３２３は、施解錠可能なドア、車両１０を起動可能か否か等の車両１０の解錠或いは起動に関する認証キーの権限を特定する。また、例えば、認証キー発行部３２３は、後述する臨時キーシェアによる他の携帯端末２０への認証キーのシェアの可否、他の携帯端末２０へシェア可能なの期間、回数等の臨時キーシェアに関する認証キーの権限を特定する。以下、利用可能な期間、回数等に関する認証キーの権限、車両１０の解錠或いは起動に関する認証キーの権限、及び、臨時キーシェアに関する認証キーの権限を総括的に、単に「認証キーの各種権限」と称する。そして、認証キー発行部３２３は、通信処理部３２１を介して、対象となる携帯端末２０に発行した認証キーを配信する。

【０１０６】

［キーシェアサービスに関する構成の詳細］

次に、図３を参照して、認証キー管理システム１におけるキーシェアサービスに関する構成について説明する。

【０１０７】

図３は、認証キー管理システム１におけるキーシェアサービスに関する構成の一例を中心に示す図である。以下、図３について、認証キー管理システム１におけるキーシェアサービスに関する構成を中心に説明し、上述した車両１０の施解錠及び起動に関する構成と重複する構成に関する重複する説明を極力省略する。以下、図４～図６の説明についても同様である。

【０１０８】

車両１０Ａのオーナユーザが所持する携帯端末２０Ａａの処理装置２３は、上述の如く、通信処理部２３１と、通信処理部２３２と、認証キー取得部２３３と、認証要求部２３４と、施解錠要求部２３５を含む。また、携帯端末２０Ａａの処理装置２３は、更に、ユーザ登録要求部２３６と、サービス利用登録要求部２３７と、サービス利用状況要求部２３８と、キーシェア要求部２３９を含む。

【０１０９】

尚、本実施形態では、携帯端末２０Ａａのユーザ登録要求部２３６、サービス利用登録

要求部２３７、サービス利用状況要求部２３８、及び、キーシェア要求部２３９の機能は、上記キーアプリが起動され、且つ、センタサーバ３０との双方向通信に基づくユーザ認証が成功することにより、オーナユーザが利用可能になる前提で説明を進める。また、当該ユーザ認証は、オーナユーザに対して予め規定されるＩＤ（以下、「オーナユーザＩＤ」と称する）と、オーナユーザＩＤに対応するパスワードに基づき、センタサーバ３０で行われる前提で説明を進める。

【０１１０】

ユーザ登録要求部２３６は、オーナユーザによる所定の操作に応じて、車両１０Ａを利用する各種サービス（キーシェアサービス、トランク配送サービス、及び、Ｃ２Ｃカーシェアサービス等）を利用する車両１０Ａの常用ユーザの登録をセンタサーバ３０に対して要求する。例えば、ユーザ登録要求部２３６は、オーナユーザＩＤ及びパスワードと、登録対象である子ユーザを特定する属性情報（例えば、氏名、年齢、オーナユーザとの関係等）を含むユーザ登録要求を、通信処理部２３２を介して、センタサーバ３０に送信する。

【０１１１】

また、ユーザ登録要求部２３６は、通信処理部２３２によりセンタサーバ３０から子ユーザの登録が完了した旨の通知（ユーザ登録完了通知）が受信された場合、ユーザ登録完了通知に含まれる子ユーザのＩＤ（以下、「子ユーザＩＤ」と称する）及びパスワードを記憶部２３０に保存する。このとき、ユーザ登録要求部２３６は、オーナユーザによる所定の操作に応じて、通信処理部２３１を介して、登録された子ユーザが所持する携帯端末２０Ａｂに子ユーザＩＤ及びパスワードを送信してもよい。

【０１１２】

サービス利用登録要求部２３７は、オーナユーザによる所定の操作に応じて、車両１０Ａの常用ユーザによる車両１０Ａを利用する各種サービスの利用登録をセンタサーバ３０に要求する。つまり、サービス利用登録要求部２３７は、上述の如く、車両１０Ａの常用ユーザが各種サービスを利用するための各種サービスに対応するキーシェア管理部３２７やサービス管理サーバ４０の認証キー手配権限の登録を要求する。例えば、サービス利用登録要求部２３７は、オーナユーザＩＤ及びそのパスワードと、各種サービスに利用される車両１０Ａを特定する情報と、対象のサービスを特定する情報と、対象のサービスを利用する常用ユーザのＩＤ（オーナユーザＩＤ或いは子ユーザＩＤ）を含むサービス利用登録要求を、通信処理部２３２を介して、センタサーバ３０に送信する。以下、オーナユーザＩＤ及び子ユーザＩＤを総括的に「常用ユーザＩＤ」と称する場合がある。これにより、サービス利用登録要求部２３７は、キーシェアサービスを利用する子ユーザをセンタサーバ３０に登録することができる。

【０１１３】

また、サービス利用登録要求部２３７は、通信処理部２３２によりセンタサーバ３０及びサービス管理サーバ４０の少なくとも一方からサービス利用登録要求に基づくサービスの利用登録が完了した旨の通知を受信する。そして、サービス利用登録要求部２３７は、オーナユーザによる所定の操作に基づく車両１０Ａの常用ユーザによる特定サービスの利用登録が完了した旨をディスプレイ２４に表示させる。これにより、オーナユーザは、当該常用ユーザによる特定サービスの利用登録が完了したことを把握することができる。

【０１１４】

サービス利用状況要求部２３８は、オーナユーザによる所定の操作に応じて、オーナユーザＩＤに対応する形で利用登録済の車両１０Ａの常用ユーザによるキーシェアサービスを含む各種サービスの利用状況に関する情報（サービス利用状況情報）をセンタサーバ３０に要求する。例えば、サービス利用状況要求部２３８は、オーナユーザＩＤ及びそのパスワードを含むサービス利用状況要求を、通信処理部２３２を介して、センタサーバ３０に送信する。そして、サービス利用状況要求部２３８は、通信処理部２３２によりセンタサーバ３０から受信されるサービス利用状況情報が受信された場合、ディスプレイ２４にサービス利用状況情報を表示させる。これにより、オーナユーザは、オーナユーザＩＤに

紐付く態様でセンタサーバ３０に利用登録される各種サービスの各常用ユーザによる利用状況に関する情報を一元的に把握することができる。

【０１１５】

キーシェア要求部２３９は、オーナユーザによる所定の操作に応じて、キーシェアサービスに利用登録された子ユーザへの車両１０Ａの施解錠或いは起動を行うための認証キーの配信をセンタサーバ３０に要求する。例えば、キーシェア要求部２３９は、通信処理部２３２を介して、オーナユーザＩＤ及びそのパスワードと、認証キーによる施解錠対象の車両１０Ａに関する情報と、認証キーの配信（シェア）対象の子ユーザに関する情報（例えば、子ユーザＩＤ）を含むキーシェア要求をセンタサーバ３０に送信する。このとき、キーシェア要求には、オーナユーザによる所定の操作で設定される配信される認証キーが利用可能な期間に関する利用期間情報（例えば、利用開始日時及び利用終了日時等）が含まれてよい。また、キーシェア要求には、オーナユーザによる所定の操作に応じて指定されうる、利用可能な期間や回数等に関する認証キーの権限、車両の解錠或いは起動に関する認証キーの権限、及び、後述する臨時キーシェアに関する認証キーの権限等、認証キーの各種権限に関する権限情報が含まれてもよい。これにより、後述の如く、同時期に利用可能な認証キーを複数の携帯端末２０でシェアする場合に、オーナユーザが適宜権限情報を設定することにより、オーナユーザ以外のユーザによる車両１０Ａの利用を制限することができる。そのため、車両１０Ａのセキュリティ性を向上させることができる。

【０１１６】

また、キーシェア要求部２３９は、オーナユーザによる所定操作に応じて、車両１０Ａの複数の常用ユーザの携帯端末２０（即ち、携帯端末２０Ａａ，２０Ａｂの少なくとも一方）を配信対象とし、利用可能な期間が重複する認証キーの配信をセンタサーバ３０に要求してもよい。つまり、キーシェア要求では、認証キーの配信対象である複数の常用ユーザが指定されてもよく、その中にオーナユーザが含まれてもよい。また、キーシェア要求では、指定される複数の常用ユーザごとの認証キーの利用可能な期間は、重複していてもよい。これにより、同時期に利用可能な車両１０Ａの認証キーを複数の常用ユーザでシェアできる。そのため、例えば、複数人で車両１０Ａに同乗して旅行やキャンプ等に出かける際、認証キーが保存された携帯端末２０を貸し借りすることなく、それぞれの同乗人が車両１０Ａを施解錠等することができるため、ユーザの利便性を向上させることができる。

【０１１７】

また、キーシェア要求部２３９は、オーナユーザによる所定の操作に応じて、既に配信済の認証キーを他の携帯端末２０（つまり、キーアプリがインストールされる携帯端末２０）にシェアしてもよい（以下、当該認証キーのシェア態様を「臨時キーシェア」と称する）。このとき、他の携帯端末２０は、子ユーザの携帯端末２０Ａｂであってもよいし、子ユーザ以外のユーザ、つまり、車両１０Ａを一時的に利用するユーザの携帯端末２０であってもよい。

【０１１８】

例えば、キーシェア要求部２３９は、通信処理部２３１を通じて、認証キー（具体的には、認証キーの複製）を他の携帯端末２０に送信する。これにより、急に、車両１０Ａに同乗して複数人で旅行等に行くことになった場合であっても、車両１０Ａのオーナユーザは、他のユーザと認証キーをシェアすることができる。また、携帯端末２０Ａａから直接的に他の携帯端末２０に同時期に利用可能な認証キーをシェアすることができる。そのため、例えば、携帯端末２０Ａａが無線移動体通信網における通信状況が悪い場所や通信圏外にある場合であっても、車両１０Ａのオーナユーザは、他のユーザと認証キーをシェアすることができる。

【０１１９】

このとき、キーシェア要求部２３９は、オーナユーザによる所定の操作に基づき設定される、或いは、予め規定される、利用可能な期間又は回数に関する権限や車両１０Ａの解錠或いは起動に関する権限が制限された認証キーを、通信処理部２３１を通じて、他の携

帯端末２０に送信してよい。具体的には、例えば、利用可能な期間や回数を３０分や１回等に制限する権限が付与された認証キーや、車両１０Ａの乗降用ドアの施解錠だけに制限したり、車両１０Ａの起動を禁止したり等する権限が付与された認証キーが、他の携帯端末２０に送信されてよい。以下、センタサーバ３０を介して行われる臨時キーシェアの場合についても同様である。これにより、臨時キーシェアによる車両１０Ａのセキュリティ性を向上させることができる。

【０１２０】

また、キーシェア要求部２３９は、臨時キーシェアを行う場合に、通常のキーシェアの場合と同様、センタサーバ３０から他の携帯端末２０に認証キーを配信させてもよい。このとき、キーシェア要求部２３９は、通信処理部２３２を通じて、配信済みの認証キーを特定する情報（例えば、認証キーに埋め込まれる発行ＩＤ等）、及び、配信対象の他の携帯端末２０を指定する情報を含む臨時キーシェア要求をセンタサーバ３０に送信することにより、センタサーバ３０から他の携帯端末２０に車両１０Ａの認証キーを配信させてよい。

【０１２１】

例えば、キーシェア要求部２３９は、他の携帯端末２０が子ユーザの携帯端末２０Ａｂである場合、通信処理部２３２を通じて、子ユーザＩＤを含む臨時キーシェア要求をセンタサーバ３０に送信してよい。

【０１２２】

また、例えば、キーシェア要求部２３９は、通信処理部２３１等を通じて、他の携帯端末２０から所定の識別情報（例えば、キーアプリのインストールユーザとしてセンタサーバ３０に登録される他の携帯端末２０のユーザに対応するＱＲコード（登録商標））を取得する。そして、キーシェア要求部２３９は、当該識別情報に基づき特定される他の携帯端末２０を配信対象として指定する臨時キーシェア要求をセンタサーバ３０に送信してよい。

【０１２３】

尚、携帯端末２０Ａａは、他の方法で、当該識別情報を取得してもよい。例えば、携帯端末２０Ａａは、搭載されるカメラ機能を利用して、他の携帯端末２０のディスプレイ２４に表示される識別情報を認識する態様で、他の携帯端末２０のユーザに対応する識別情報を取得してもよい。また、例えば、携帯端末２０Ａａは、他の携帯端末２０のユーザからオーナユーザのメールアドレスやＳＮＳのアカウントに送信された識別情報を取得してもよい。

【０１２４】

また、例えば、キーシェア要求部２３９は、オーナユーザによる所定の操作に応じて、携帯端末２０Ａａの現在位置の周辺に存在する他の携帯端末２０の候補となる候補端末に関する候補端末情報を要求する候補端末情報要求を、通信処理部２３２を通じて、センタサーバ３０に送信する。また、キーシェア要求部２３９は、通信処理部２３２によりセンタサーバ３０から候補端末情報が受信された場合、ディスプレイ２４に候補端末情報を表示させる。このとき、センタサーバ３０から返信される候補端末情報には、候補端末のうち、特定の操作或いは動作が行われている候補端末を特定する情報が含まれてよい。これにより、キーシェア対象の他の携帯端末２０のユーザが当該携帯端末２０に対して特定の操作或いは動作を行うことで、車両１０Ａのオーナユーザは、携帯端末２０Ａａのディスプレイ２４に表示される候補端末の中から他の携帯端末２０を特定することができる。そして、キーシェア要求部２３９は、オーナユーザによる所定の操作により、候補端末の中から特定された他の携帯端末２０を配信対象として指定する臨時キーシェア要求をセンタサーバ３０に送信してよい。

【０１２５】

また、キーシェア要求部２３９は、オーナユーザによる所定の操作に応じて、キーアプリを起動しセンタサーバ３０から認証キーを他の携帯端末２０に取得させるためのＵＲＬ（Uniform Resource Locator）スキームによるリンク情報（以下、単に「リンク情報」と

称する）を、通信処理部２３２を通じて、他の携帯端末２０のユーザのメールアドレスやＳＮＳのアカウントに送信してもよい。このとき、キーシェア要求部２３９は、オーナユーザによる所定操作に応じて、通信処理部２３２を通じて、取得済の認証キーを指定する臨時キーシェア要求をセンタサーバ３０に送信し、臨時キーシェア要求に応じてセンタサーバ３０から返信されるリンク情報を取得する。これにより、キーシェア要求部２３９は、センタサーバ３０から他の携帯端末２０に認証キーを配信させることができる。

【０１２６】

また、臨時キーシェアは、既に認証キーが配信済の子ユーザの携帯端末２０Ａｂから実行可能な態様であってもよい。即ち、キーシェア要求部２３９のうちの臨時キーシェアに関する機能は、子ユーザの携帯端末２０Ａｂの処理装置２３にインストールされるキーアプリの機能に含まれていてもよい。これにより、オーナユーザを含まない複数人で車両１０Ａに同乗する場合についても、認証キーを取得済みの子ユーザの携帯端末２０Ａｂを複数人の間で貸し借りする必要がなく、車両１０Ａの子ユーザの利便性を更に向上させることができる。以下、子ユーザの携帯端末２０Ａｂから臨時キーシェアが可能な前提で説明を進める。

【０１２７】

センタサーバ３０の処理装置３２は、上述の如く、通信処理部３２１と、条件判定部３２２と、認証キー発行部３２３と、記憶部３２０を含む。また、センタサーバ３０の処理装置３２（情報処理装置の一例）は、例えば、ＲＯＭや補助記憶装置に格納される一以上のプログラムをＣＰＵ上で実行することにより実現される機能部として、位置情報管理部３２４と、スケジュール管理部３２５と、登録管理部３２６と、キーシェア管理部３２７を含む。

【０１２８】

条件判定部３２２は、通信処理部３２１により携帯端末２０Ａａ，２０Ａｂから認証キー取得要求が受信された場合、認証キー取得要求に含まれる常用ユーザＩＤ及びそのパスワードに基づく認証を行う。条件判定部３２２は、例えば、記憶部３２０に登録される常用ユーザＩＤ及びそのパスワードと、認証キー取得要求に含まれる常用ユーザＩＤ及びそのパスワードを照合し、一致する場合、認証成功、つまり、正規の認証キー取得要求であると判定する。

【０１２９】

また、条件判定部３２２は、後述するキーシェア管理部３２７から送られる認証キー手配要求が正規の認証キー手配要求であるか否かを判定する。例えば、条件判定部３２２は、キーシェア管理部３２７からの認証キー手配要求に含まれる認証情報（例えば、ＩＤ及びパスワード）等に基づき、認証が成功した場合、正規の認証キー手配要求であると判定してよい。

【０１３０】

認証キー発行部３２３は、条件判定部３２２により正規の認証キー取得要求或いは正規の認証キー手配要求であると判定された場合に、認証キーを発行し、通信処理部３２１を通じて、対象となる携帯端末２０に認証キーを配信する。

【０１３１】

位置情報管理部３２４は、通信処理部３２１を介して、車両１０Ａから位置情報を取得し、車両１０Ａの位置情報をリアルタイムにモニタリングすることにより、車両１０Ａの移動状況を把握する。これにより、例えば、位置情報管理部３２４は、通信処理部３２１を介して、子ユーザに貸与されている車両１０Ａの位置情報をオーナユーザに通知することができる。また、例えば、位置情報管理部３２４は、通信処理部３２１を介して、子ユーザに貸与される予定の車両１０Ａが指定位置（自宅等）に向かっているかどうかやどのくらいで戻ってくるか等の情報を子ユーザの携帯端末２０Ａｂに通知することができる。

【０１３２】

スケジュール管理部３２５は、各種サービスに関する車両１０Ａの利用状況を管理する。例えば、スケジュール管理部３２５は、定期的に、キーシェア管理部３２７からキーシ

ェアサービスによる車両１０の利用スケジュール、具体的には、キーシェアサービスにより配信される認証キーの利用可能日時に関する情報を取得する。また、スケジュール管理部３２５は、通信処理部３２１を介して、配送管理サーバ５０及びＣ２Ｃカーシェア管理サーバ７０からトランク配送サービス及びＣ２Ｃカーシェアサービスのそれぞれによる車両１０Ａの利用スケジュールを取得する。そして、スケジュール管理部３２５は、取得した各種サービスに関する車両１０Ａの利用スケジュールに基づき、複数のサービスに亘る車両１０Ａの利用予定に関する情報（車両利用予定情報）を生成し、記憶部３２０に保存される古い車両利用予定情報を更新する。

【０１３３】

登録管理部３２６は、通信処理部３２１によりオーナユーザの携帯端末２０Ａａから受信されるユーザ登録要求に応じて、各種サービスを利用する常用ユーザ（子ユーザ）の登録を行う。例えば、登録管理部３２６は、携帯端末２０Ａａからのユーザ登録要求に含まれるオーナユーザＩＤ及びパスワードと、記憶部３２０に保存されるオーナユーザＩＤ及びパスワードを照合し、一致する場合、正規のユーザ登録要求であると判定する、つまり、認証成功と判定する。そして、登録管理部３２６は、正規のユーザ登録要求に含まれる子ユーザＩＤを、各種サービスを利用可能な常用ユーザとして記憶部３２０内のユーザ・サービス登録情報ＤＢ（Data Base）に登録する。

【０１３４】

また、登録管理部３２６（登録部の一例）は、通信処理部３２１によりオーナユーザの携帯端末２０Ａａから受信されるサービス利用登録要求に応じて、車両１０Ａの常用ユーザによる各種サービスの利用登録を行う。つまり、登録管理部３２６は、サービス利用登録要求に応じて、車両１０Ａのユーザが各種サービスを利用するための各種サービスに対応するキーシェア管理部３２７やサービス管理サーバ４０の認証キー手配権限の登録を行う。例えば、登録管理部３２６は、携帯端末２０Ａａからのサービス利用登録要求に含まれるオーナユーザＩＤ及びパスワードに基づき、上記と同様の認証処理を行い、正規のサービス利用登録要求であるか否かを判定する。また、登録管理部３２６は、正規のサービス利用登録要求である場合、サービス利用登録要求に含まれる常用ユーザＩＤが既にユーザ・サービス登録情報ＤＢに登録済であるか否かを判定する。そして、登録管理部３２６は、サービス利用登録要求に含まれる常用ユーザＩＤが既にユーザ・サービス登録情報ＤＢに登録済である場合、サービス利用登録要求で特定される対象のサービスを、当該常用ユーザＩＤに対応する常用ユーザが利用可能なサービスとして記憶部３２０内のユーザ・サービス登録情報ＤＢ（Data Base）に登録する。

【０１３５】

具体的には、登録管理部３２６は、オーナユーザＩＤに、対象となるサービスを特定するサービス固有情報と、車両１０Ａを特定する車両固有情報と、サービスを利用する常用ユーザを特定する常用ユーザＩＤと、車両１０Ａに対応する車両固有情報及び常用ユーザＩＤと対象のサービスとを対応させるサービスリンク情報とを紐付ける態様のユーザ・サービス登録情報ＤＢを構築する。

【０１３６】

サービス固有情報は、例えば、サービスごとに規定されるサービスＩＤである。具体的には、例えば、Ｃ２Ｃカーシェアサービスを提供する事業者が複数ある場合、複数の事業者ごとに固有のサービスＩＤが規定され、例えば、同じ事業者が複数のＣ２Ｃカーシェアサービスを提供している場合、同じ事業者が提供する複数のサービスごとに固有のＩＤが規定される。また、複数の配送事業者と複数のＥＣ事業者の相互間の組み合わせによって、トランク配送サービスが提供される場合、配送事業者とＥＣ事業者との組み合わせごとに、固有のサービスＩＤが規定されてもよいし、複数の配送事業者ごとに規定される固有のサービスＩＤと複数のＥＣ事業者ごとに規定される固有のサービスＩＤの組み合わせによって、対象のサービスが特定されてもよい。

【０１３７】

車両固有情報は、認証キーによる施解錠或いは起動の対象である車両１０Ａを特定可能

であれば、任意の情報であってよい。例えば、車両１０Ａごとに規定される、車両ＩＤやＶＩＮ等の識別情報であってよいし、例えば、キーユニット１２等の車両１０Ａに搭載される認証キーに基づくドアの施解錠或いは起動に関連する車載装置ごとに規定される、キーユニットＩＤ等の識別情報であってもよい。以下、車両固有情報は、キーユニットＩＤである前提で説明を進める。

【０１３８】

サービスリンク情報は、各種サービスを管理するキーシェア管理部３２７、配送管理サーバ５０及びＥＣサーバ６０、並びに、Ｃ２Ｃカーシェア管理サーバ７０が、認証キー手配要求を送ることにより、認証キー発行部３２３に認証キーの発行及び対象の携帯端末２０への認証キーの配信をさせるために必要な情報である。つまり、認証キー発行部３２３は、キーシェア管理部３２７、配送管理サーバ５０及びＥＣサーバ６０、並びに、Ｃ２Ｃカーシェア管理サーバ７０からサービスリンク情報を含む認証キー手配要求を受け付けることにより、認証キーによる施解錠或いは起動の対象である車両１０Ａを特定し、適切な認証キーを発行することができる。

【０１３９】

サービスリンク情報は、センタサーバ３０において、対象サービスと車両１０Ａ及び該サービスを利用するユーザとの間を対応づけられれば、任意の情報であってよい。例えば、サービスリンク情報は、キーシェア管理部３２７、配送管理サーバ５０、ＥＣサーバ６０、及び、Ｃ２Ｃカーシェア管理サーバ７０に対応する各種サービスのユーザ向けのウェブサイトにおける常用ユーザのログインＩＤ（以下、便宜的に「サービスログインＩＤ」と称する）等であってよい。この場合、携帯端末２０Ａａのサービス利用登録要求部２３７は、通信処理部２３２を介して、各種サービスに対応する登録対象の常用ユーザのサービスログインＩＤを含むサービス利用登録要求をセンタサーバ３０に送信する。また、各種サービスに対応する登録対象の常用ユーザがサービスログインＩＤを未取得の場合、携帯端末２０Ａａの処理装置２３は、所定のブラウザを起動させ、各種サービスのウェブサイトのサービスログインＩＤを取得させてもよい。これにより、配送管理サーバ５０やＣ２Ｃカーシェア管理サーバ７０は、対象のサービスの依頼時に利用者（車両１０Ａの常用ユーザ）がウェブサイトにログインするときに、サービスリンク情報に相当するサービスログインＩＤを把握し、サービス提供に関する認証キーの手配を容易に行うことができる。以下、トランク配送サービス及びＣ２Ｃカーシェアサービスに関するサービスリンク情報は、上記サービスログインＩＤである前提で説明を進める。

【０１４０】

また、センタサーバ３０は、複数の車両１０Ａを常用的に利用する常用ユーザの場合、サービスログインＩＤだけでは、常用ユーザを特定できても、車両１０Ａを特定することができない。そのため、サービスリンク情報には、サービスログインＩＤに加えて、車両１０Ａを間接的に特定するための情報（例えば、車両固有情報を所定の方式で暗号化した情報等）が含まれる。

【０１４１】

登録管理部３２６は、各種サービスの利用登録が完了した場合、通信処理部３２１を介して、登録対象の常用ユーザに対応する携帯端末２０Ａａ，２０Ａｂにその旨を通知する。また、登録管理部３２６は、各種サービスの利用登録が完了した場合、登録対象のサービスの運用管理を行うキーシェア管理部３２７やサービス管理サーバ４０に、サービスリンク情報を含むサービス利用登録完了通知を送信する。

【０１４２】

尚、携帯端末２０Ａａ，２０Ａｂに対する各種サービスの利用登録が完了した旨の通知は、サービス利用登録完了通知を受信したサービス管理サーバ４０から送信されてもよい。

【０１４３】

また、登録管理部３２６は、通信処理部３２１により携帯端末２０Ａａからサービス利用状況要求が受信された場合、記憶部５２０のユーザ・サービス登録情報ＤＢやスケジュ

ール管理部３２５により管理される車両利用予定情報等に基づき、サービス利用状況情報を生成し、通信処理部３２１を介して、携帯端末２０Ａａに配信する。

【０１４４】

キーシェア管理部３２７は、キーシェアサービスの運用管理を行う。

【０１４５】

例えば、キーシェア管理部３２７は、通信処理部３２１によりオーナユーザの携帯端末２０Ａａから受信されるキーシェア要求に応じて、キーシェア要求で指定される常用ユーザＩＤに対応する携帯端末２０Ａａ，２０Ａｂへの認証キーの手配を行う。具体的には、キーシェア管理部３２７は、キーシェア要求に含まれるオーナユーザＩＤ及びパスワードと、記憶部３２０に保存されるオーナユーザＩＤ及びパスワードを照合し、一致する場合、正規のキーシェア要求であると判定する。また、キーシェア管理部３２７は、スケジュール管理部３２５に問い合わせを行い、キーシェア要求に含まれる利用期間情報と、最新の車両利用予定情報との間に、不整合、つまり、複数のサービス及び複数の常用ユーザに亘る車両１０Ａの利用に関する利用日時の重複がないかを判定する。そして、キーシェア管理部３２７は、利用時間の重複が無い場合、キーシェア要求に含まれる情報から特定される、認証キーの配信対象の携帯端末２０Ａａ，２０Ａｂに対応する常用ユーザ、及び、認証キーによる施解錠或いは起動対象である車両１０Ａに関する情報と、それぞれの携帯端末２０Ａａ，２０Ａｂの利用可能な期間、回数、解錠可能なドア、起動可否等の権限情報を含む認証キー手配要求を認証キー発行部３２３に送る。これにより、認証キー発行部３２３は、認証キーの配信対象の携帯端末２０Ａａ，２０Ａｂに対応する常用ユーザＩＤと、認証キーによる施解錠或いは起動の対象の車両１０Ａを特定し、適切な認証キーを発行できる。

【０１４６】

また、キーシェア管理部３２７は、例えば、記憶部３２０に格納される、キーシェア要求で指定される認証キーの配信対象である携帯端末２０Ａａ，２０Ａｂのユーザの属性情報（例えば、年齢や運転免許の有無等）を確認する。そして、キーシェア管理部３２７は、認証キーの配信対象の携帯端末２０Ａａ，２０Ａｂのユーザ（車両１０Ａの常用ユーザ）が車両１０Ａを運転できないと判断されるユーザである場合、当該ユーザの携帯端末２０に、車両１０Ａの起動不可の権限が付与された認証キーが発行されるようにする。車両１０Ａを運転できないユーザは、例えば、運転免許証の取得可能年齢に到達していないユーザや、運転免許証を取得していないユーザ等である。具体的には、キーシェア管理部３２７は、車両１０Ａを運転できないと判断されたユーザに対応する携帯端末２０Ａａ，２０Ａｂに対応する権限情報に、車両１０Ａの起動を禁止する旨が含まれる認証キー手配要求を認証キー発行部３２３に送る。これにより、認証キー発行部３２３は、車両１０Ａを運転できないユーザの携帯端末２０Ａａ，２０Ａｂに、車両１０Ａの起動が禁止される権限が付与された認証キーを配信することができるため、キーシェアサービスにおける車両１０Ａの安全性を向上させることができる。

【０１４７】

また、例えば、キーシェア管理部３２７は、通信処理部３２１によりオーナユーザの携帯端末２０Ａａから受信される臨時キーシェア要求に基づき、臨時キーシェア要求で指定される他の携帯端末２０に車両１０Ａの認証キーを配信する。具体的には、キーシェア管理部３２７は、記憶部３２０に格納されるキーアプリのインストールユーザ情報ＤＢに基づき、配信対象の他の携帯端末２０に対応するインストールユーザのＩＤ（以下、「インストールユーザＩＤ」と称する）を特定する。そして、キーシェア管理部３２７は、特定されたインストールユーザＩＤと、臨時キーシェア要求で指定される認証キーに対応する情報（例えば、臨時キーシェア要求に含まれる認証キーの発行ＩＤ等）を含む認証キー手配要求を認証キー発行部３２３に送る。これにより、認証キー発行部３２３は、インストールユーザＩＤと、認証キーの発行ＩＤ等に基づき、配信対象の他の携帯端末２０を特定し、通信処理部３２１を介して、認証キーを当該他の携帯端末２０に配信することができる。

【０１４８】
尚、キーシェア管理部３２７の機能は、車両１０Ａを利用する他のサービスと同様、サービス管理サーバ４０に含まれうる、センタサーバ３０の外部のサーバ（キーシェア管理サーバ）に移管されてもよい。
【０１４９】
子ユーザが所持する携帯端末２０Ａｂは、上述の如く、通信処理部２３１と、通信処理部２３２と、認証キー取得部２３３と、認証要求部２３４と、施解錠要求部２３５と、記憶部２３０を含む。
【０１５０】
尚、本実施形態では、携帯端末２０Ａｂの認証キー取得部２３３の機能は、上記キーアプリが起動され、且つ、センタサーバ３０との双方向通信に基づくユーザ認証が成功することにより、子ユーザによる利用が可能になる前提で説明を進める。また、当該ユーザ認証は、子ユーザＩＤ及びそのパスワードに基づき、センタサーバ３０で行われる前提で説明を進める。また、携帯端末２０Ａｂの認証要求部２３４及び施解錠要求部２３５等の機能は、キーアプリが起動されることにより、子ユーザによる利用が可能になる前提で説明を進める。
【０１５１】
認証キー取得部２３３は、上述の如く、通信処理部２３２を介して、携帯端末２０Ａａからセンタサーバ３０に送信されるキーシェア要求に応じてセンタサーバ３０から配信される認証キーを取得する。これにより、携帯端末２０Ａｂは、通信処理部２３１、認証要求部２３４、及び、施解錠要求部２３５の機能に基づき、車両１０Ａのドアを施錠及び解錠したり、車両１０Ａを起動させたりすることができる。つまり、携帯端末２０Ａｂを所持する子ユーザは、キーシェアサービスによって、オーナユーザとの間での鍵の受け渡しを行うことなく、携帯端末２０Ａｂを利用して、車両１０Ａを施錠及び解錠し、車両１０Ａを運転する等、直接的に利用することができる。また、同様に、オーナユーザは、子ユーザとの間での鍵の受け渡しを行うことなく、車両１０Ａを子ユーザに貸し出すことができる。そのため、認証キー管理システム１におけるキーシェアサービスによって、車両１０Ａのオーナユーザと子ユーザとの間での車両１０Ａの貸し借りにおける利便性を向上させることができる。
【０１５２】
また、認証キー取得部２３３は、上述の如く、通信処理部２３２を介して、携帯端末２０Ａａからセンタサーバ３０に送信される臨時キーシェア要求に応じてセンタサーバ３０から配信される認証キーを取得する。臨時キーシェア要求に応じて、子ユーザの携帯端末２０Ａｂ以外の他の携帯端末２０に認証キーが配信される場合についても同様である。これにより、携帯端末２０Ａｂを含む他の携帯端末２０は、通信処理部２３１、認証要求部２３４、及び、施解錠要求部２３５の機能に基づき、車両１０Ａのドアを施解錠したり、車両１０Ａを起動したりすることができる。つまり、携帯端末２０Ａｂを所持する子ユーザは、例えば、他の常用ユーザを含む複数人で車両１０Ａに同乗して外出する等の場合に、前もって、認証キーを取得していない場合であっても、認証キーが配信済みの携帯端末２０Ａａ，２０Ａｂを借りる必要がなく、携帯端末２０Ａｂを利用して、車両１０Ａを施錠及び解錠したり、車両１０Ａを運転したりする等、直接的に利用することができる。また、同様に、オーナユーザは、前もって、子ユーザの携帯端末２０Ａｂに認証キーを取得させなかった場合であっても、自分の携帯端末２０Ａａを子ユーザに貸す必要がない。そのため、認証キー管理システム１における臨時キーシェアによって、車両１０Ａの常用ユーザを含む複数人で車両１０Ａが同乗利用される場合におけるユーザの利便性を向上させることができる。
【０１５３】
［トランク配送サービスに関する構成の詳細］
次に、図４を参照して、認証キー管理システム１におけるトランク配送サービスに関する構成について説明する。

【０１５４】
図４は、認証キー管理システム１におけるトランク配送サービスに関する構成の一例を中心に示す図である。以下、図４について、認証キー管理システム１におけるトランク配送サービスに関する構成を中心に説明し、上述したキーシェアサービスに関する構成と重複する構成に関する重複する説明を極力省略する。
【０１５５】
車両１０Ａのオーナユーザが所持する携帯端末２０Ａａの処理装置２３は、上述の如く、通信処理部２３２と、ユーザ登録要求部２３６と、サービス利用登録要求部２３７と、サービス利用状況要求部２３８を含む。
【０１５６】
ユーザ登録要求部２３６は、上述の如く、オーナユーザによる所定の操作に応じて、トランク配送サービスを含む各種サービスを利用する車両１０Ａの常用ユーザ（子ユーザ）の登録をセンタサーバ３０に要求する。
【０１５７】
サービス利用登録要求部２３７は、上述の如く、オーナユーザによる所定の操作に応じて、登録された常用ユーザ（オーナユーザ或いは子ユーザ）ごとのトランク配送サービスを含む各種サービスの利用登録をセンタサーバ３０に要求する。
【０１５８】
例えば、サービス利用登録要求部２３７は、サービスリンク情報として、登録対象の車両１０Ａの常用ユーザに対応する、配送管理サーバ５０のサービスを利用するユーザ向けのウェブサイト（以下、「配送サイト」と称する）のサービスログインＩＤ及びＥＣサイトのサービスログインＩＤを含む、トランク配送サービスを利用するためのサービス利用登録要求をセンタサーバ３０に送信する。
【０１５９】
サービス利用状況要求部２３８は、上述の如く、オーナユーザによる所定の操作に応じて、オーナユーザＩＤに対応する形で利用登録済の車両１０Ａの常用ユーザによるトランク配送サービスを含む各種サービスの利用状況に関する情報（サービス利用状況情報）をセンタサーバ３０に要求する。
【０１６０】
配送管理サーバ５０は、通信機器５１と、処理装置５２を含む。
【０１６１】
通信機器５１は、所定の通信ネットワークを通じて、携帯端末２０、センタサーバ３０、及び、ＥＣサーバ６０のそれぞれと双方向で通信を行う任意のデバイスである。
【０１６２】
処理装置５２は、例えば、ＲＯＭや補助記憶装置に格納される一以上のプログラムをＣＰＵ上で実行することにより実現される機能部として、通信処理部５２１、サービス連携登録部５２２と、配送受付部５２３と、配送管理部５２４を含む。また、処理装置５２は、サーバコンピュータの補助記憶装置等の記憶領域として実現される記憶部５２０を含む。
【０１６３】
通信処理部５２１は、通信機器５１を制御し、携帯端末２０、センタサーバ３０、及び、ＥＣサーバ６０のそれぞれとの間で、制御信号や情報信号等の各種信号の送受信を行う。
【０１６４】
サービス連携登録部５２２は、通信処理部５２１によりセンタサーバ３０から受信されるサービス利用登録完了通知に応じて、車両１０Ａの常用ユーザのトランク配送サービスの利用に関するセンタサーバ３０と配送管理サーバ５０との間での連携のための情報登録を行う。
【０１６５】
例えば、サービス連携登録部５２２は、記憶部５２０に構築される配送サイトのユーザ

を管理するユーザ管理ＤＢの中のサービス利用登録完了通知に含まれるサービスログインＩＤ（サービスリンク情報）に対して、トランク配送サービスの利用対象である旨のフラグを追加する。また、併せて、サービス連携登録部５２２は、記憶部５２０のユーザ管理ＤＢの中のサービス利用登録完了通知に含まれるサービスログインＩＤに対して、サービス利用登録完了通知に含まれるＥＣサーバ６０に対応するウェブサイト（即ち、ＥＣサイト）のサービスログインＩＤを紐付ける態様で登録する。これにより、配送管理サーバ５０は、通信処理部５２１によりＥＣサーバ６０からサービスログインＩＤを含む注文受付が受信された場合に、対応する配送サイトのサービスログインＩＤを特定することができる。そして、配送管理サーバ５０は、特定されたサービスログインＩＤを含む認証キー手配要求をセンタサーバ３０に送信することにより、後述の如く、センタサーバ３０から配達員の携帯端末２０Ａｃに認証キーを配信させることができる。

【０１６６】

配送受付部５２３は、通信処理部５２１を介して、ＥＣサーバ６０からＥＣサイトにおける商品の注文者に対応するＥＣサイトのサービスログインＩＤを含む荷物の配送依頼に関する情報（配送依頼情報）を受け付ける。ＥＣサーバ６０から受け付けられる配送依頼情報には、配送先の注文者の氏名、住所、電話番号等の基本情報の他、指定された配達先に関する情報（配達先情報）、指定された配達日時に関する情報（配達日時情報）等が含まれる。

【０１６７】

配送管理部５２４は、配送受付部５２３により受け付けられた配送依頼に関する荷受けから配達までの各工程の運用管理を行う。

【０１６８】

例えば、配送管理部５２４は、配送依頼の配達先情報で指定された車両１０Ａの駐車位置を管轄する営業所に荷物が到着した旨の通知を受け付けると、指定された配達時間帯に合わせて、当該荷物を配達に出発する日時や担当の配達員等を決定する。

【０１６９】

続いて、配送管理部５２４は、当該荷物の出発前（例えば、出発予定時刻の１０分前）に、通信処理部５２１を介して、センタサーバ３０に車両１０Ａの位置情報を問い合わせる。このとき、当該問い合わせには、トランク配送サービスの利用者である車両１０Ａの常用ユーザの配送サイトにおけるサービスログインＩＤ（即ち、サービスリンク情報）が含まれる。後述の位置情報の問い合わせについても同様である。そして、配送管理部５２４は、通信処理部５２１を介して、センタサーバ３０から車両１０Ａの現在の位置情報を取得し、指定された車両１０Ａの駐車位置との一致性や管轄エリアとの関係性等から配達可否を判断する。

【０１７０】

続いて、配送管理部５２４は、配達可能と判断すると、通信処理部５２１を介して、配達員の携帯端末２０Ａｃに対して、当該荷物を車両１０Ａのトランクに配達可能である旨の通知（配達可能通知）を送信する。

【０１７１】

続いて、配送管理部５２４は、配達可能通知を受信した携帯端末２０Ａｃから認証キー取得要求が通信処理部５２１により受信されると、正規の認証キー取得要求であるか否かを判定する。具体的には、配送管理部５２４は、当該認証キー取得要求に含まれうる配達員、届け先（例えば、受取人の氏名或いは法人名等）、荷物の種別、配達時間帯、配達場所等の配達対象の荷物に関する情報（以下、便宜的に「配達荷物情報」と称する）と、記憶部５２０に登録されている当該荷物に関する各種情報とを照合することにより、当該判定を行ってよい。そして、配送管理部５２４は、正規の認証キー取得要求であると判定すると、通信処理部５２１を介して、認証キー手配要求をセンタサーバ３０に送信する。このとき、認証キー手配要求には、配達員の携帯端末２０Ａｃを特定するための情報、が含まれる。配達員を特定するための情報は、例えば、配達員が携帯端末２０Ａｃの認証キー取得部２３３等に対応する上記キーアプリの機能を利用するためにセンタサーバ３０にお

けるユーザ認証を受けるための認証用ＩＤ（以下、便宜的に「配達員ＩＤ」と称する）であってよい。これにより、配達員の携帯端末２０Ａｃは、センタサーバ３０から認証キーを取得できる。

【０１７２】

続いて、配送管理部５２４は、通信処理部５２１を介して、営業所から配達に出かけた配達員の携帯端末２０Ａｃから車両１０Ａの現在位置の問い合わせを受け付けると、センタサーバ３０に車両１０Ａの現在の位置情報を問い合わせる。そして、配送管理部５２４は、通信処理部５２１を介して、センタサーバ３０から車両１０Ａの現在の位置情報を取得し、配達員の携帯端末２０Ａｃに車両１０Ａの現在の位置情報を送信（転送）する。これにより、出先の配達員は、車両１０Ａの現在の位置情報と、配達先情報で指定された車両１０Ａの駐車位置に関する情報とを比較し、配達するか持ち帰るかなどを判断することができる。

【０１７３】

最後に、配送管理部５２４は、通信処理部５２１を介して、当該荷物の配達を完了した配達員の携帯端末２０Ａｃから受信される配達完了通知を受信すると、当該荷物に関するトランク配送サービスに関する運用管理は基本的に終了する。このとき、配送管理部５２４は、電子メールや携帯端末２０Ａａ，２０Ａｂにインストールされる、配送サイトと連携する所定のアプリを通じて、依頼主（ＥＣサイトにおける商品の購入者）である車両１０Ａの常用ユーザに配達完了した旨を通知してもよい。

【０１７４】

尚、車両１０ＡのＤＣＭ１４は、上述の如く、車両１０Ａのトランクにアクセスするドア（トランクリッド等）が解錠された後に、施錠された場合に、配達員による配達が完了したと判断し、センタサーバ３０にその旨を通知してもよい。これにより、センタサーバ３０は、当該通知が受信された場合に、配達完了通知を配送管理サーバ５０に送信することができる。つまり、配達完了通知は、センタサーバ３０から配送管理サーバ５０に送信されてもよい。

【０１７５】

ＥＣサーバ６０は、通信機器６１と、処理装置６２を含む。

【０１７６】

通信機器６１は、所定の通信ネットワークを通じて、携帯端末２０、センタサーバ３０、及び、配送管理サーバ５０のそれぞれと双方向で通信を行う任意のデバイスである。

【０１７７】

処理装置５２は、例えば、ＲＯＭや補助記憶装置に格納される一以上のプログラムをＣＰＵ上で実行することにより実現される機能部として、通信処理部６２１、ウェブリソース送信部６２２、サービス連携登録部６２３と、注文受付処理部６２４を含む。また、処理装置６２は、サーバコンピュータの補助記憶装置等の記憶領域として実現される記憶部６２０を含む。

【０１７８】

通信処理部６２１は、通信機器６１を制御し、携帯端末２０、センタサーバ３０、及び、配送管理サーバ５０のそれぞれとの間で、制御信号や情報信号等の各種信号の送受信を行う。

【０１７９】

ウェブリソース送信部６２２は、記憶部６２０に保存される、ＥＣサイトのリソースとしての各種情報に基づき、携帯端末２０Ａａ，２０Ａｂを含むＥＣサイトを閲覧するユーザの任意の端末のブラウザ上に表示させるウェブページに対応するリソースを、所定の方式で当該端末のブラウザに送信する。ＥＣサイトに表示されうるウェブページには、ＥＣサイトのトップページ、ＥＣサイトで取り扱う個々の商品に対応するウェブページ、個々の商品の注文時にユーザが各種情報を入力する注文入力ページ等が含まれる。例えば、ウェブリソース送信部６２２は、ウェブページに対応するＨＴＭＬ（Hyper Text Markup Language）ドキュメントと、ウェブページ上に表示される画像、動画等のＨＴＭＬドキュメ

ントの配下の情報を並列して送信する。
【０１８０】
サービス連携登録部６２３は、通信処理部６２１によりセンタサーバ３０から受信されるサービス利用登録完了通知に応じて、車両１０Ａの常用ユーザのトランク配送サービスの利用に関するセンタサーバ３０とＥＣサーバ６０との間での連携のための情報登録を行う。例えば、サービス連携登録部６２３は、記憶部６２０に構築されるＥＣサイトのユーザを管理するユーザ管理ＤＢの中のサービス利用登録完了通知に含まれるサービスログインＩＤに対して、トランク配送サービスの利用対象である旨のフラグを追加する。また、併せて、サービス連携登録部６２３は、ユーザ管理ＤＢの中のサービス利用登録完了通知に含まれるサービスログインＩＤに対して、サービス利用登録完了通知に含まれる配送管理サーバ５０に対応するウェブサイト（即ち、配送サイト）のサービスログインＩＤを紐付ける態様で登録する。これにより、ＥＣサーバ６０は、例えば、通信処理部６２１により配送管理サーバ５０から配送サイトのサービスログインＩＤを含む注文商品に関する問い合わせ等が受信された場合に、対応するＥＣサイトのサービスログインＩＤを特定することができる。
【０１８１】
注文受付処理部６２４は、ＥＣサイトにおけるユーザの商品の注文に対応する各種操作入力に基づき、ユーザからの商品の注文を受け付ける。このとき、注文受付処理部６２４は、ＥＣサイトの注文入力ページにおいて、車両１０Ａのトランクが配達先として選択された場合、通信処理部６２１を介して、センタサーバ３０に車用利用予定情報を問い合わせる。これにより、注文受付処理部６２４は、通信処理部６２１を介して、最新の車両利用予定情報を取得することができるため、例えば、指定された配達日時が、既に、他の予定と重複している場合、配達日時の変更を要求したり等の対応を取ることができる。
【０１８２】
尚、上述の如く、ＥＣサイトにおける注文商品以外の荷物を対象とするトランク配送サービスも想定されうる。この場合、配送管理サーバ５０は、同様に、センタサーバ３０から最新の車両利用予定情報を取得すればよい。これにより、配送管理サーバ５０は、車両１０Ａの常用ユーザから指定された車両１０Ａのトランクへの荷物の配達日時が、既に、他の予定と重複している場合、配達日時の変更を要求したり等の対応を取ることができる。
【０１８３】
センタサーバ３０の処理装置３２は、上述の如く、通信処理部３２１と、条件判定部３２２と、認証キー発行部３２３と、位置情報管理部３２４と、スケジュール管理部３２５と、登録管理部３２６と、記憶部３２０を含む。
【０１８４】
条件判定部３２２は、通信処理部３２１を介して、配送管理サーバ５０から認証キー手配要求を受信した場合、正規の認証キー手配要求であるか否かを判定する。例えば、条件判定部３２２は、認証キー手配要求に含まれる配送サイトのサービスログインＩＤや配送管理サーバ５０に対応する所定の認証情報（例えば、ＩＤ及びパスワード等）に基づき、正規の認証キー手配要求であるか否かを判定する。
【０１８５】
認証キー発行部３２３は、条件判定部３２２により正規の認証キー手配要求であると判定された場合、記憶部３２０のユーザ・サービス登録情報ＤＢに基づき、認証キー手配要求に対応する車両１０Ａを特定する。また、認証キー発行部３２３は、時限的（例えば、配信から数分から数十分の単位だけで利用可能）、且つ、利用回数が制限され（例えば、利用回数一回だけ）且つトランクリッドの施解錠だけが可能な権限が限定された認証キーを発行する。これにより、配達員による車両１０Ａの無断利用を防止し、セキュリティ性を向上させることができる。そして、認証キー発行部３２３は、通信処理部３２１を介して、認証キー手配要求で特定される配達員の携帯端末２０Ａｃに認証キーを配信する。
【０１８６】

尚、認証キーの利用可能な期間や利用回数等を制限する方法は、例えば、既知の数学的な方法やセンタサーバ３０と車両１０との間の双方向通信による方法等の任意の方法が採用されてよい。

【０１８７】

位置情報管理部３２４は、通信処理部３２１により受信される配送管理サーバ５０からの車両１０Ａの現在位置の問い合わせに応じて、通信処理部３２１を介して、車両１０Ａに位置情報要求を送信する。これにより、車両１０ＡのＤＣＭ１４は、センタサーバ３０からの位置情報要求に応じて、ＧＰＳモジュール１３から入力される車両１０Ａの位置情報をセンタサーバ３０に返信し、位置情報管理部３２４は、通信処理部３２１を介して、車両１０Ａの現在の位置情報を取得できる。そして、位置情報管理部３２４は、通信処理部３２１を介して、車両１０Ａから取得した現在の位置情報を配送管理サーバ５０に返信する。

【０１８８】

スケジュール管理部３２５は、通信処理部３２１により受信されるＥＣサーバ６０からの問い合わせに応じて、記憶部３２０に保存される最新の車両利用予定情報を、通信処理部３２１を介して、ＥＣサーバ６０に返信する。

【０１８９】

登録管理部３２６は、上述の如く、通信処理部３２１によりオーナユーザの携帯端末２０Ａａから受信されるユーザ登録要求に応じて、トランク配送サービスを含む各種サービスの利用する常用ユーザ（子ユーザ）の登録を行う。また、登録管理部３２６は、上述の如く、通信処理部３２１によりオーナユーザの携帯端末２０Ａａから受信されるサービス利用登録要求に応じて、車両１０Ａの常用ユーザによるトランク配送サービスの利用登録を行う。また、登録管理部３２６は、上述の如く、トランク配送サービスを含む各種サービスの利用登録が完了した場合、通信処理部３２１を介して、登録対象の常用ユーザに対応する携帯端末２０Ａａ，２０Ａｂにその旨を通知する。また、登録管理部３２６は、トランク配送サービスの利用登録が完了した場合、通信処理部３２１を介して、登録対象のサービスの運用管理を行う配送管理サーバ５０及びＥＣサーバ６０に、サービスリンク情報を含むサービス利用登録完了通知を送信する。

【０１９０】

配達員の携帯端末２０Ａｃの処理装置２３は、上述の如く、通信処理部２３１と、通信処理部２３２と、認証キー取得部２３３と、認証要求部２３４と、施解錠要求部２３５を含む。

【０１９１】

尚、本実施形態では、携帯端末２０Ａｃの認証キー取得部２３３、認証要求部２３４、施解錠要求部２３５の機能は、上記キーアプリが起動されることにより、オーナユーザによる利用が可能になる前提で説明を進める。

【０１９２】

認証キー取得部２３３は、配達員による所定の操作に応じて、通信処理部２３２を介して、配送管理サーバ５０に認証キー取得要求を送信する。このとき、認証キー取得要求には、記憶部２３０に予め保存される上述の配達荷物情報が含まれる。これにより、配送管理サーバ５０は、認証キー取得要求に応じて、認証キー手配要求をセンタサーバ３０に送信し、センタサーバ３０は、認証キー手配要求に応じて、携帯端末２０Ａｃに認証キーを配信し、携帯端末２０Ａｃは、認証キーを取得することができる。よって、携帯端末２０Ａｃは、通信処理部２３１、認証要求部２３４、及び、施解錠要求部２３５の機能に基づき、車両１０Ａのトランクリッドを施錠及び解錠することができるため、配達員は、依頼された荷物を車両１０Ａのトランクに配達し、且つ、車両１０Ａのトランクを元通り施錠して帰ることができる。

【０１９３】

［Ｃ２Ｃカーシェアサービスに関する構成の詳細］

次に、図５を参照して、認証キー管理システム１におけるＣ２Ｃカーシェアサービスに

関する構成について説明する。
【０１９４】
図５は、認証キー管理システム１におけるＣ２Ｃカーシェアサービスに関する構成の一例を中心に示す図である。以下、図５について、認証キー管理システム１におけるＣ２Ｃカーシェアサービスに関する構成を中心に説明し、上述したキーシェアサービス等に関する構成と重複する構成に関する重複する説明を極力省略する。
【０１９５】
車両１０Ａのオーナユーザが所持する携帯端末２０Ａａの処理装置２３は、上述の如く、通信処理部２３２と、ユーザ登録要求部２３６と、サービス利用登録要求部２３７、サービス利用状況要求部２３８を含む。
【０１９６】
ユーザ登録要求部２３６は、上述の如く、オーナユーザによる所定の操作に応じて、Ｃ２Ｃカーシェアサービスを含む各種サービスを利用する車両１０Ａの常用ユーザ（子ユーザ）の登録をセンタサーバ３０に要求する。
【０１９７】
サービス利用登録要求部２３７は、上述の如く、オーナユーザによる所定の操作に応じて、登録された常用ユーザ（オーナユーザ或いは子ユーザ）ごとのＣ２Ｃカーシェアサービスを含む各種サービスの利用登録をセンタサーバ３０に要求する。
【０１９８】
例えば、サービス利用登録要求部２３７は、サービスリンク情報として、登録対象の車両１０Ａの常用ユーザに対応する、Ｃ２Ｃカーシェア管理サーバ７０に対応するＣ２Ｃカーシェアサービスを利用するユーザ向けのウェブサイト（以下、「Ｃ２Ｃカーシェアサイト」と称する）のサービスログインＩＤ含む、Ｃ２Ｃカーシェアサービスを利用するためのサービス利用登録要求をセンタサーバ３０に送信する。
【０１９９】
サービス利用状況要求部２３８は、上述の如く、オーナユーザによる所定の操作に応じて、オーナユーザＩＤに対応する形で利用登録済の車両１０Ａの常用ユーザによるＣ２Ｃカーシェアサービスを含む各種サービスの利用状況に関する情報（サービス利用状況情報）をセンタサーバ３０に要求する。
【０２００】
Ｃ２Ｃカーシェア管理サーバ７０は、通信機器７１と、処理装置７２を含む。
【０２０１】
通信機器７１は、所定の通信ネットワークを通じて、携帯端末２０及びセンタサーバ３０のそれぞれと双方向で通信を行う任意のデバイスである。
【０２０２】
処理装置７２は、例えば、ＲＯＭや補助記憶装置に格納される一以上のプログラムをＣＰＵ上で実行することにより実現される機能部として、通信処理部７２１、サービス連携登録部７２２と、予約管理部７２３と、車両管理部７２４を含む。また、処理装置７２は、サーバコンピュータの補助記憶装置等の記憶領域として実現される記憶部７２０を含む。
【０２０３】
尚、貸出対象である車両１０Ａを特定する情報は、車両１０Ａの常用ユーザ（オーナユーザ）によって、既に、Ｃ２Ｃカーシェアサイトを通じて、サービスログインＩＤに紐づけられる態様で、記憶部７２０に登録（保存）済みである前提で説明を進める。
【０２０４】
通信処理部７２１は、通信機器７１を制御し、携帯端末２０及びセンタサーバ３０のそれぞれとの間で、制御信号や情報信号等の各種信号の送受信を行う。
【０２０５】
サービス連携登録部７２２は、通信処理部７２１によりセンタサーバ３０から受信されるサービス利用登録完了通知に応じて、車両１０Ａの常用ユーザのＣ２Ｃカーシェアサー

ビスの利用に関するセンタサーバ３０とＣ２Ｃカーシェア管理サーバ７０との間での連携のための情報登録を行う。

【０２０６】

例えば、サービス連携登録部７２２は、記憶部７２０に構築されるＣ２Ｃカーシェアサイトのユーザを管理するユーザ管理ＤＢの中のサービス利用登録完了通知に含まれるサービスログインＩＤに対して、Ｃ２Ｃカーシェアサービスにおける車両１０Ａの貸主である旨のフラグを追加する。これにより、Ｃ２Ｃカーシェア管理サーバ７０は、貸主である車両１０Ａの常用ユーザに対応するサービスログインＩＤを含む認証キー手配要求をセンタサーバ３０に送信することにより、後述の如く、センタサーバ３０から借主の携帯端末２０Ａｄに認証キーを配信させることができる。

【０２０７】

予約管理部７２３は、Ｃ２Ｃカーシェアサイト等を通じて行われる車両１０Ａの利用予約を管理する。

【０２０８】

例えば、予約管理部７２３は、Ｃ２Ｃカーシェアサイト等を通じて、車両１０Ａの常用ユーザから車両１０Ａの貸し出し可能日時の登録を受け付け、受け付けられた貸し出し可能日時を記憶部７２０に登録（保存）する。このとき、予約管理部７２３は、通信処理部７２１を介して、センタサーバ３０に車用利用予定情報を問い合わせる。これにより、予約管理部７２３は、通信処理部７２１を介して、最新の車両利用予定情報を取得することができる。そのため、Ｃ２Ｃカーシェア管理サーバ７０は、例えば、車両１０Ａの常用ユーザから受け付けられた貸し出し可能日時が、既に、他の予定と重複している場合、貸し出し可能日時の変更を要求したり、受け付けられた貸し出し可能日時から重複部分を除いた分を貸し出し可能日時として登録したり等の対応を取ることができる。

【０２０９】

また、例えば、予約管理部７２３は、記憶部７２０に保存される、車両１０Ａの貸し出し可能日時の範囲内で、車両１０Ａの利用予約を受け付ける。そして、予約管理部７２３は、Ｃ２Ｃカーシェアサイトを通じて、借主であるユーザから車両１０Ａの利用予約を受け付けると、記憶部７２０に保存される車両１０Ａの貸し出し予定スケジュールに関する情報（貸出予定スケジュール情報）を更新する。

【０２１０】

また、例えば、予約管理部７２３は、通信処理部７２１により車両１０Ａの借主の携帯端末２０Ａｄから認証キー取得要求が受信された場合、正規の認証キー取得要求であるか否かを判定する。具体的には、予約管理部７２３は、認証キー取得要求に含まれる、Ｃ２Ｃカーシェアサイトのサービスログイン ＩＤ及びパスワードや、利用予約の日時との関係（例えば、利用予約の日時の範囲内か、或いは、開始日時まで所定時間を切っているか等）に基づき、当該判定を行ってよい。予約管理部７２３は、正規の認証キー取得要求である場合、通信処理部７２１を介して、センタサーバ３０に認証キー手配要求を送信する。このとき、認証キー手配要求には、車両１０Ａの借主の携帯端末２０Ａｄを特定するための情報が含まれる。車両１０Ａの借主を特定するための情報は、例えば、車両１０Ａの借主が携帯端末２０Ａｄの認証キー取得部２３３の機能を利用するためにセンタサーバ３０におけるユーザ認証を受けるための認証用ＩＤ（以下、便宜的に「借主ＩＤ」と称する）であってよい。これにより、車両１０Ａの借主の携帯端末２０Ａｄは、センタサーバ３０から認証キーを取得できる。

【０２１１】

車両管理部７２４は、貸出対象の車両１０Ａを管理する。

【０２１２】

例えば、車両管理部７２４は、車両１０Ａの利用予約日時の前（例えば、数十分前～直前までの期間）に、通信処理部７２１を介して、センタサーバ３０に車両１０Ａの現在の位置情報を問い合わせる。そして、車両管理部７２４は、通信処理部７２１を介して、当該問い合わせに応じてセンタサーバ３０から返信される車両１０Ａの現在の位置情報を取

得する。これにより、車両１０Ａの貸し出し予定の日時（利用予約日時）の前に、指定された場所に車両１０Ａが戻っているか等を判断することができる。そのため、Ｃ２Ｃカーシェア管理サーバ７０は、車両１０Ａが指定された場所に戻っていない場合、車両１０Ａの貸主である常用ユーザに対して、電子メールや携帯端末２０Ａａ，２０Ａｂにインストールされる、Ｃ２Ｃカーシェアサイトと連携する所定のアプリを通じて、指定場所に戻るよう警告したり等の対応を取ることができる。

【０２１３】

センタサーバ３０の処理装置３２は、上述の如く、通信処理部３２１と、条件判定部３２２と、認証キー発行部３２３と、位置情報管理部３２４と、スケジュール管理部３２５と、登録管理部３２６と、記憶部３２０を含む。

【０２１４】

条件判定部３２２は、通信処理部３２１によりＣ２Ｃカーシェア管理サーバ７０から認証キー手配要求が受信された場合、正規の認証キー手配要求であるか否かを判定する。例えば、条件判定部３２２は、認証キー手配要求に含まれるサービスリンク情報（Ｃ２Ｃカーシェアサイトのサービスログイン１Ｄ等）やＣ２Ｃカーシェア管理サーバ７０に対応する所定の認証情報（例えば、１Ｄ及びパスワード等）に基づき、正規の認証キー手配要求であるか否かを判定する。

【０２１５】

認証キー発行部３２３は、条件判定部３２２により正規の認証キー手配要求であると判定された場合、記憶部３２０のユーザ・サービス登録情報ＤＢに基づき、認証キー手配要求に対応する車両１０Ａを特定する。また、認証キー発行部３２３は、時限的（例えば、認証キー手配要求に含まれる車両１０Ａの利用予約日時とその前後のバッファ期間だけで利用可能）な認証キーを発行する。そして、認証キー発行部３２３は、通信処理部３２１を介して、認証キー手配要求で特定される車両１０Ａの借主の携帯端末２０Ａｄに認証キーを配信する。

【０２１６】

尚、Ｃ２Ｃカーシェアサービスは、例えば、車両１０Ａのトランクだけを貸し出す態様のサービス（Ｃ２Ｃトランクシェアサービス）を含んでもよい。車両トランク貸出サービスの場合、認証キー発行部３２３は、トランクリッドの施解錠だけが可能な権限が限定された認証キーを発行すればよい。これにより、Ｃ２Ｃカーシェアリングの貸出対象をトランクだけに限定できる。これにより、例えば、旅行先で貸し出されている車両１０Ａのトランクを借りて、旅行先で利用するための購入商品を、借りたトランクに配達してもらう態様のトランク配送サービスが実現されうる。

【０２１７】

位置情報管理部３２４は、通信処理部３２１によりＣ２Ｃカーシェア管理サーバ７０から受信される車両１０Ａの現在位置の問い合わせに応じて、通信処理部３２１を介して、車両１０Ａに位置情報要求を送信する。これにより、位置情報管理部３２４は、通信処理部３２１を介して、車両１０Ａから現在の位置情報を取得できる。そして、位置情報管理部３２４は、通信処理部３２１を介して、車両１０Ａから取得した現在の位置情報をＣ２Ｃカーシェア管理サーバ７０に返信する。

【０２１８】

スケジュール管理部３２５は、通信処理部３２１によりＣ２Ｃカーシェア管理サーバ７０から受信される車両１０Ａの現在位置の問い合わせに応じて、通信処理部３２１を介して、車両１０Ａに最新の車両利用予定情報を送信する。

【０２１９】

登録管理部３２６は、上述の如く、上述の如く、通信処理部３２１によりオーナユーザの携帯端末２０Ａａから受信されるユーザ登録要求に応じて、Ｃ２Ｃカーシェアサービスを含む各種サービスの利用する常用ユーザ（子ユーザ）の登録を行う。また、登録管理部３２６は、上述の如く、通信処理部３２１によりオーナユーザの携帯端末２０Ａａから受信されるサービス利用登録要求に応じて、車両１０Ａの常用ユーザによるＣ２Ｃカーシェ

アサービスの利用登録を行う。また、登録管理部３２６は、上述の如く、Ｃ２Ｃカーシェアサービスを含む各種サービスの利用登録が完了した場合、通信処理部３２１を介して、登録対象の常用ユーザに対応する携帯端末２０Ａａ，２０Ａｂにその旨を通知する。また、登録管理部３２６は、Ｃ２Ｃカーシェアサービスの利用登録が完了した場合、登録対象のサービスの運用管理を行う配送管理サーバに、サービスリンク情報を含むサービス利用登録完了通知を送信する。

【０２２０】

車両１０Ａの借主の携帯端末２０Ａｄの処理装置２３は、上述の如く、通信処理部２３１と、通信処理部２３２と、認証キー取得部２３３と、認証要求部２３４と、施解錠要求部２３５と、記憶部２３０を含む。

【０２２１】

認証キー取得部２３３は、車両１０Ａの借主による所定の操作に応じて、通信処理部２３２を介して、Ｃ２Ｃカーシェア管理サーバ７０に認証キー取得要求を送信する。このとき、認証キー取得要求には、車両１０Ａの借主に対応するＣ２Ｃカーシェアサイトのサービスログイン ＩＤが含まれる。これにより、Ｃ２Ｃカーシェア管理サーバ７０は、認証キー取得要求に応じて、認証キー手配要求をセンタサーバ３０に送信し、センタサーバ３０は、認証キー手配要求に応じて、携帯端末２０Ａｄに認証キーを配信し、携帯端末２０Ａｄは、認証キーを取得することができる。よって、携帯端末２０Ａｄは、通信処理部２３１、認証要求部２３４、及び、施解錠要求部２３５の機能に基づき、車両１０Ａのドアを施錠及び解錠することができる。つまり、携帯端末２０Ａｄを所持する車両１０Ａの借主は、Ｃ２Ｃカーシェアサービスによって、車両１０Ａの常用ユーザとの間での鍵の受け渡しを行うことなく、携帯端末２０Ａｄを利用して、車両１０Ａを施錠及び解錠し、車両１０Ａを運転する等、直接的に利用することができる。また、同様に、車両１０Ａの常用ユーザは、鍵の受け渡しを行うことなく、車両１０Ａを常用ユーザ以外の他者に貸し出すことができる。そのため、認証キー管理システム１におけるＣ２Ｃカーシェアサービスによって、車両１０Ａの常用ユーザと当該常用ユーザ以外の他者との間での車両１０Ａの貸し借りにおける利便性を向上させることができる。

【０２２２】

［Ｂ２Ｃカーシェアサービスに関する構成の詳細］

次に、図６を参照して、認証キー管理システム１におけるＢ２Ｃカーシェアサービスサービスについて説明する。

【０２２３】

図６は、認証キー管理システム１におけるＢ２Ｃカーシェアサービスに関する構成の一例を中心とする図である。以下、図６について、認証キー管理システム１におけるＢ２Ｃカーシェアサービスに関する構成を中心に説明し、上述したキーシェアサービス等に関する構成と重複する構成に関する重複する説明を極力省略する。

【０２２４】

Ｂ２Ｃカーシェア管理サーバ８０は、通信機器８１と、処理装置８２を含む。

【０２２５】

通信機器８１は、所定の通信ネットワークを通じて、携帯端末２０Ｂ及びセンタサーバ３０のそれぞれと双方向で通信を行う任意のデバイスである。

【０２２６】

処理装置８２は、例えば、ＲＯＭや補助記憶装置に格納される一以上のプログラムをＣＰＵ上で実行することにより実現される機能部として、通信処理部８２１、予約管理部８２２と、車両管理部８２３を含む。また、処理装置８２は、サーバコンピュータの補助記憶装置等の記憶領域として実現される記憶部８２０を含む。

【０２２７】

通信処理部８２１は、通信機器８１を制御し、携帯端末２０Ｂ及びセンタサーバ３０のそれぞれとの間で、制御信号や情報信号等の各種信号の送受信を行う。

【０２２８】

予約管理部８２２は、Ｂ２Ｃカーシェアサイト等を通じて行われる車両１０Ｂの利用予約を管理する。

【０２２９】

例えば、予約管理部８２２は、Ｂ２Ｃカーシェア管理サーバ８０の事業者等により運営されるウェブサイト（以下、便宜的に「Ｂ２Ｃカーシェアサイト」と称する）を通じて、車両１０Ｂを借りたいユーザ（以下、「借主ユーザ」）と称するからの車両１０Ｂの利用予約を受け付ける。そして、予約管理部８２２は、受け付けられた車両１０Ａの利用予約に関する情報（利用予約情報）を記憶部８２０に保存する。このとき、利用予約情報には、例えば、対象である車両１０Ａを特定する情報、利用予約日時（開始日時及び終了日時）に関する情報、Ｂ２Ｃカーシェアサイトにおける借主ユーザのサービスログインＩＤ等が含まれる。

【０２３０】

また、例えば、予約管理部８２２は、車両１０Ｂの利用予約を受け付けるたびに、記憶部８２０に保存される、車両１０Ｂの利用スケジュールに関する情報（車両利用スケジュール情報）を更新する。これにより、Ｂ２Ｃカーシェア管理サーバ８０は、Ｂ２Ｃカーシェアサイトに、車両１０Ｂの利用スケジュールを表示させて、利用予約可能な日時を借主ユーザに提示することができる。

【０２３１】

また、例えば、予約管理部８２２は、通信処理部８２１により携帯端末２０Ｂから認証キー要求が受信された場合、正規の認証キー要求であるか否かを判定する。具体的には、予約管理部８２２は、認証キー要求に含まれる借主ユーザに対応するＢ２Ｃカーシェアサイトのサービスログインｉｄ及びパスワードや、利用予約の日時との関係（例えば、利用予約日時の範囲内か、或いは、開始日時まで所定時間を切っているか等）に基づき、当該判定を行ってよい。予約管理部８２２は、正規の認証キー取得要求である場合、通信処理部８２１を介して、センタサーバ３０に認証キー手配要求を送信する。このとき、認証キー手配要求には、車両１０Ｂを借りる借主ユーザの携帯端末２０Ｂを特定するための情報が含まれる。車両１０Ｂを借りる借主ユーザを特定するための情報は、例えば、車両１０Ｂを借りる借主ユーザが携帯端末２０Ｂの認証キー取得部２３３等に対応する上記キーアプリの機能を利用するためにセンタサーバ３０におけるユーザ認証を受けるための認証用ＩＤ（以下、便宜的に「借主ユーザＩＤ」と称する）であってよい。これにより、車両１０Ｂを借りる借主ユーザの携帯端末２０Ｂは、センタサーバ３０から認証キーを取得できる。

【０２３２】

車両管理部８２３は、貸出対象の車両１０Ｂを管理する。

【０２３３】

例えば、車両管理部８２３は、ある借主ユーザの車両１０Ｂの利用予約日時の前（例えば、数十分前）に、通信処理部８２１を介して、センタサーバ３０に、利用予約で指定された場所の周辺（例えば、数百メートル以内等）に駐車されている車両１０Ｂを問い合わせる。そして、車両管理部８２３は、通信処理部８２１を介して、当該問い合わせに応じてセンタサーバ３０から返信される指定場所周辺に駐車されている車両１０Ｂの位置情報を取得する。これにより、車両管理部８２３は、当該借主の車両１０Ｂの利用開始日時の前に、指定場所周辺に駐車されている一又は複数の車両１０Ｂを特定し、どの車両１０Ｂを貸し出すか等を判断することができる。

【０２３４】

また、例えば、車両管理部８２３は、Ｂ２Ｃカーシェアサイトにおける借主ユーザによる指定エリア内の車両１０Ｂの検索要求に応じて、通信処理部８２１を介して、指定エリア内の車両１０Ｂの位置情報をセンタサーバ３０に問い合わせる。そして、車両管理部８２３は、通信処理部８２１を介して、当該問い合わせに応じてセンタサーバ３０から返信される指定エリア内の車両１０Ｂの位置情報を取得する。これにより、車両管理部８２３は、例えば、Ｂ２Ｃカーシェアサイトにおいて、指定エリア内の車両１０Ｂを直ぐ借りた

い借主ユーザに対して、対象となる車両１０Ｂの位置情報を提示することができる。
【０２３５】
センタサーバ３０の処理装置３２は、上述の如く、通信処理部３２１と、条件判定部３２２と、認証キー発行部３２３と、記憶部３２０を含む。
【０２３６】
条件判定部３２２は、通信処理部３２１によりＢ２Ｃカーシェア管理サーバ８０から受信される認証キー手配要求が受信された場合、正規の認証キー手配要求であるか否かを判定する。例えば、条件判定部３２２は、認証キー手配要求に含まれる借主ユーザＩＤが記憶部３２０に登録済の認証用ＩＤであるかやＢ２Ｃカーシェア管理サーバ８０に対応する所定の認証情報（例えば、ＩＤ及びパスワード等）に基づき、正規の認証キー手配要求であるか否かを判定する。
【０２３７】
認証キー発行部３２３は、条件判定部３２２により正規の認証キー手配要求であると判定された場合、時限的（例えば、認証キー手配要求に含まれる車両１０Ｂの利用予約日時とその前後のバッファ期間だけで利用可能）な認証キーを発行する。そして、認証キー発行部３２３は、通信処理部３２１を介して、認証キー手配要求で特定される車両１０Ｂを借りる借主ユーザの携帯端末２０Ｂに認証キーを配信する。
【０２３８】
車両１０Ｂを借りる借主ユーザの携帯端末２０Ｂの処理装置２３は、上述の如く、通信処理部２３１と、通信処理部２３２と、認証キー取得部２３３と、認証要求部２３４と、施解錠要求部２３５と、記憶部２３０を含む。
【０２３９】
認証キー取得部２３３は、車両１０Ｂを借りる借主ユーザの所定の操作に応じて、通信処理部２３２を介して、Ｂ２Ｃカーシェア管理サーバ８０に認証キー取得要求を送信する。このとき、認証キー取得要求には、車両１０Ｂを借りる借主ユーザに対応するＢ２Ｃカーシェアサイトのサービスログイン ＩＤ等が含まれる。これにより、Ｂ２Ｃカーシェア管理サーバ８０は、認証キー取得要求に応じて、認証キー手配要求をセンタサーバ３０に送信し、センタサーバ３０は、認証キー手配要求に応じて、携帯端末２０Ｂに認証キーを配信し、携帯端末２０Ｂは、認証キーを取得することができる。よって、携帯端末２０Ｂは、通信処理部２３１、認証要求部２３４、及び、施解錠要求部２３５の機能に基づき、車両１０Ｂのドアを施錠及び解錠することができる。つまり、携帯端末２０Ｂを所持する車両１０Ｂを借りる借主ユーザは、Ｂ２Ｃカーシェアサービスによって、車両１０Ｂの事業者等との間での鍵の受け渡しを行うことなく、携帯端末２０Ｂを利用して、車両１０Ｂを施錠及び解錠し、車両１０Ａを運転する等、直接的に利用することができる。そのため、認証キー管理システム１におけるＢ２Ｃカーシェアサービスによって、車両１０Ｂを借りる借主ユーザの利便性を向上させることができる。
【０２４０】
［センタサーバの特徴的な動作の詳細］
次に、図７，図９を参照して、センタサーバ３０の特徴的な処理フローについて説明する。
【０２４１】
まず、図７は、本実施形態に係るセンタサーバ３０による車両１０Ａの常用ユーザが上述の各種サービスを利用するための登録処理（サービス利用登録処理）の一例を概略的に示すフローチャートである。本フローチャートによる処理は、所定の処理周期ごとに、繰り返し実行される。以下、図９のフローチャートについても同様である。
【０２４２】
ステップＳ７０２にて、登録管理部３２６は、通信処理部３２１によりサービス利用登録要求が受信されたか否かを判定する。登録管理部３２６は、サービス登録要求が受信された場合、ステップＳ７０４に進み、それ以外の場合、今回の処理を終了する。
【０２４３】

ステップＳ７０４にて、登録管理部３２６は、通信処理部３２１により受信されたサービス利用登録要求に含まれるオーナユーザＩＤ及びパスワードによる認証処理を行う。

【０２４４】

ステップＳ７０６にて、登録管理部３２６は、認証成功か否か、つまり、正規のサービス利用登録要求であるか否かを判定する。登録管理部３２６は、正規のサービス利用登録要求である場合、ステップＳ７０８に進み、それ以外の場合、ステップＳ７１２に進む。

【０２４５】

ステップＳ７０８にて、登録管理部３２６は、サービス利用登録要求に含まれるオーナユーザＩＤに、サービス利用登録要求で特定される対象のサービス、車両１０Ａ、及び、該サービスを利用する常用ユーザに対応するサービス固有情報（サービスＩＤ）、車両固有情報（キーユニットＩＤ）、及び、常用ユーザＩＤ（オーナユーザＩＤ或いは子ユーザＩＤ）を紐付けて、記憶部３２０のユーザ・サービス登録情報ＤＢに登録（保存）する。

【０２４６】

ステップＳ７１０にて、登録管理部３２６は、対象のサービスに対応するキーシェア管理部３２７或いはサービス管理サーバ４０に対象のサービスの利用登録が完了した旨の通知（サービス利用登録完了通知）を送信する。また、登録管理部３２６は、同様に、オーナユーザの携帯端末２０Ａａ及び登録対象の常用ユーザ（子ユーザ）の携帯端末２０Ａｂに対象のサービスの利用登録が完了した旨を通知する。そして、登録管理部３２６は、今回の処理を終了する。

【０２４７】

一方、ステップＳ７１２にて、登録管理部３２６は、オーナユーザの携帯端末２０Ａａに、対象のサービスの利用登録が不可である旨（即ち、ユーザ認証が失敗した旨）を通知し、今回の処理を終了する。

【０２４８】

例えば、図８は、図７の処理により記憶部５２０に構築されるユーザ・サービス登録情報ＤＢの一例を模式的に示す図である。具体的には、記憶部５２０のユーザ・サービス登録情報ＤＢに登録される、オーナユーザＩＤと、オーナユーザＩＤに紐づけられるキーユニットＩＤ、常用ユーザＩＤ、サービスＩＤ、及び、サービスリンク情報との対応関係を示す図である。

【０２４９】

本例では、オーナユーザが２台の車両１０Ａを所有しており、オーナユーザの家族等の一人の子ユーザが各種サービスを利用可能な常用ユーザとして登録されている。また、オーナユーザが一の車両１０Ａについて利用可能なサービスは、キーシェアサービス、トランク配送サービス、及び、Ｃ２Ｃカーシェアリングサービスであり、子ユーザが一の車両１０Ａについて利用可能なサービスは、キーシェアサービス、トランク配送サービスである。また、オーナユーザが他の車両１０について利用可能なサービスは、キーシェアサービスとトランク配送サービスであり、子ユーザが他の車両１０Ａについて利用可能なサービスは、キーシェアサービスだけである。

【０２５０】

このように、登録管理部３２６は、車両１０Ａの常用ユーザが車両１０Ａを利用した所定のサービスを利用するために、サービスに関連する外部装置（サービス管理サーバ４０等）が、所定の要求信号（認証キー手配要求）を送信することにより、車両１０Ａの常用ユーザ以外のサービスに関連する第三者の所持する携帯端末２０Ａｃ，２０Ａｄに鍵情報（認証キー）を認証キー発行部３２３から配信させる権限（認証キー手配権限）をユーザ・サービス登録情報ＤＢに登録する。

【０２５１】

これにより、センタサーバ３０は、Ｃ２Ｃカーシェアサービスやトランク配送サービス員等のサービスに関連するサービス管理サーバ４０が、車両１０Ａの借主や配達員等のサービスに関連する第三者の携帯端末２０Ａｃ，２０Ａｄに認証キーを配信させる権限を自ら管理することができる。そのため、例えば、サービス管理サーバ４０が認証キーを配信

させるためのＩＤやパスワード等の認証情報が漏えいした場合であっても、当該ＩＤやパスワードは、あるサービスに固有のものであるため、当該認証情報によって、新たなサービスの利用登録を行うことはできない。また、センタサーバ３０は、通常、車両１０Ａの常用ユーザ以外のアクセスが制限される場合が多く、そもそも、悪意の第三者がセンタサーバ３０に対してサービスの利用登録を行わせるのは困難である。従って、センタサーバ３０は、悪意の第三者による車両１０Ａを利用するサービスへの無断登録や無断登録されたサービスを通じた車両１０Ａの無断利用を抑制することができる。

【０２５２】

また、図８に示すように、登録管理部３２６は、オーナユーザＩＤに対して、サービスに利用する対象の車両１０Ａ（キーユニットＩＤ）、サービスを利用する車両１０Ａの常用ユーザ（常用ユーザＩＤ）、対象のサービス（サービスＩＤ）、並びに、対象のサービスと車両１０Ａ及び常用ユーザとを対応付けるサービスリンク情報を紐付けて、記憶部５２０に保存する。つまり、登録管理部３２６は、車両１０Ａの常用ユーザが車両１０Ａを利用したサービスを利用するためのキーシェア管理部３２７やサービス管理サーバ４０の認証キー手配権限を、オーナユーザＩＤに紐付けて登録する。

【０２５３】

これにより、センタサーバ３０は、オーナユーザＩＤを起点として、利用登録されるサービスに関連する情報を一元的に管理することができる。また、センタサーバ３０は、認証キー手配権限を、オーナユーザだけが通常知り得るオーナユーザに対応する固有情報（オーナユーザＩＤ）と紐づけて管理することができる。従って、サービスの利用登録の際、オーナユーザに対応する固有情報が必要になるため、センタサーバ３０は、オーナユーザ以外の車両１０Ａの常用ユーザ（例えば、オーナユーザの家族や親しい友人等）による車両１０Ａを利用するサービスへの無断登録等を抑制することができる。

【０２５４】

また、図８に示すように、登録管理部３２６は、各種サービスに関連する車両１０Ａの常用ユーザ以外の第三者（例えば、トランク配送サービスの配送員やＣ２Ｃカーシェアリングサービスの借主）の携帯端末２０Ａｃ，２０Ａｄに認証キーを配信させるためのサービスリンク情報と、サービスリンク情報と異なる、車両１０Ａを特定する情報（キーユニットＩＤ）とを紐付けて、記憶部５２０に保存する。これにより、センタサーバ３０は、トランク配送サービスの配達員やＣ２Ｃカーシェアサービスの借主等のサービスに関連する第三者の携帯端末２０Ａｃ，２０Ａｄが認証キーを取得するのに必要なサービスリンク情報を自ら管理することができる。具体的には、センタサーバ３０は、サービスリンク情報を、車両１０Ａに固有の情報（車両固有情報）と紐付けて管理することができる。そのため、サービス提供業者に車両１０Ａを特定するための車両固有情報を提供することなく、サービスに関連する外部装置（サービス管理サーバ４０）や携帯端末２０等から受信する認証キーの配信要求（認証キー手配要求）に含まれるサービスリンク情報から認証キーの施解錠対象の車両１０Ａを特定できる。つまり、仮に、悪意の第三者が、センタサーバ３０に対して、無断であるサービスの利用を登録しようとしても、サービスリンク情報に加えて、車両１０Ａのオーナユーザ等の常用ユーザ等しか通常知り得ない車両固有情報が必要となる。従って、センタサーバ３０は、悪意の第三者による車両１０Ａを利用するサービスへの無断登録や無断登録されたサービスを通じた車両の無断利用を抑制することができる。

【０２５５】

また、車両固有情報は、本例では、車両１０Ａに搭載されるキーユニット１２に固有のキーユニットＩＤである。これにより、センタサーバ３０は、サービスリンク情報を、ＶＩＮ等の汎用的な車両１０Ａに固有の情報でなく、携帯端末２０からの送信信号の受信により車両１０Ａの解錠或いは起動する機能に関する車載装置（キーユニット１２）の固有情報（キーユニットＩＤ）と紐付けて管理することができる。従って、第三者が知り得る機会が限定される車載装置の固有情報が採用されることにより、センタサーバ３０は、車両１０Ａを利用するサービスへの無断登録や無断登録されたサービスを通じた車両１０Ａ

の無断利用を更に抑制することができる。
【０２５６】
続いて、図９は、センタサーバ３０によるサービス利用状況情報提供処理の一例を概略的に示すフローチャートである。
【０２５７】
ステップＳ９０２にて、登録管理部３２６は、通信処理部３２１により、サービス利用状況要求が受信されたか否かを判定する。登録管理部３２６は、通信処理部により、サービス利用状況要求が受信された場合、ステップＳ９０４に進み、それ以外の場合、今回の処理を終了する。
【０２５８】
ステップＳ９０４にて、登録管理部３２６は、サービス利用状況要求で指定される種類のサービス利用状況情報を生成する。
【０２５９】
ステップＳ９０６にて、登録管理部３２６は、通信処理部３２１を介して、サービス利用状況情報を携帯端末２０Ａａに配信し、今回の処理を終了する。これにより、携帯端末２０Ａａのディスプレイ２４には、センタサーバ３０から配信されたサービス利用状況情報に対応する画像（サービス利用状況画像）が表示される。そのため、オーナユーザは、センタサーバ３０の記憶部５２０（ユーザ・サービス登録情報ＤＢ）に登録される複数の常用ユーザ及び複数のサービスに亘る車両１０Ａを利用するサービスの利用状況を一元的に把握することができる。
【０２６０】
例えば、図１０は、オーナユーザの携帯端末２０Ａａのディスプレイ２４に表示されるサービス利用状況画像の具体例を示す図である。具体的には、図１０は、携帯端末２０Ａａのディスプレイ２４に表示される６種類のサービス利用状況画像１００１～１００５の具体例を示す。
【０２６１】
サービス利用状況画像１００１は、センタサーバ３０の記憶部５２０（ユーザ・サービス登録情報ＤＢ）にあるオーナユーザＩＤに紐付けて登録されている、各種サービスに利用される車両１０Ａの一覧を表す。本例では、サービス利用状況画像１００１には、あるオーナユーザにより登録された二台の車両１０Ａを模式的に示す車両画像が上下方向に並べて示される。
【０２６２】
サービス利用状況画像１００２は、オーナユーザＩＤに紐付けて登録されているサービスの一覧を表す。本例では、サービス利用状況画像１００２には、登録されているサービスを提供する事業者名が示され、具体的には、トランク配送サービスを提供する”○○運輸”、及び、Ｃ２Ｃカーシェアリングサービスを提供する”△△カーシェア”が登録されていることが示される。
【０２６３】
サービス利用状況画像１００３は、オーナユーザＩＤに紐付けて登録されている常用ユーザの一覧を示す。本例では、サービス利用状況画像１００３には、各種サービスを利用する二人の常用ユーザ（オーナユーザと子ユーザ）を模式的に示す人画像が上下に並べて示される。また、サービス利用状況画像１００３では、それぞれの常用ユーザの人画像の右側に、それぞれの常用ユーザが利用する各種サービスで利用される車両１０Ａを模式的に示す車両画像が示され、具体的には、一方の常用ユーザは、一台の車両１０Ａを対象として各種サービスを利用し、他方のユーザは、二台の車両１０Ａを対象として各種サービスを利用することが示される。
【０２６４】
サービス利用状況画像１００４は、オーナユーザＩＤに紐付けて登録されている全ての常用ユーザ及び全てのサービスに亘る一台の車両１０Ａの利用スケジュールを示す。本例では、サービス利用状況画像１００４には、二人の常用ユーザを対象とする一台の車両１

０Ａの各種サービスに対応する利用スケジュールが示される。
【０２６５】
サービス利用状況画像１００５は、オーナユーザＩＤに紐付けて登録されている一台の車両１０Ａの認証キーによる施解錠の履歴の一覧を示す。本例では、サービス利用状況画像１００５には、車両１０Ａが認証キーにより施解錠された日時と、利用された認証キーの配信対象（つまり、車両１０Ａの施解錠を行った人）が示される。
【０２６６】
このように、登録管理部３２６は、通信処理部３２１を介して、オーナユーザＩＤを伴う携帯端末２０Ａａからの要求に応じて、オーナユーザＩＤに紐づけられた認証キー手配権限に対応するサービスに関する情報（サービス利用状況情報）を携帯端末２０Ａａに送信する。これにより、センタサーバ３０は、オーナユーザに対応する固有情報（オーナユーザＩＤ）を伴う端末（携帯端末２０Ａａ）からの要求、つまり、オーナユーザの端末からの要求に応じて、利用登録されたサービスに関する情報をオーナユーザの端末に送信することができる。そのため、オーナユーザは、端末のディスプレイ等に表示される利用登録されたサービスに関する情報（例えば、利用登録されたサービスの一覧、全サービスに利用される車両の利用スケジュール等）を把握することができる。従って、センタサーバ３０は、利用登録されているサービスに関する情報をオーナユーザに一元的に把握させることができる。
【０２６７】
登録管理部３２６は、通信処理部３２１を介して、オーナユーザＩＤを伴う携帯端末２０Ａａからの要求に応じて、オーナユーザＩＤに紐付けられた認証キー手配権限に対応するオーナユーザ以外の車両１０Ａの常用ユーザに関する情報を含むサービス利用状況情報を携帯端末２０Ａａに送信する。これにより、センタサーバ３０は、オーナユーザの端末（携帯端末２０Ａａ）からの要求に応じて、利用登録されたサービスを利用するオーナユーザ以外の車両１０Ａの常用ユーザに関する情報をオーナユーザの端末に送信することができる。そのため、オーナユーザは、端末のディスプレイ等に表示される利用登録されたサービスを利用するオーナユーザ以外の車両の常用ユーザに関する情報（例えば、各種サービスの利用者一覧や全利用者に亘る車両の利用スケジュール等）を把握することができる。従って、センタサーバ３０は、利用登録されているサービスの利用者（オーナユーザ以外の車両の常用的なユーザ）に関する情報をオーナユーザに一元的に把握させることができる。
【０２６８】
以上、本発明を実施するための形態について詳述したが、本発明はかかる特定の実施形態に限定されるものではなく、特許請求の範囲に記載された本発明の要旨の範囲内において、種々の変形・変更が可能である。
【０２６９】
例えば、上述した実施形態では、携帯端末２０が認証キーを含む認証要求をキーユニット１２に送信し、キーユニット１２が認証キーに基づく認証結果に応じて、施解錠・起動装置１１との間での信号のやり取りを行い、施解錠・起動装置１１による車両１０Ａのドアの施解錠及び車両１０Ａの起動が実現されるが、当該態様には限定されない。
【０２７０】
具体的には、携帯端末２０にキーユニット１２の機能が移管され、携帯端末２０は、ＬＦ電波及びＲＦ電波による車両１０（施解錠・起動装置１１）との間で、上述した鍵情報（内部鍵情報）に基づく信号のやり取りを行うことにより、施解錠・起動装置１１による車両１０Ａのドアの施解錠及び車両１０Ａの起動が実現される構成であってもよい。この場合、上述した実施形態の「認証キー」は、「鍵情報」に読み替えられるとよい。つまり、センタサーバ３０は、上述した実施形態における認証キーと同様の方法で、認証キーの代わりに、鍵情報を発行し、携帯端末２０に配信してよい。これにより、上述した実施形態と同様の作用・効果を奏する。
【０２７１】

また、施解錠・起動装置１１に、キーユニット１２の機能を統合し、施解錠・起動装置１１とキーユニット１２との間での通信及び該通信に係る認証に関する構成（ＬＦ電波送信機１１１、ＲＦ電波受信機１１２、照合ＥＣＵ１１３、ＬＦ電波受信機１２１、ＲＦ電波送信機１２２）を省略してもよい。この場合、キーＥＣＵ１２４は、認証キーに基づく携帯端末２０の認証が成功した場合、照合ＥＣＵ１１３の代わりに、直接、ボディＥＣＵ１１４及びエンジンＥＣＵ１１６のそれぞれに解錠指令或いは施錠指令及び起動指令を出力し、車両１０のドアの施解錠及び車両１０の起動を行わせてよい。これにより、上述した実施形態と同様の作用・効果を奏する。

【符号の説明】

【０２７２】

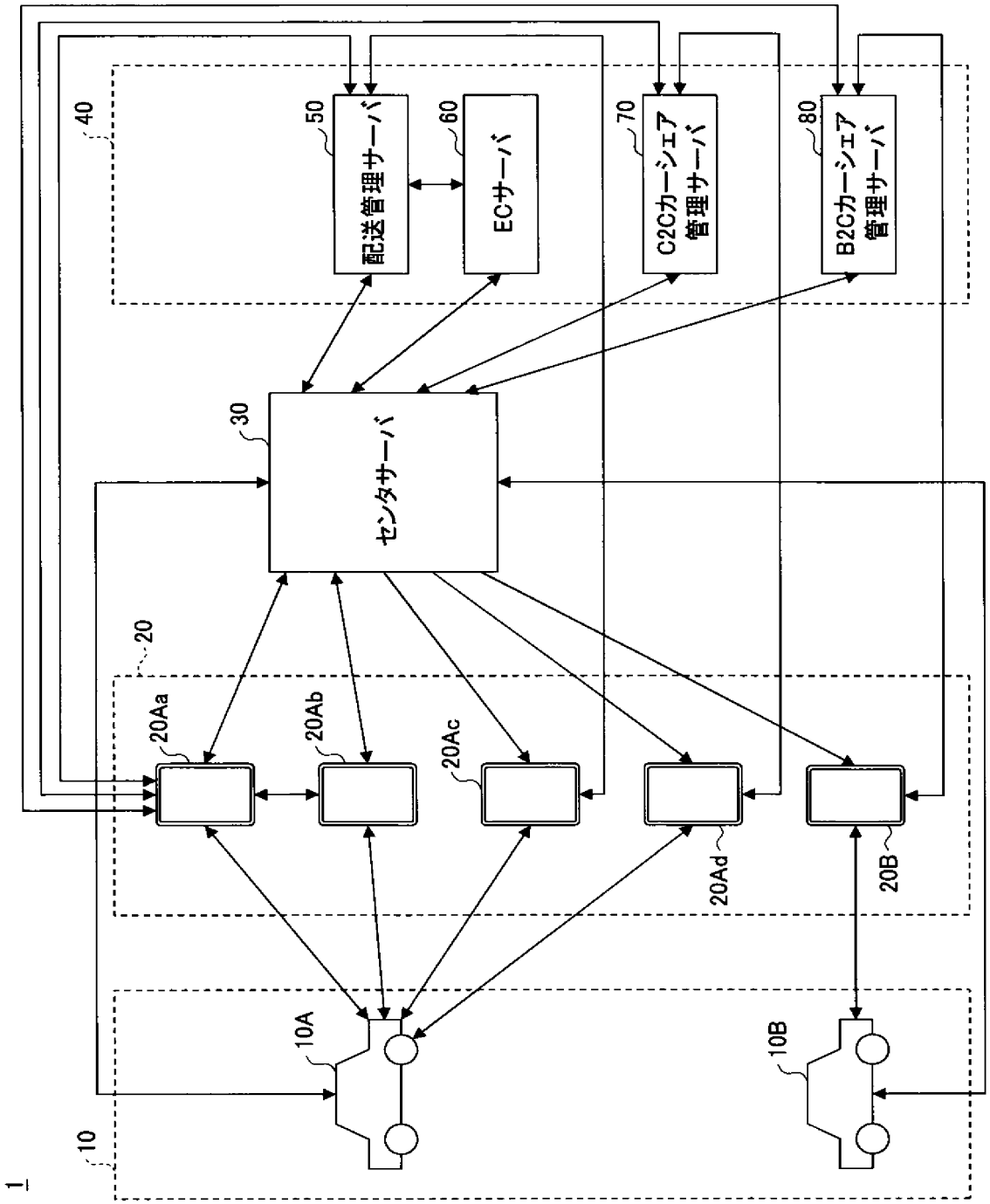
１　認証キー管理システム
１０　車両
１１　施解錠・起動装置
１２　キーユニット
１３　ＧＰＳモジュール
１４　ＤＣＭ
２０，２０Ａａ，２０Ａｂ，２０Ａｃ，２０Ａｄ，２０Ｂ　携帯端末
２１　通信機器
２２　通信機器
２３　処理装置
２４　タッチパネルディスプレイ
３０　センタサーバ（鍵情報管理装置）
３１　通信機器
３２　処理装置（情報処理装置）
４０　サービス管理サーバ
５０　配送管理サーバ
５１　通信機器
５２　処理装置
６０　ＥＣサーバ
６１　通信機器
６２　処理装置
７０　Ｃ２Ｃカーシェア管理サーバ
７１　通信機器
７２　処理装置
８０　Ｂ２Ｃカーシェア管理サーバ
８１　通信機器
８２　処理装置
１１１　ＬＦ電波送信機
１１２　ＲＦ電波受信機
１１３　照合ＥＣＵ
１１４　ボディＥＣＵ
１１５　ドアロックモータ
１１６　エンジンＥＣＵ
１１７　エンジン
１２１　ＬＦ電波受信機
１２２　ＲＦ電波送信機
１２３　通信機器
１２４　キーＥＣＵ
２３０　記憶部
２３１　通信処理部

２３２　通信処理部
２３３　認証キー取得部
２３４　認証要求部
２３５　施解錠要求部
２３６　ユーザ登録要求部
２３７　サービス利用登録要求部
２３８　サービス利用状況要求部
２３９　キーシェア要求部
３２０　記憶部
３２１　通信処理部
３２２　条件判定部
３２３　認証キー発行部（鍵情報配信部）
３２４　位置情報管理部
３２５　スケジュール管理部
３２６　登録管理部（登録部）
３２７　キーシェア管理部
５２０　記憶部
５２１　通信処理部
５２２　サービス連携登録部
５２３　配送受付部
５２４　配送管理部
６２０　記憶部
６２１　通信処理部
６２２　ウェブリソース送信部
６２３　サービス連携登録部
６２４　注文受付処理部
７２０　記憶部
７２１　通信処理部
７２２　サービス連携登録部
７２３　予約管理部
７２４　車両管理部
８２０　記憶部
８２１　通信処理部
８２２　予約管理部
８２３　車両管理部

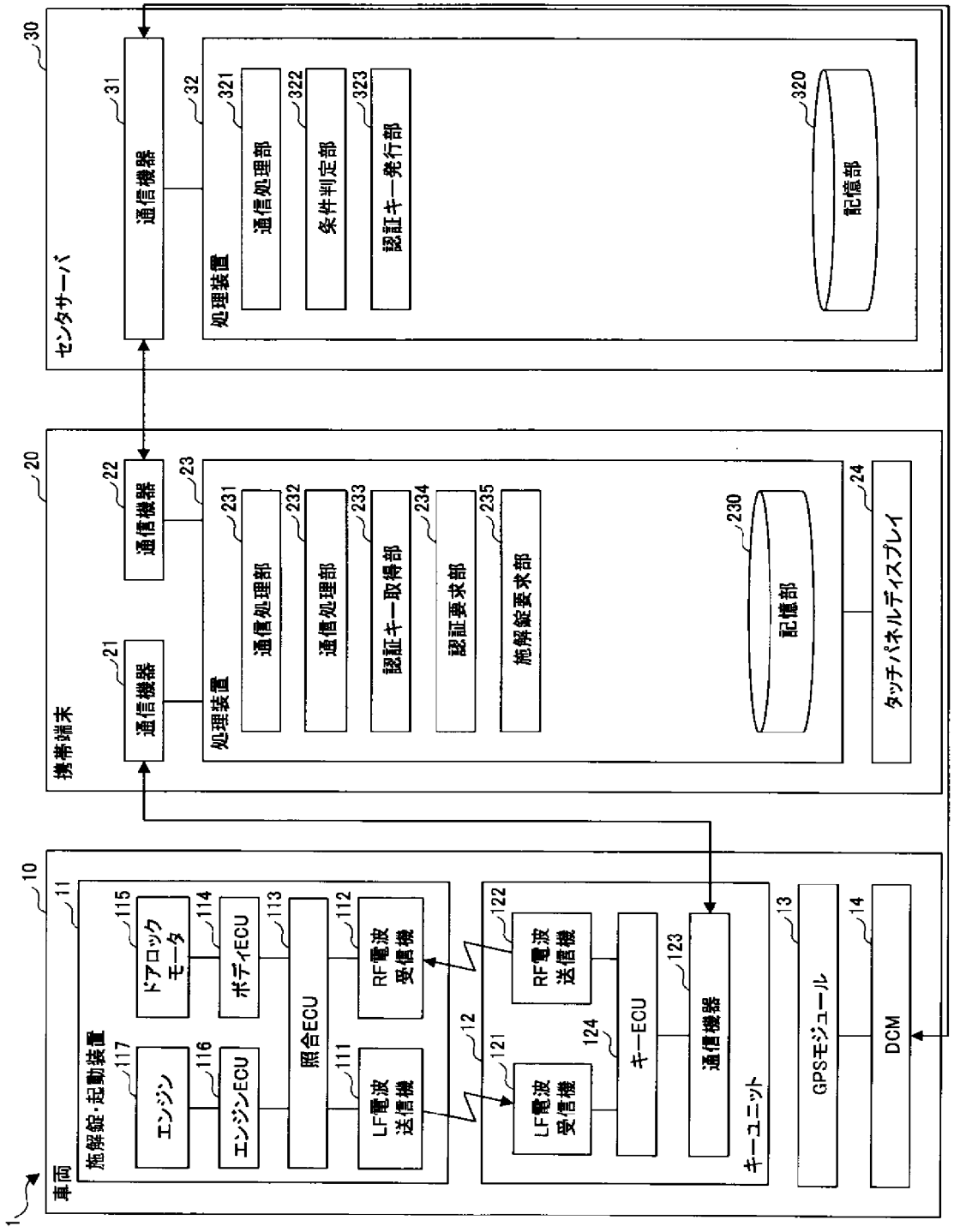
【書類名】特許請求の範囲
【請求項１】
　携帯端末が車両に向けて所定の送信信号を送信することにより前記車両を解錠又は起動させるための鍵情報を携帯端末に配信する鍵情報配信部と、
　前記車両のユーザが前記車両を利用した所定のサービスを利用するために、前記サービスに関連する外部装置が、所定の要求信号を送信することにより、前記車両のユーザ以外の前記サービスに関連する第三者の携帯端末に前記鍵情報を前記鍵情報配信部から配信させる権限を登録する登録部と、を備える、
　鍵情報管理装置。
【請求項２】
　前記登録部は、前記権限を、更に、前記車両のオーナユーザに対応する固有情報と紐付けて登録する、
　請求項１に記載の鍵情報管理装置。
【請求項３】
　前記オーナユーザに対応する固有情報を伴う端末からの要求に応じて、前記オーナユーザに対応する固有情報に紐づけられた前記権限に対応する前記サービスに関する情報を該端末に送信する送信部を更に備える、
　請求項２に記載の鍵情報管理装置。
【請求項４】
　前記登録部は、前記車両のユーザごとの前記権限を前記オーナユーザに対応する固有情報と紐付けて記憶し、
　前記送信部は、前記オーナユーザに対応する固有情報を伴う端末からの要求に応じて、前記オーナユーザに対応する固有情報に紐付けられた前記権限ごとの前記オーナユーザ以外の前記車両のユーザに関する情報を該端末に送信する、
　請求項３に記載の鍵情報管理装置。
【請求項５】
　鍵情報管理装置により実行される鍵情報管理方法であって、
　携帯端末が車両に向けて所定の送信信号を送信することにより前記車両を解錠又は起動させるための鍵情報を携帯端末に配信する鍵情報配信ステップと、
　前記車両のユーザが前記車両を利用した所定のサービスを利用するために、前記サービスに関連する外部装置が、所定の要求信号を送信することにより、前記車両のユーザ以外の前記サービスに関連する第三者の所持する携帯端末に前記鍵情報を前記鍵情報配信ステップにより配信させる権限を登録する登録ステップと、を含む、
　鍵情報管理方法。
【請求項６】
　情報処理装置に、
　携帯端末が車両に向けて所定の送信信号を送信することにより前記車両を解錠又は起動させるための鍵情報を携帯端末に配信する鍵情報配信ステップと、
　前記車両のユーザが前記車両を利用した所定のサービスを利用するために、前記サービスに関連する外部装置が、所定の要求信号を送信することにより、前記車両のユーザ以外の前記サービスに関連する第三者の所持する携帯端末に前記鍵情報を前記鍵情報配信ステップにより配信させる権限を登録する登録ステップと、を実行させる、
　鍵情報管理プログラム。

【書類名】要約書
【要約】
【課題】悪意の第三者による車両を利用するサービスへの無断登録や無断登録されたサービスを通じた車両の無断利用を抑制することが可能な鍵情報管理装置等を提供する。
【解決手段】携帯端末が車両に向けて所定の送信信号を送信することにより前記車両を解錠又は起動させるための鍵情報を携帯端末に配信する鍵情報配信部と、車両のユーザが車両を利用した所定のサービスを利用するために、サービスに関連する外部装置が、所定の要求信号を送信することにより、車両のユーザ以外のサービスに関連する第三者の所持する携帯端末に鍵情報を鍵情報配信部から配信させる権限を登録する登録部と、を備える。
【選択図】図１

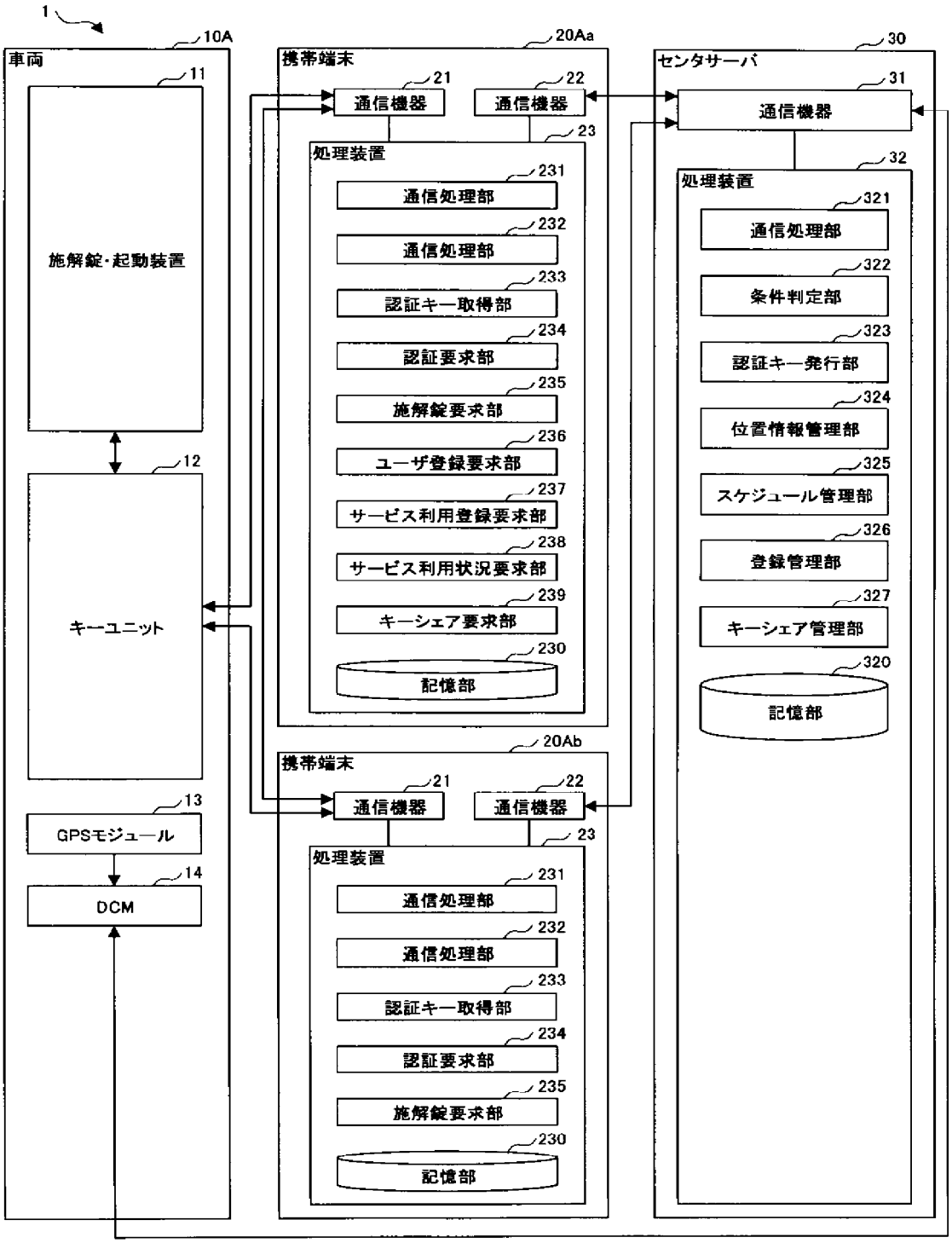
【書類名】図面
【図１】


1
10
10A
10B
20
20Aa
20Ab
20Ac
20Ad
20B
30
センタサーバ
40
50
配送管理サーバ
60
ECサーバ
70
C2Cカーシェア
管理サーバ
80
B2Cカーシェア
管理サーバ

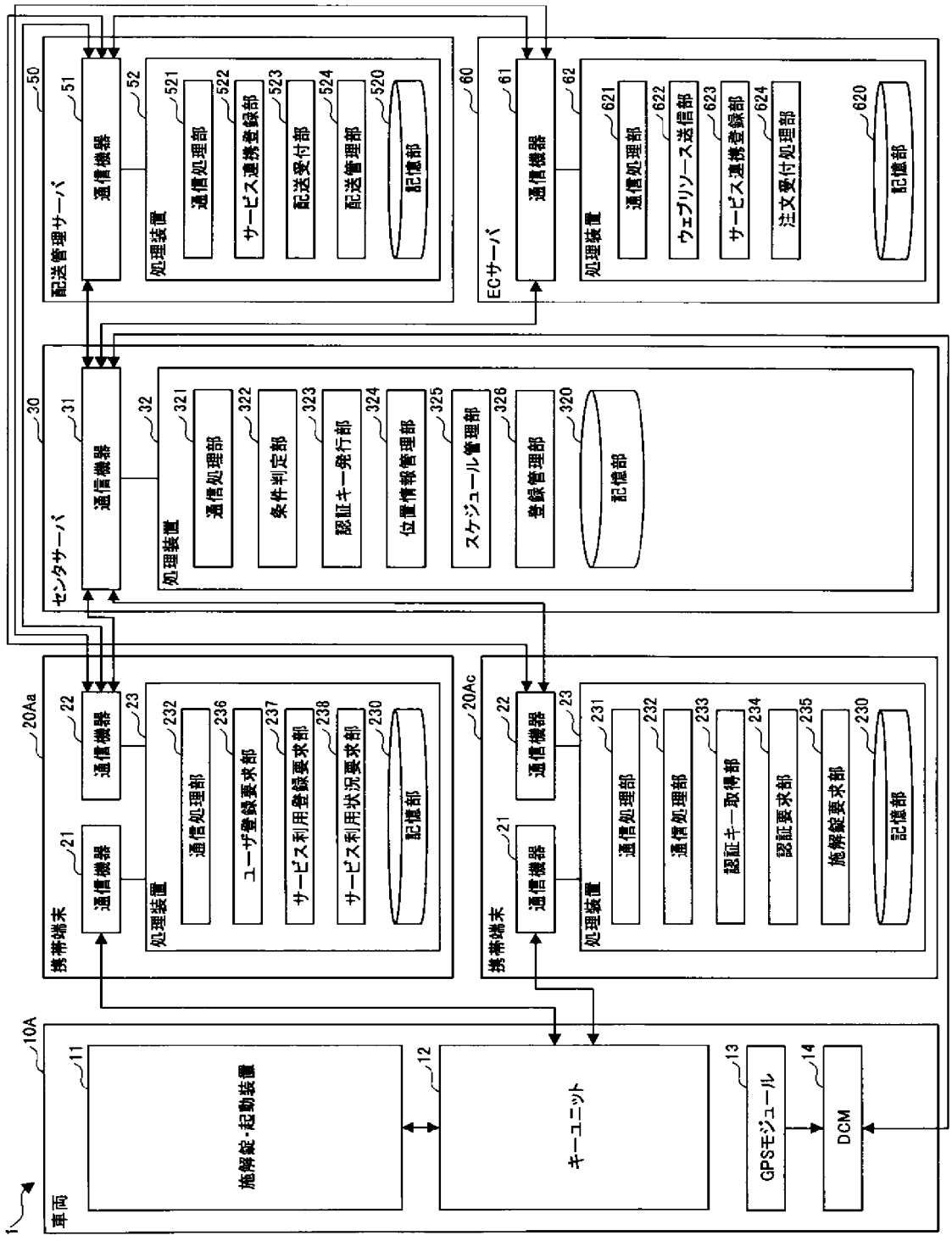
【図２】


1
車両
10
施解錠・起動装置
11
ドアロックモータ
115
ボディECU
114
照合ECU
113
RF電波受信機
112
エンジン
117
エンジンECU
116
LF電波送信機
111
12
LF電波受信機
121
RF電波送信機
122
キーECU
124
通信機器
123
キーユニット
13
GPSモジュール
14
DCM
携帯端末
20
通信機器
21
通信機器
22
処理装置
23
通信処理部
231
通信処理部
232
認証キー取得部
233
認証要求部
234
施解錠要求部
235
配憶部
230
タッチパネルディスプレイ
24
センタサーバ
30
通信機器
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条件判定部
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配憶部
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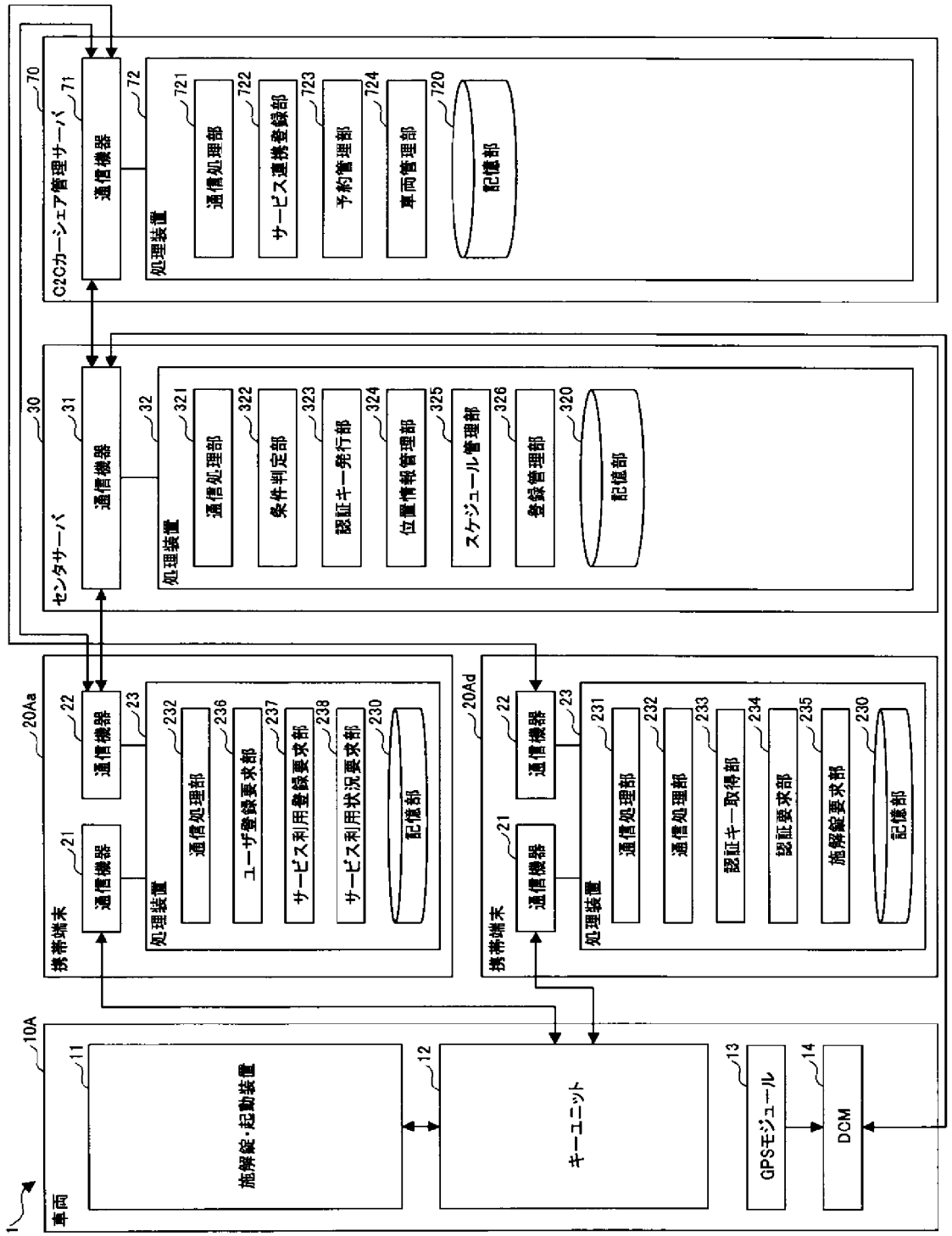
【図３】


1
10A
車両
11
施解錠・起動装置
12
キーユニット
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GPSモジュール
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DCM
20Aa
携帯端末
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通信機器
22
通信機器
23
処理装置
231
通信処理部
232
通信処理部
233
認証キー取得部
234
認証要求部
235
施解錠要求部
236
ユーザ登録要求部
237
サービス利用登録要求部
238
サービス利用状況要求部
239
キーシェア要求部
230
記憶部
20Ab
携帯端末
21
通信機器
22
通信機器
23
処理装置
231
通信処理部
232
通信処理部
233
認証キー取得部
234
認証要求部
235
施解錠要求部
230
記憶部
30
センタサーバ
31
通信機器
32
処理装置
321
通信処理部
322
条件判定部
323
認証キー発行部
324
位置情報管理部
325
スケジュール管理部
326
登録管理部
327
キーシェア管理部
320
記憶部

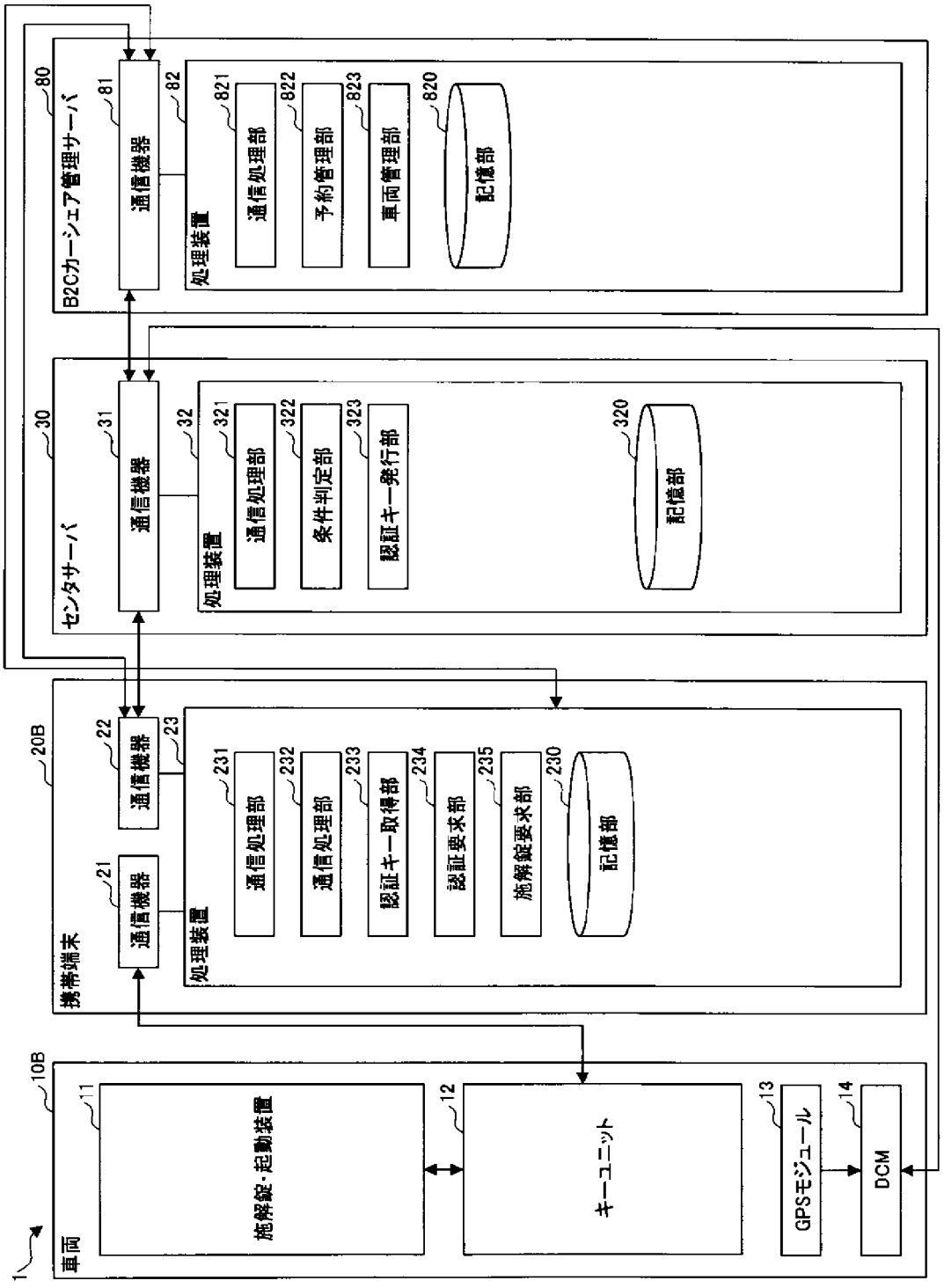
【図４】


1
車両
10A
施解錠・起動装置
11
キーユニット
12
GPSモジュール
13
DCM
14
携帯端末
20Aa
21
通信機器
22
23
処理装置
通信処理部
232
236
ユーザ登録要求部
237
サービス利用登録要求部
238
サービス利用状況要求部
230
記憶部
携帯端末
20Ac
21
通信機器
22
23
処理装置
231
通信処理部
232
通信処理部
233
認証キー取得部
234
認証要求部
235
施解錠要求部
230
記憶部
センタサーバ
30
31
通信機器
32
処理装置
321
通信処理部
322
条件判定部
323
認証キー発行部
324
位置情報管理部
325
スケジュール管理部
326
登録管理部
320
記憶部
配送管理サーバ
50
51
通信機器
52
処理装置
521
通信処理部
522
サービス連携登録部
523
配送受付部
524
配送管理部
520
記憶部
EGサーバ
60
61
通信機器
62
処理装置
621
通信処理部
622
ウェブリソース送信部
623
サービス連携登録部
624
注文受付処理部
620
記憶部

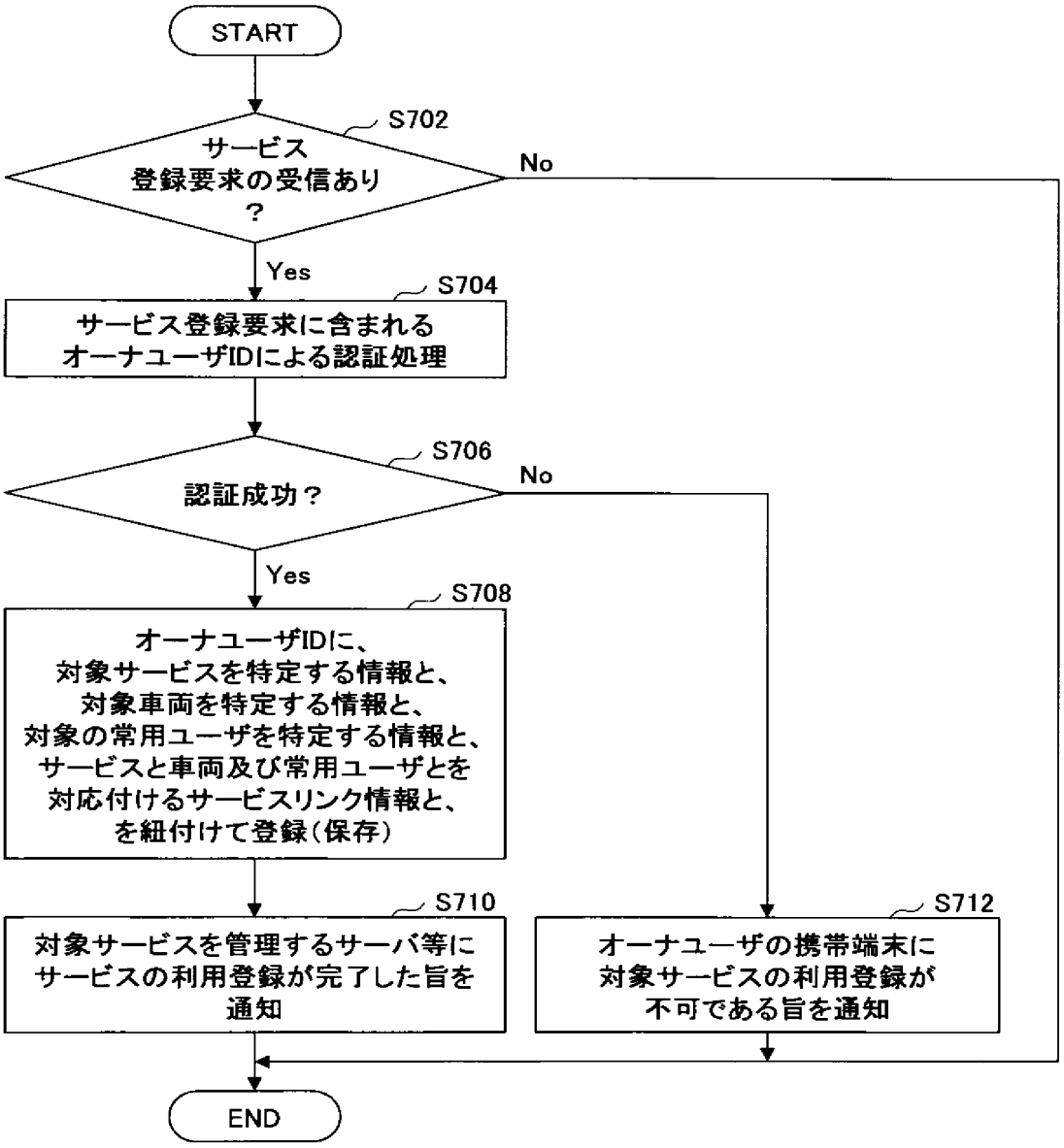
【図５】


1
車両
10A
施解錠・起動装置
11
キーユニット
12
GPSモジュール
13
DCM
14
携帯端末
20Aa
21
通信機器
22
通信機器
23
処理装置
232
通信処理部
236
ユーザ登録要求部
237
サービス利用登録要求部
238
サービス利用状況要求部
230
記憶部
携帯端末
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通信機器
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通信機器
23
処理装置
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通信処理部
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通信処理部
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認証キー取得部
234
認証要求部
235
施解錠要求部
230
記憶部
センタサーバ
30
31
通信機器
32
処理装置
321
通信処理部
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条件判定部
323
認証キー発行部
324
位置情報管理部
325
スケジュール管理部
326
登録管理部
320
記憶部
C2Cカーシェア管理サーバ
70
71
通信機器
72
処理装置
721
通信処理部
722
サービス連携登録部
723
予約管理部
724
車両管理部
720
記憶部

【図６】


1
車両
10B
施解錠・起動装置
11
キーユニット
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GPSモジュール
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DCM
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携帯端末
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通信機器
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通信機器
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処理装置
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通信処理部
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認証キー取得部
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認証要求部
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施解錠要求部
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記憶部
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センタサーバ
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通信機器
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処理装置
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通信処理部
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条件判定部
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認証キー発行部
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記憶部
320
B2Cカーシェア管理サーバ
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通信機器
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処理装置
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通信処理部
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予約管理部
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車両管理部
823
記憶部
820

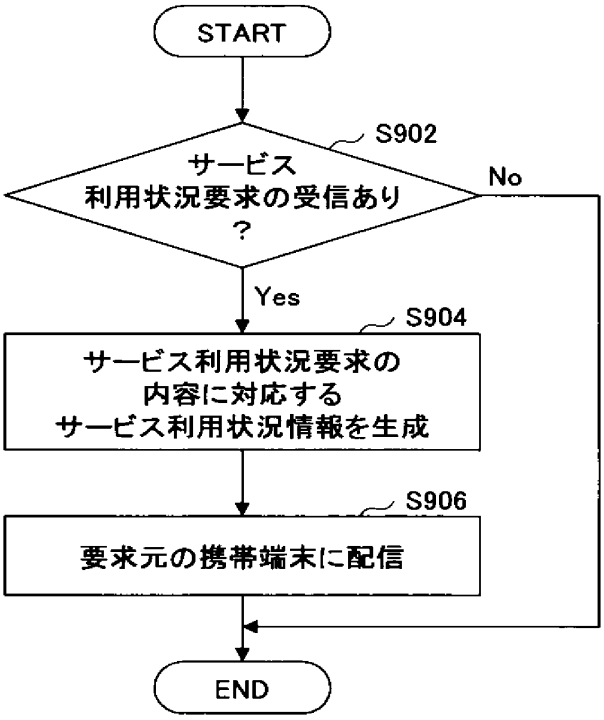
【図７】


START
S702
サービス
登録要求の受信あり
？
No
Yes
S704
サービス登録要求に含まれる
オーナユーザIDによる認証処理
S706
認証成功？
No
Yes
S708
オーナユーザIDに、
対象サービスを特定する情報と、
対象車両を特定する情報と、
対象の常用ユーザを特定する情報と、
サービスと車両及び常用ユーザとを
対応付けるサービスリンク情報と、
を紐付けて登録（保存）
S710
対象サービスを管理するサーバ等に
サービスの利用登録が完了した旨を
通知
S712
オーナユーザの携帯端末に
対象サービスの利用登録が
不可である旨を通知
END

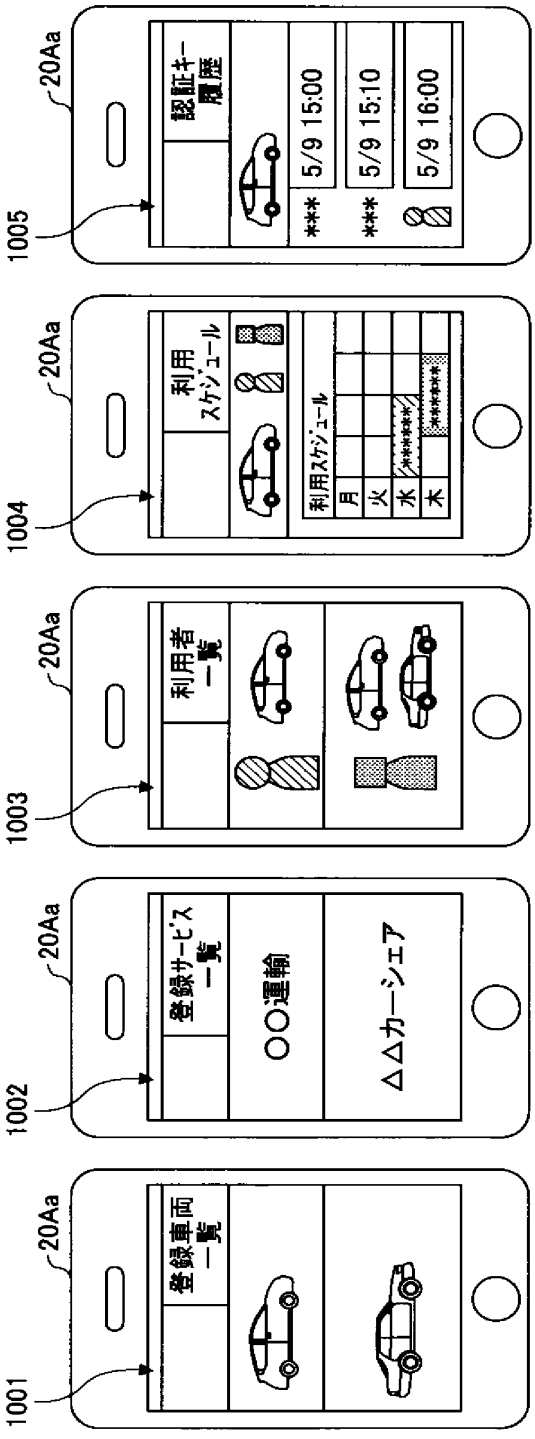
【図８】

オーナユーザID
キーユニットID(X)
キーユニットID(Y)
常用ユーザID(A)
常用ユーザID(B)
常用ユーザID(A)
常用ユーザID(B)
サービスID(α)
サービスID(β)
サービスID(γ)
サービスID(α)
サービスID(β)
サービスID(α)
サービスID(β)
サービスID(α)
サービスリンク情報(a)
サービスリンク情報(b)
サービスリンク情報(c)
サービスリンク情報(d)
サービスリンク情報(e)
サービスリンク情報(f)
サービスリンク情報(g)
サービスリンク情報(h)
常用ユーザA:オーナユーザ
常用ユーザB:子ユーザ
サービスα:キーシェアサービス
サービスβ:トランク配送サービス
サービスγ:C2Cカーシェアリングサービス

【図９】


START
S902
サービス
利用状況要求の受信あり
？
No
Yes
S904
サービス利用状況要求の
内容に対応する
サービス利用状況情報を生成
S906
要求元の携帯端末に配信
END

【図１０】


1001
20Aa
登録車両一覧
1002
20Aa
登録サービス一覧
○○運輸
△△カーシェア
1003
20Aa
利用者一覧
1004
20Aa
利用スケジュール
利用スケジュール
月
火
水
木
1005
20Aa
認証キー履歴
*** 5/9 15:00
*** 5/9 15:10
5/9 16:00

出願人履歴

０００００３２０７

19900827

新規登録

愛知県豊田市トヨタ町１番地

トヨタ自動車株式会社

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 16/800,571

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	300
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	660
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	760
TOTAL CLAIMS (37 CFR 1.16(i))	8 minus 20 =	*			OR	x 100 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 460 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1720

APPLICATION AS AMENDED - PART II

		(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($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	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	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	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 found in the appropriate box in column 1.

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United States Patent and Trademark Office
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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
16/800,571	02/25/2020	2688	1720	115628.0000058	8	3

CONFIRMATION NO. 6616

23838
Hunton Andrews Kurth LLP/HAK
2200 Pennsylvania Avenue NW
Washington, DC 20037

FILING RECEIPT

OC000000119317019

Date Mailed: 03/12/2020

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

Masato ENDO, Nagakute-shi, JAPAN;
Yuichiro HARUNA, Oyama-shi, JAPAN;
Masaki OSHIMA, Kitanagoya-shi, JAPAN;

Applicant(s)

TOYOTA JIDOSHA KABUSHIKI KAISHA, Toyota-shi, JAPAN;

Assignment For Published Patent Application

TOYOTA JIDOSHA KABUSHIKI KAISHA, Toyota-shi, JAPAN

Power of Attorney: The patent practitioners associated with Customer Number 23838

Domestic Priority data as claimed by applicant

This application is a CON of 16/139,519 09/24/2018

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
JAPAN 2017-205675 10/24/2017 Access Code Provided

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

IPR2024-00981
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If Required, Foreign Filing License Granted: 03/10/2020

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/800,571**

Projected Publication Date: 06/18/2020

Non-Publication Request: No

Early Publication Request: No

Title

KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM

Preliminary Class

369

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	
	Filing Date	
	First Named Inventor	Masato ENDO
	Art Unit	N/A
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	115628.0000058

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	9499129	B1	2016-11-22	Penilla et al.	Cited in Parent U.S. 16/139,519
	2	9365188	B1	2016-06-14	Penilla et al.	Cited in Parent U.S. 16/139,519
If you wish to add additional U.S. Patent citation information please click the Add button.						Add

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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	20130321178	A1	2013-12-05	Jameel et al.	Cited in Parent U.S. 16/139,519
	2	20160055699	A1	2016-02-25	VINCENTI	Cited in Parent U.S. 16/139,519
	3	20170334395	A1	2017-11-23	LU et al.	Cited in Parent U.S. 16/139,519
	4	20190001925	A1	2019-01-03	ARAKAWA et al.	Cited in Parent U.S. 16/139,519

IPR2024-00981
Emerging Auto EX2010

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Masato ENDO
	Art Unit	N/A
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	115628.0000058

	5	20170178035	A1	2017-06-22	GRIMM et al.	Cited in Parent U.S. 16/139,519
	6	20110191126	A1	2011-08-04	HAMPSHIRE et al.	Cited in Parent U.S. 16/139,519
	7	20140222298	A1	2014-08-07	Gurin	Cited in Parent U.S. 16/139,519
	8	20150310532	A1	2015-10-29	Gura et al.	Cited in Parent U.S. 16/139,519

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	1	2006118122	JP	A	2006-05-11	Honda Motor Co Ltd	Cited in Parent U.S. 16/139,519	
	2	2006206225	JP	A	2006-08-10	Denso Corp	Cited in Parent U.S. 16/139,519	
	3	2015045141	JP	A	2015-03-12	Auto Network Gijutsu Kenkyusho	Cited in Parent U.S. 16/139,519	
	4	2016150532	WO	A1	2016-09-29	VOLKSWAGEN AG	Cited in Parent U.S. 16/139,519	
	5	2016054276	WO	A1	2016-04-07	CONTINENTAL INTELLIGENT TRANSP SYSTEMS LLC	Cited in Parent U.S. 16/139,519	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
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	Application Number	
	Filing Date	
	First Named Inventor	Masato ENDO
	Art Unit	N/A
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	115628.0000058

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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Daniel G. Shanley/	Date (YYYY-MM-DD)	2020-02-25
Name/Print	Daniel G. Shanley	Registration Number	54,863

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Application Number:	
Filing Date:	
Title of Invention:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
First Named Inventor/Applicant Name:	Masato ENDO
Filer:	Daniel Gregory Shanley/Michelle Humphreys
Attorney Docket Number:	115628.0000058

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	300	300
UTILITY SEARCH FEE	1111	1	660	660
UTILITY EXAMINATION FEE	1311	1	760	760
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1720**

Electronic Acknowledgement Receipt

EFS ID:	38686059
Application Number:	16800571
International Application Number:	
Confirmation Number:	6616
Title of Invention:	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM
First Named Inventor/Applicant Name:	Masato ENDO
Customer Number:	23838
Filer:	Daniel Gregory Shanley/Michelle Humphreys
Filer Authorized By:	Daniel Gregory Shanley
Attorney Docket Number:	115628.0000058
Receipt Date:	25-FEB-2020
Filing Date:	
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Application Type:	Utility under 35 USC 111(a)

Payment information:

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Payment Type	DA
Payment was successfully received in RAM	$1720
RAM confirmation Number	E20202OF52580518
Deposit Account	500206
Authorized User	Michelle Humphreys
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1		115628-0000058_Spec.pdf	469638 8622e33338c5622ea342072a70d63a98ba0f58bb	yes	79
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Specification		1	75	
	Claims		76	78	
	Abstract		79	79	
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2	Drawings-only black and white line drawings	115628-0000058_Drawings.PDF	1911663 83e51eb1f81d1aa4eea81f53465bbd88e28e1228	no	10
Warnings:					
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3	Application Data Sheet	115628-0000058_ADS.pdf	1226474 40976eb3cb60ca146026c8b57841d9c2052b2927	no	9
Warnings:					
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4	Oath or Declaration filed	115628-0000058_DEC-ASG.PDF	126644 d2434502c6cc500a6a0a5e8125f2fca921820c65	no	2
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5	Power of Attorney	115628-0000058_ToyotaPOA.pdf	254337 b79e157e1435a782cfa62739cf8412168fe3183a	no	2

Warnings:					
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6	Assignee showing of ownership per 37 CFR 3.73	115628-0000058_373c.PDF	121100 6a783e1dd9fafc133a3cee8035971736a995620b	no	3
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7	Information Disclosure Statement (IDS) Form (SB08)	115628-0000058_IDS.pdf	1034929 dc5d8f94536455f6651c830f43230548c31513ef	no	5
Warnings:					
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KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM

INCORPORATION BY REFERENCE

[0001] This is a continuation application of U.S. Patent application No. 16/139,519, filed September 24, 2018, which claims priority to Japanese Patent Application No. 2017-205675 filed on October 24, 2017, the entire contents of which all are incorporated herein by reference.

BACKGROUND

1. Technical Field

[0002] The disclosure relates to a key information management device, a key information management method, and a non-transitory computer-readable recording medium on which a key information management program is recorded.

2. Description of Related Art

[0003] For example, a key information management system is disclosed (see, for example, Japanese Unexamined Patent Application Publication No. 2006-118122 (JP 2006-118122 A). In the key information management system, a mobile terminal receives key information that is transmitted from a server, and then the mobile terminal is usable as an electronic key.

SUMMARY

[0004] When key information that allows a vehicle to be unlocked for a limited time is delivered to a mobile terminal of a person other than a regular user of the vehicle, it is conceivable that various services can be provided to the regular user of the vehicle. For example, there is a car sharing service that assists in renting a vehicle between individuals

(consumer to consumer (C2C)) (hereinafter, referred to as C2C car sharing service). The C2C car sharing service is provided in the following way. In a time period during which a regular user does not use the vehicle, key information that allows a vehicle to be unlocked and started for a limited time is delivered to a mobile terminal of a person who wants to temporarily rent the vehicle. There is also, for example, a delivery service that allows the trunk of a vehicle to be designated as a delivery address for a package (hereinafter, referred to as trunk delivery service). The trunk delivery service is provided in the following way. Key information that allows the trunk of a vehicle to be unlocked for a limited time is delivered to a mobile terminal of a delivery person of a delivery company.

[0005] However, for example, if various services become available only by registering information for identifying a vehicle, such as a vehicle index number (VIN), with service providers, a third party, that is, a service provider, could learn registered information for identifying a vehicle when a regular user of the vehicle uses a service. For this reason, information for identifying a vehicle is possibly abused by a third party in bad faith, and another service is registered by the third party in bad faith without permission or a vehicle is used by the third party in bad faith without permission through a service registered without permission.

[0006] The disclosure provides a key information management device, a key information management method, and a non-transitory computer-readable recording medium on which a key information management program is recorded, which are able to prevent registration with a service using a vehicle by a third party in bad faith without permission and usage of a vehicle by a third party in bad faith without permission through a service registered without permission.

[0007] A first aspect of the disclosure provides a key information management device. The key information management device includes an information processing device. The information processing device is configured to deliver key information to a mobile terminal as the mobile terminal transmits a predetermined transmission signal toward a vehicle. The key information is information for unlocking the vehicle, starting

the vehicle, or unlocking and starting the vehicle. The information processing device is configured to register permission for a user of the vehicle to use a predetermined service using the vehicle. The permission is permission to cause the information processing device to deliver the key information to a mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle, as an external device concerned with the predetermined service transmits a predetermined request signal.

[0008] According to the above aspect, the key information management device by itself is able to manage permission to cause an external device concerned with a service, such as a C2C car sharing service and a trunk delivery service, to deliver key information to a mobile terminal of a third party concerned with the service, such as a renter of a vehicle and a delivery person. For this reason, for example, even when authentication information, such as ID and password, that an external device causes the information processing device to deliver key information has leaked, since the ID and password is unique to a service, it is not possible to perform registration with a new service by using the authentication information. In addition, the key information management device normally often restricts access from a person other than a user of a vehicle, and it is originally difficult for a third party in bad faith to perform registration with a service with the use of the key information management device. Therefore, the key information management device is able to reduce registration with a service using a vehicle by a third party in bad faith without permission and usage of a vehicle by a third party in bad faith without permission through a service registered without permission.

[0009] In the above-described aspect, the information processing device may be configured to register the permission further in association with unique information corresponding to an owner user of the vehicle.

[0010] According to this aspect, the key information management device is able to manage permission to cause an external device to deliver key information to a mobile terminal of a third party concerned with a service, other than a user of a vehicle, further in association with unique information that corresponds to an owner user and that is normally only available to the owner user. Therefore, since unique information corresponding to

an owner user is required at the time of registration with a service, the key information management device is able to reduce, for example, registration with a service using a vehicle by a user of the vehicle, other than an owner user, (for example, a member of a family of an owner user, a close friend of an owner user, or the like) without permission.

[0011] In the above-described aspect, the information processing device may be configured to transmit information related to the predetermined service to the mobile terminal having the unique information corresponding to the owner user in response to a request from the mobile terminal, and the predetermined service may correspond to the permission associated with the unique information corresponding to the owner user.

[0012] According to this aspect, the key information management device is able to transmit information related to a registered service to a terminal of an owner user in response to a request from the terminal having unique information corresponding to the owner user, that is, a request from the terminal of the owner user. For this reason, an owner user is allowed to see information related to registered services (for example, a list of registered services, a use schedule of a vehicle that is used by the services, and the like) that are displayed on a display, or the like, of a terminal. Therefore, the key information management device is able to cause an owner user to monistically see information related to registered services.

[0013] In the above-described aspect, the information processing device may be configured to store the permission for each user of the vehicle in association with the unique information corresponding to the owner user, the information processing device may be configured to transmit information related to a user of the vehicle, other than the owner user, to the mobile terminal having the unique information corresponding to the owner user in response to a request from the mobile terminal, and the user of the vehicle, other than the owner user, may correspond to the permission associated with the unique information corresponding to the owner user.

[0014] According to this aspect, the key information management device is able to transmit information related to a user of a vehicle, other than an owner user, who uses a registered service to a terminal of the owner user in response to a request from the terminal

of the owner user. For this reason, an owner user is allowed to see information related to users of a vehicle, other than the owner user, who use registered services (for example, a list of users of various services, a use schedule of a vehicle over all the users, and the like) that are displayed on a display, or the like, of a terminal. Therefore, the key information management device is able to cause an owner user to monistically see information related to users of registered services (users of a vehicle, other than the owner user).

[0015] A second aspect of the disclosure may be implemented by a key information management method that is executed by a key information management device. The key information management method includes: delivering key information to a mobile terminal as the mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle; and registering permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to deliver the key information to a mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle, as an external device concerned with the predetermined service transmits a predetermined request signal.

[0016] A third aspect of the disclosure may be implemented by a non-transitory computer-readable recording medium on which a key information management program is recorded. The key information management program causes an information processing device to execute instructions for: delivering key information to a mobile terminal as the mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle; and registering permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to deliver the key information to a mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle, as an external device concerned with the predetermined service transmits a predetermined request signal.

[0017] According to the above-described aspects, it is possible to provide a key information management device, a key information management method, and a

non-transitory computer-readable recording medium on which a key information management program is recorded, which are able to prevent registration with a service using a vehicle by a third party in bad faith without permission and usage of a vehicle by a third party in bad faith without permission through a service registered without permission.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] Features, advantages, and technical and industrial significance of exemplary embodiments of the disclosure will be described below with reference to the accompanying drawings, in which like numerals denote like elements, and wherein:

FIG. 1 is a diagram that shows an example of the overall configuration of an authentication key management system;

FIG. 2 is a block diagram that mainly shows an example of components related to locking and unlocking of a vehicle in the authentication key management system;

FIG. 3 is a block diagram that mainly shows an example of components related to a key sharing service in the authentication key management system;

FIG. 4 is a block diagram that mainly shows an example of components related to a trunk delivery service in the authentication key management system;

FIG. 5 is a block diagram that mainly shows an example of components related to a C2C car sharing service in the authentication key management system;

FIG. 6 is a block diagram that mainly shows an example of components related to a B2C car sharing service in the authentication key management system;

FIG. 7 is a flowchart that schematically shows an example of a service registration process that is executed by a center server;

FIG. 8 is a view that schematically shows an example of a user and service registration information DB;

FIG. 9 is a flowchart that schematically shows an example of a service use status information providing process that is executed by the center server; and

FIG. 10 is a view that shows specific examples of service use status images that are displayed on a display of a mobile terminal of an owner user.

DETAILED DESCRIPTION OF EMBODIMENTS

[0019] Hereinafter, an embodiment of the disclosure will be described with reference to the accompanying drawings.

Overall Configuration of Authentication Key Management System

[0020] FIG. 1 is a diagram that shows an example of the overall configuration of an authentication key management system according to the present embodiment.

[0021] The authentication key management system 1 includes vehicles 10, mobile terminals 20, a center server 30, and service management servers 40.

[0022] Each vehicle 10 is able to carry out wireless communication within a relatively close range (a range to such an extent that communication is available between the inside of a vehicle cabin and the outside of the vehicle cabin) to the mobile terminals 20 (hereinafter, referred to as near-field communication) in conformity with predetermined communication standards. Each vehicle 10 is an object of which doors are locked or unlocked and that is started (ignition is turned on) based on a transmission signal (an authentication request, a lock request, or an unlock request, which will be described later) from one of the mobile terminals 20. The doors of each vehicle 10 may include not only passenger doors but also a luggage compartment door (for example, a trunk lid, a back door, or the like) for accessing a trunk (luggage compartment). Turning on the ignition (IG-ON) of each vehicle 10 may include not only startup of an engine in the vehicle 10 that uses the engine as a main power source but also power on of an electric motor in the vehicle 10 that uses an electric motor as a main power source. Hereinafter, in the present embodiment, description will be made on the assumption that each vehicle 10 uses an engine 117 (described later) as a main power source, a start (IG-ON) of each vehicle 10 corresponds to a startup of the engine 117 and a stop (IG-OFF) of each vehicle 10 corresponds to a stop of the engine 117.

[0023] The vehicles 10 are communicably connected to the center server 30 through a predetermined communication network (for example, a mobile telephone network having a large number of base stations as terminals, the Internet, or the like).

Each vehicle 10 transmits location information to the center server 30, as will be described later.

[0024] The vehicles 10 include a privately-owned vehicle 10A and a vehicle 10B owned by a B2C car sharing service provider.

[0025] The mobile terminals 20 are communicably connected to the center server 30 through a predetermined communication network (for example, a mobile telephone network having a large number of base stations as terminals, the Internet, or the like). Each mobile terminal 20 is able to unlock or lock the intended vehicle 10 by acquiring authentication key information (an example of key information; hereinafter, referred to as authentication key) that is delivered from the center server 30 and transmitting the acquired authentication key by relatively close-range wireless communication in response to a predetermined operation of a user. Each mobile terminal 20 may be, for example, a general cellular phone, a smartphone, or a tablet terminal. Each mobile terminal 20 may implement the above-described function by launching a predetermined application program (hereinafter, referred to as key application) that is installed onto a built-in processing device 23, as will be described later. Each mobile terminal 20 may be a portable special-purpose terminal specialized to acquire an authentication key from the center server 30, and to unlock the doors of the intended vehicle 10 and start the intended vehicle 10 with the use of the acquired authentication key. The mobile terminals 20 include mobile terminals 20Aa, 20Ab, 20Ac, 20Ad corresponding to the vehicle 10A, and a mobile terminal 20B corresponding to the vehicle 10B.

[0026] The mobile terminal 20Aa is a mobile terminal owned by an owner (owner user) among regular users of the vehicle 10A. The mobile terminal 20Aa may be bidirectionally communicable with the mobile terminal 20Ab by relatively close-range wireless communication.

[0027] The mobile terminal 20Ab is a mobile terminal owned by each of the regular users other than the owner user of the vehicle 10A (for example, including a member of a family of the owner user, a close friend of the owner user, and the like; hereinafter, referred to as child users).

[0028] The child users may include a user who does not drive the vehicle 10A and a user who is not permitted to drive the vehicle 10A (for example, a child under 18 years of age of the owner user, or the like). For example, when only a trunk delivery service (described later) is used, the regular users do not need to drive the vehicle 10A.

[0029] The mobile terminal 20Ac is owned by a delivery person of a business operator that provides a trunk delivery service (described later) (hereinafter, simply referred to as delivery service provider). The mobile terminal 20Ac is communicably connected to the center server 30 and a delivery management server 50 (described later) through a predetermined communication network (for example, a mobile telephone network having a large number of base stations as terminals, the Internet, or the like).

[0030] The mobile terminal 20Ad is a mobile terminal owned by a renter of the vehicle 10A in a C2C car sharing service (described later). The mobile terminal 20Ad is communicably connected to the center server 30 and a C2C car sharing management server 70 (described later) through a predetermined network (for example, a mobile telephone network having a large number of base stations as terminals, the Internet, or the like).

[0031] The mobile terminal 20B is a mobile terminal owned by a renter of the vehicle 10B in a B2C car sharing service (described later). The mobile terminal 20B is communicably connected to the center server 30 and a B2C car sharing management server 80) through a predetermined communication network (for example, a mobile telephone network having a large number of base stations as terminals, the Internet, or the like).

[0032] The center server 30 is communicably connected to the vehicles 10, the mobile terminals 20, and the service management servers 40.

[0033] The center server 30 (an example of a key information management device) manages issuance of an authentication key of each vehicle 10. For example, the center server 30 issues an authentication key and delivers the authentication key to the intended mobile terminal 20 in response to a predetermined condition.

[0034] The center server 30 also acquires location information of each vehicle 10 from the vehicle 10. Thus, the center server 30 is able to get the location of each vehicle 10.

[0035] The center server 30 also operates a car sharing service for sharing the vehicle 10A among the plurality of regular users including the owner user of the vehicle 10A. Specifically, the center server 30 operates an authentication key sharing service (key sharing service) that each of the registered regular users, including the owner user, is allowed to acquire the authentication key of the vehicle 10A into his or her own mobile terminal 20 (the mobile terminal 20Aa or the mobile terminal 20Ab).

[0036] The center server 30 also executes a registration process for the regular users of the vehicle 10A to use a service using the vehicle 10A (the key sharing service, the trunk delivery service, the C2C car sharing service, or the like). Specifically, the center server 30 registers permission for the regular users of the vehicle 10A to use a service using the vehicle 10A. The permission is permission to deliver an authentication key to a predetermined mobile terminal 20 (hereinafter, referred to as authentication key arrangement permission) as one of a key sharing management unit 327 (described later) and the service management servers 40 transmits an authentication key arrangement request (described later) to the center server 30.

[0037] The center server 30 also manages the use of the vehicle 10A among a plurality of services (that is, a plurality of business operators), such as the trunk delivery service (described later) and the C2C car sharing service (described later).

[0038] The service management servers 40 manage operations of various services that are provided by using the vehicles 10. The service management servers 40 include the delivery management server 50 and an electronic commerce (EC) server 60 that correspond to the trunk delivery service, the C2C car sharing management server 70 that corresponds to the C2C car sharing service, and the B2C car sharing management server 80 that corresponds to the B2C car sharing service.

[0039] The trunk delivery service may include a delivery service for dealing with products ordered on an EC site (described later) as delivery items and a delivery service for dealing with items other than the products ordered on the EC site as delivery items. The latter trunk delivery service is, for example, a service that allows the regular users of the vehicle 10A to change the delivery address to the trunk of the vehicle 10A when a

notification that a package addressed to home is scheduled to be delivered has been provided from the delivery management server 50 to the regular user through an electric mail, an account of a social networking service (SNS), or a specific application program that is launched on the mobile terminal 20Aa or the mobile terminal 20Ab. Hereinafter, in the present embodiment, the former trunk delivery service will be mainly described. The operations of components related to the trunk delivery service (described later) are also applicable to the operations of components related to the latter trunk delivery service where appropriate.

[0040] The delivery management server 50 is communicably connected to the mobile terminal 20Ac and the center server 30 through a predetermined communication network. The delivery management server 50 manages operations of a logistics system associated with the trunk delivery service from receipt of a package to delivery of the package to the trunk of the vehicle 10A.

[0041] The delivery service provider that operates the delivery management server 50 may provide the regular users of the vehicle 10A with not only the trunk delivery service but also a pickup service that allows the trunk to be designated as a pickup address for a package (hereinafter, referred to as trunk pickup service). That is, the delivery management server 50 may manage operations of the trunk pickup service instead of or in addition to the trunk delivery service. In this case, a package that is a pickup item may be a product that is returned to an operator of the EC site (or a shop opened on the EC site) corresponding to the EC server 60 (that is, a product purchased on the EC site) or may be a package for delivery irrelevant to the EC site. The trunk pickup service may be realized as a pickup service at the time when a business operator that provides a service for temporarily keeping an article from a customer (for example, a business operator, such as a commercial laundry) picks up a package from the regular user of the vehicle 10A. In this case, a pickup management server that manages operations of the trunk pickup service, which may be included in the service management servers 40, as well as the delivery management server 50, may be provided by a commercial laundry provider. That is, the pickup management server may be provided instead of or in addition to the delivery

management server 50. A business operator that provides a service for collecting a predetermined article (an article, such as junk and a second-hand book that a customer desires to sell) from a customer (for example, a recycle service provider, an antique buyer, or the like) provides the regular users of the vehicle 10A with a collection service that allows the trunk to be designated as a collection address of an article that is a collection item (hereinafter, referred to as trunk collection service). In this case, a collection management server that manages operations of the trunk collection service, which may be included in the service management servers 40, as well as the delivery management server 50, may be provided by a recycle service provider, or the like. That is, the collection management server may be provided instead of or in addition to the delivery management server 50.

[0042] The EC server 60 is communicably connected to the center server 30 and the delivery management server 50 through a predetermined communication network, and operates a predetermined website (EC site) that sells products or services. Specifically, the EC server 60 displays the trunk of the vehicle 10A as a choice for delivery address on an order page of the EC site for the pre-registered regular users of the vehicle 10A and the delivery service provider (the delivery service provider corresponding to the delivery management server 50). Thus, the regular users of the vehicle 10A are allowed to get delivery of purchased products to the trunk of the vehicle 10A even when the regular users are not at home.

[0043] The C2C car sharing management server 70 is communicably connected to the mobile terminal 20Ad and the center server 30. The C2C car sharing management server 70 manages operations of the C2C car sharing service, such as receiving registration of a rentable date and time of the vehicle 10A from the owner user, receiving a reservation for use from a person who wants to rent the vehicle 10A, and arrangements for the authentication key of the vehicle 10A. The C2C car sharing management server 70 may manage operations of a C2C trunk sharing service for renting the cabin or trunk of the privately-owned vehicle 10A as a temporary luggage storage, a delivery address for a package, or the like.

[0044] The B2C car sharing management server 80 is communicably connected to the mobile terminal 20B and the center server 30. The B2C car sharing management server 80 manages operations of the B2C car sharing service, such as receiving a reservation for use of the vehicle 10B and making arrangements for a parking location of the vehicle 10B and the authentication key of the vehicle 10B. The B2C car sharing management server 80 may manage operations of a B2C trunk sharing service for renting the cabin or trunk of the vehicle 10B as a temporary luggage storage or a delivery address for a package.

[0045] The service management servers 40 may include a company car management server that operates a car sharing service (company car management service) that the vehicle 10 that is a company car of a company is intended for a reservation for use and an employee of the company is a borrower, instead of or in addition to the B2C car sharing management server 80. At this time, when there is an idle time period of the vehicle 10 that is a company car, the company car management server may operate a C2C car sharing service that the vehicle 10 that is a company car is intended for rent. The delivery management server 50 and the EC server 60 may operate a trunk delivery service that allows the trunk of the vehicle 10 that is a company car of a company to be designated as a delivery address for a package that is delivered to the company.

Detailed Components Related to Locking and Unlocking of Vehicle and Starting of Vehicle

[0046] Next, components related to locking and unlocking of each vehicle 10 and starting of each vehicle 10 in the authentication key management system 1 will be described with reference to FIG. 2.

[0047] FIG. 2 is a block diagram that mainly shows an example of components related to locking and unlocking of each vehicle 10 and starting of each vehicle 10 in the authentication key management system 1. Each vehicle 10 includes a lock/unlock and start device 11, a key unit 12, a GPS module 13, and a data communication module (DCM) 14.

[0048] The lock/unlock and start device 11 is installed on the vehicle 10, and locks or unlocks the doors of the vehicle 10 in response to a lock signal or unlock signal

that is transmitted from the key unit 12 as radio waves of a radio-frequency (RF) band (for example, 300 MHz to 3 GHz) (hereinafter, referred to as RF radio waves). The lock/unlock and start device 11 starts the vehicle 10 in response to an exchange of radio waves of a low-frequency (LF) band (for example, 30 Hz to 300 kHz) (hereinafter, referred to as LF radio waves) and RF radio waves with the key unit 12 with a trigger set to a depressing operation of a start switch (not shown) provided in the cabin of the vehicle 10. The lock/unlock and start device 11 includes an LF radio wave transmitter 111, an RF radio wave receiver 112, a collation electronic control unit (ECU) 113, a body ECU 114, door lock motors 115, an engine ECU 116, and the engine 117 that is a driving force source of the vehicle 10.

[0049] The lock/unlock and start device 11 is activated by electric power that is supplied from an auxiliary battery (not shown) mounted on the vehicle 10.

[0050] The LF radio wave transmitter 111 is incorporated in, for example, a center console or a door handle in the cabin, and transmits LF radio waves under control of the collation ECU 113.

[0051] The RF radio wave receiver 112 is provided in, for example, a trim in the trunk of the vehicle 10, and receives RF radio waves under control of the collation ECU 113.

[0052] The collation ECU 113 is an electronic control unit that controls locking and unlocking of the doors of the vehicle 10 and starting of the vehicle 10 based on an exchange of signals with the key unit 12. The collation ECU 113 is implemented by hardware, software, or a combination of hardware and software. For example, the collation ECU 113 is mainly formed of a microcomputer including a central processing unit (CPU), a random access memory (RAM), a read only memory (ROM), an auxiliary storage device, a real time clock (RTC), and a communication interface. The collation ECU 113 implements various control processes by executing various programs stored in the ROM or the auxiliary storage device on the CPU. Hereinafter, the same applies to a key ECU 124 (described later).

[0053] The collation ECU 113 receives an unlock signal and a lock signal that are

transmitted from the key unit 12 as RF radio waves with the use of the RF radio wave receiver 112.

[0054] When the collation ECU 113 has received the unlock signal or the lock signal, the collation ECU 113 authenticates the source (key unit 12) of the unlock signal or lock signal based on key information (hereinafter, referred to as internal key information) included in the unlock signal or the lock signal. For example, when internal key information that is registered in advance in an internal memory, such as the auxiliary storage device, matches the internal key information included in the unlock signal or the lock signal, the collation ECU 113 determines that authentication is successful. On the other hand, when those pieces of internal key information do not match each other, the collation ECU 113 determines that authentication has failed.

[0055] For example, the collation ECU 113 may transmit LF radio waves, including "challenge" generated by a predetermined method by utilizing the internal key information of the internal memory, from the LF radio wave transmitter 111 toward the key unit 12, and may perform challenge-response authentication based on "response" that has been returned from the key unit 12 and that is received by the RF radio wave receiver 112.

[0056] When authentication is successful, the collation ECU 113 transmits an unlock instruction (upon reception of the unlock signal) or a lock instruction (upon reception of the lock signal) to the body ECU 114 through an in-vehicle network, such as a controller area network (CAN).

[0057] As will be described later, in the unlock signal, only part of the doors of the vehicle 10 may be designated as a door to be unlocked. In this case, the collation ECU 113 designates the door(s) to be unlocked with the unlock instruction. Thus, the body ECU 114 is able to unlock part of the doors by activating only the door lock motor(s) 115 corresponding to the designated part of the doors.

[0058] When the start switch has been depressed, the collation ECU 113 authenticates the key unit 12 by exchanging signals with the key unit 12 with the use of the LF radio wave transmitter 111 and the RF radio wave receiver 112.

[0059] For example, the collation ECU 113 transmits an LF-band request signal

for requesting a reply of the internal key information from the LF radio wave transmitter 111 toward the key unit 12. When the response signal including the internal key information has been received from the key unit 12 by the RF radio wave receiver 112, the collation ECU 113 determines whether authentication is successful or authentication has failed based on matching between the internal key information registered in the internal memory in advance and the internal key information included in the response signal, as in the case of locking or unlocking of the doors.

[0060] For example, the collation ECU 113 may perform challenge-response authentication, as in the case of locking or unlocking of the doors.

[0061] When authentication is successful, the collation ECU 113 transmits an instruction to start the engine 117 to the engine ECU 116 through the in-vehicle network, such as the CAN.

[0062] The body ECU 114 is an electronic control unit that controls actuation of each of the door lock motors 115 that are communicably connected to the body ECU 114 via one-to-one communication lines, or the like. The body ECU 114 outputs a control instruction to cause the door lock motors 115 to perform unlocking action in response to the unlock instruction from the collation ECU 113. The body ECU 114 also outputs a control instruction to cause the door lock motors 115 to perform locking action in response to the lock instruction from the collation ECU 113.

[0063] Each of the door lock motors 115 is a known electric actuator that unlocks or locks a corresponding one of the doors of the vehicle 10 in response to a control instruction from the body ECU 114.

[0064] The engine ECU 116 is an electronic control unit that controls the drive of the engine 117. Specifically, the engine ECU 116 controls the drive of various actuators, such as a starter and an injector, mounted on the engine 117. When a start instruction has been input from the collation ECU 113, the engine ECU 116 causes the engine 117 to start by outputting a control instruction to the various actuators, such as the starter and injector of the engine 117.

[0065] The key unit 12 is disposed in the cabin of the vehicle 10. The key unit

12 transmits any one of the unlock signal and the lock signal as RF radio waves to the lock/unlock and start device 11 in response to a corresponding one of the unlock request and the lock request, which is transmitted from the mobile terminal 20. In addition, at the time when the start switch provided in the cabin of the vehicle 10 has been depressed, the key unit 12 exchanges signals with the lock/unlock and start device 11 in response to an LF-band signal that is transmitted from the lock/unlock and start device 11. The key unit 12 includes an LF radio wave receiver 121, an RF radio wave transmitter 122, a communication device 123, and the key ECU 124.

[0066] The key unit 12 may be disposed at a location at which the key unit 12 is difficult to be visually recognized from users seated on respective seats of the vehicle 10 (for example, inside a glove box or center console box, or the like). The key unit 12 may be fixed to the vehicle 10 or may be not fixed. The key unit 12 may be actuated by a built-in button battery, or the like, or may be actuated by electric power that is supplied from an auxiliary battery mounted on the vehicle 10.

[0067] The LF radio wave receiver 121 receives LF radio waves under control of the key ECU 124.

[0068] The RF radio wave transmitter 122 transmits RF radio waves under control of the key ECU 124.

[0069] The communication device 123 is any device that carries out near-field communication with the mobile terminals 20 under control of the key ECU 124. The communication device 123 may be, for example, a BLE communication module that carries out communication with the mobile terminals 20 in conformity with the BLE communication standards. The BLE is an abbreviation of Bluetooth low energy. Bluetooth is a registered trademark. Hereinafter, description will be made on the assumption that the communication standards employed in the communication device 123 adhere to BLE communication.

[0070] The communication device 123 may be a communication device that adheres to close-range communication standards for a significantly short communicable range, such as near-field communication (NFC) standards. In this case, the

communication device 123 may be incorporated at a location close to a body surface outside the cabin of the vehicle 10 (that is, for example, a location inside a door handle). Thus, even when a communicable range of the communication device 123 is significantly short, the key unit 12 (key ECU 124) is able to carry out communication with the mobile terminals 20 outside the cabin.

[0071] The key ECU 124 is an electronic control unit that executes a control process of transmitting any one of the lock signal and the unlock signal to the lock/unlock and start device 11 in response to a corresponding one of the lock request and the unlock request, which is received from the mobile terminal 20.

[0072] The key ECU 124 receives an authentication request including an authentication key associated with the key unit 12 from the mobile terminal 20 through the communication device 123.

[0073] When an authentication request including the authentication key associated with the key unit 12 has been received from the mobile terminal 20, the key ECU 124 authenticates the mobile terminal 20 based on the authentication key. When the authentication is successful, the key ECU 124 reconstitutes the internal key information stored in the internal memory, such as the auxiliary storage device, into a usable state. The internal key information is stored in a state where the internal key information is not usable as a use for authentication in the lock/unlock and start device 11, such as an inaccessible state and an encrypted state. For this reason, when authentication of the mobile terminal 20 is successful, the key ECU 124, for example, changes access permission to the internal memory for changing the key information into an accessible state or decodes the encrypted internal key information based on the authentication key. Thus, the key ECU 124 is able to transmit an unlock signal or lock signal, including the internal key information, to the lock/unlock and start device 11 by accessing the normally inaccessible internal key information, or transmit an unlock signal or lock signal, including the decoded internal key information, to the lock/unlock and start device 11. For this reason, the lock/unlock and start device 11 is able to perform appropriate authentication based on the internal key information included in the unlock signal or the lock signal.

Even if there occurs a situation in which a third party in bad faith illegally gets hold of the key unit 12, since the internal key information in the key unit 12 is, for example, inaccessible or encrypted, it is possible to reduce occurrence of a theft of the vehicle 10.

[0074] The key ECU 124 also receives an unlock request and a lock request from the mobile terminal 20 through the communication device 123. When authentication of the mobile terminal 20 is successful (specifically, after authentication of the mobile terminal 20 is successful, BLE communication is continuously established) and the key ECU 124 has received an unlock request or a lock request from the mobile terminal 20, the key ECU 124 transmits an unlock signal or lock signal, including lock/unlock key information, to the lock/unlock and start device 11 through the RF radio wave transmitter 122.

[0075] Thus, after an authentication process in the lock/unlock and start device 11, the doors of the vehicle 10 are unlocked or locked.

[0076] As described above, at the time when the start switch provided in the cabin of the vehicle 10 has been depressed, the key ECU 124 exchanges signals with the lock/unlock and start device 11 in response to an LF-band signal that is transmitted from the lock/unlock and start device 11.

[0077] For example, when the request signal has been received from the lock/unlock and start device 11 by the LF radio wave receiver 121, the key ECU 124 transmits a response signal including the internal key information stored in the internal memory, or the like, toward the lock/unlock and start device 11 through the RF radio wave transmitter 122.

[0078] For example, when LF radio waves including "challenge" have been received from the lock/unlock and start device 11 by the LF radio wave receiver 121, the key ECU 124 generates "response" based on the internal key information, and transmits the "response" to the lock/unlock and start device 11 through the RF radio wave transmitter 122.

[0079] Thus, after the authentication process in the lock/unlock and start device 11, the engine 117 is started.

[0080] Permission related to the function of locking or unlocking the vehicle 10 or starting the vehicle 10 may be defined in the authentication key. The permission is assigned by the center server 30.

[0081] For example, when the authentication key has the permission to unlock only part of the doors of the vehicle 10, the key ECU 124 transmits an unlock signal, including information that designates the door(s) to be unlocked, to the key unit 12 through the RF radio wave transmitter 122. Thus, as described above, only part of the doors of the vehicle 10 may be unlocked.

[0082] For example, when the authentication key has no permission to start the engine 117, the key ECU 124 just needs to be configured not to exchange signals with the lock/unlock and start device 11 even when an LF-band signal from the lock/unlock and start device 11 based on a depressing operation of the start switch has been received by the LF radio wave receiver 121. Thus, it is possible to prohibit start of the engine 117 in accordance with the permission of the authentication key.

[0083] The GPS module 13 receives GPS signals that are transmitted from three or more, desirably four or more satellites above the vehicle 10, and measures the location of the vehicle 10. The GPS module 13 is communicably connected to the DCM 14, or the like, through the in-vehicle network, such as a one-to-one communication line and the CAN. The measured location information of the vehicle 10 is input to the DCM 14, or the like.

[0084] The DCM 14 is a communication device that bidirectionally carries out communication with the center server 30 through a predetermined communication network. The DCM 14 transmits the current location information of the vehicle 10, which is input from the GPS module 13, to the center server 30 at prescribed timing or in response to a request, or the like, from the center server 30. The DCM 14 transmits various pieces of vehicle information to the center server 30. Examples of the various pieces of vehicle information include information that the doors of the vehicle 10 have been unlocked based on the authentication key or the vehicle 10 has been started based on the authentication key. The various pieces of vehicle information are acquired through the in-vehicle network,

such as the CAN, at prescribed timing or in response to a request, or the like, from the center server 30.

[0085] Each mobile terminal 20 includes a communication device 21, a communication device 22, a processing device 23, and a touch panel display (hereinafter, simply referred to as display) 24.

[0086] The communication device 21 is any device that carries out near-field communication with the vehicle 10 in accordance with the same communication standards as the communication device 123. As described above, the communication device 21 is, for example, a BLE communication module in the case of the present embodiment.

[0087] The communication device 22 is any device that carries out communication with the center server 30, the service management servers 40, and the like, through a predetermined communication network. The communication device 22 is, for example, a mobile communication module that conforms to communication standards, such as long term evolution (LTE), 4th generation (4G) and 5th generation (5G).

[0088] The processing device 23 executes various control processes in the mobile terminal 20. The functions of the processing device 23 may be implemented by hardware, software, or a combination of hardware and software. The processing device 23 includes, for example, a CPU, a RAM, a ROM, an auxiliary storage device, an RTC, various interfaces for communication, and the like. The processing device 23 includes, for example, a communication processing unit 231, a communication processing unit 232, an authentication key acquisition unit 233, an authentication requesting unit 234, and a lock/unlock requesting unit 235, as functional units that are implemented by executing one or more programs stored in the ROM or the auxiliary storage device on the CPU. The processing device 23 also includes, for example, a storage unit 230 that is implemented as a storage area in the auxiliary storage device. A process of saving (storing) various data in the storage unit 230 is implemented by a predetermined program stored in the ROM or the auxiliary storage device.

[0089] The communication processing unit 231 bidirectionally carries out near-field communication with the key unit 12 with the use of the communication device

21, and transmits or receives various signals.

[0090] The communication processing unit 232 establishes connection with a predetermined communication network with the use of the communication device 22, and transmits or receives various signals, such as data signals and control signals, with the center server 30, the service management servers 40, and the like.

[0091] The authentication key acquisition unit 233, for example, acquires an authentication key from the center server 30 and saves the acquired authentication key in the storage unit 230 in response to a predetermined operation of the user to a predetermined graphical user interface (GUI) that is displayed on the display 24. Hereinafter, description will be made on the assumption that various operations to the mobile terminal 20 are made by operations to GUI that is displayed on the display 24 in synchronization with the operation of the key application.

[0092] For example, the authentication key acquisition unit 233 of the mobile terminal 20Aa transmits an authentication key acquisition request to the center server 30 via the communication processing unit 232. Thus, the center server 30 receives the authentication key acquisition request, and, when the center server 30 determines that the authentication key acquisition request is a regular authentication key acquisition request, issues an authentication key. The authentication key acquisition unit 233 acquires the authentication key that is delivered from the center server 30 via the communication processing unit 232.

[0093] For example, the authentication key acquisition unit 233 of the mobile terminal 20Ab acquires an authentication key that is delivered from the center server 30 to the mobile terminal 20Ab via the communication processing unit 232 in response to a key sharing request (described later) that is transmitted from the mobile terminal 20Aa to the center server 30.

[0094] The authentication key acquisition unit 233 of the mobile terminal 20Ab by itself may transmit an authentication key acquisition request to the center server 30 via the communication processing unit 232. In this case, when the center server 30 has received the authentication key acquisition request from the mobile terminal 20Ab, the

center server 30 just needs to make an inquiry to the mobile terminal 20Aa of the owner user about whether to allow delivery of the authentication key.

[0095] For example, the authentication key acquisition unit 233 of the mobile terminal 20Ac transmits an authentication key acquisition request to acquire an authentication key to the delivery management server 50. For example, the authentication key acquisition unit 233 of the mobile terminal 20Ad transmits an authentication key acquisition request to acquire an authentication key to the C2C car sharing management server 70. For example, the authentication key acquisition unit 233 of the mobile terminal 20B transmits an authentication key acquisition request to acquire an authentication key to the B2C car sharing management server 80. Thus, each of the delivery management server 50, the C2C car sharing management server 70, and the B2C car sharing management server 80 transmits an authentication key arrangement request to the center server 30 in response to reception of an authentication key acquisition request, and the center server 30 issues an authentication key in response to reception of the authentication key arrangement request. The authentication key acquisition unit 233 acquires the authentication key that is delivered from the center server 30 via the communication processing unit 232.

[0096] The authentication key acquisition unit 233 of each of the mobile terminals 20Ac, 20Ad, 20B may transmit an authentication key acquisition request to the center server 30 through the communication processing unit 232. In this case, the center server 30 may determine whether the authentication key acquisition request is a regular authentication key acquisition request by making an inquiry to a corresponding one of the delivery management server 50, the C2C car sharing management server 70, and the B2C car sharing management server 80.

[0097] The authentication requesting unit 234 transmits an authentication request to authenticate the mobile terminal 20 to the key unit 12 of the vehicle 10 via the communication processing unit 231. The mobile terminal 20 serves as a remote operating unit for locking or unlocking the doors of the vehicle 10. For example, when the authentication requesting unit 234 has found a key unit corresponding to an authentication

key, specifically, when an advertising packet corresponding to the key unit 12 has been received by the communication processing unit 231, the authentication requesting unit 234 may transmit an authentication request to the key unit 12. For example, the authentication requesting unit 234 may transmit an authentication request to the key unit 12 in response to a predetermined operation of the user.

[0098] The lock/unlock requesting unit 235 transmits an unlock request including an authentication key or a lock request including an authentication key to the key unit 12 via the communication processing unit 231 in response to a predetermined operation of the user. Thus, even when an unlock request or a lock request has been transmitted to the key unit 12 before an authentication request is transmitted by the authentication requesting unit 234, the doors of the vehicle 10 may be locked or unlocked based on the authentication process in the key unit 12. For example, the GUI that is an operation screen of the display 24 may contain an unlock button for issuing a request to unlock the vehicle 10 and a lock button for issuing a request to lock the vehicle 10, a lock request may be transmitted with the touch of the lock button, and an unlock request may be transmitted with the touch of the unlock button. A lock request and an unlock request may be transmitted as a result of an operation to a predetermined hardware operating unit provided in the mobile terminal 20.

[0099] For example, the functions of the authentication key acquisition unit 233, authentication requesting unit 234, and lock/unlock requesting unit 235 may be configured to be available to the user by launching a predetermined application program that is installed on the ROM, auxiliary storage device, or the like, of the processing device 23. Hereinafter, description will be made on the assumption that the functions of the authentication key acquisition unit 233, authentication requesting unit 234, and lock/unlock requesting unit 235 of the processing device 23 become available to the user by launching the key application installed on the processing device 23 (the auxiliary storage device or the ROM).

[0100] The center server 30 includes a communication device 31 and a processing device 32.

[0101] The functions of the center server 30 may be implemented by a plurality of servers in a distributed manner. Hereinafter, this also applies to the delivery management server 50, the EC server 60, the C2C car sharing management server 70, and the B2C car sharing management server 80.

[0102] The communication device 31 is any device that bidirectionally carries out communication with each of the vehicles 10, the mobile terminals 20, and the service management servers 40 through a predetermined communication network.

[0103] The processing device 32 executes various control processes in the center server 30. The functions of the processing device 32 may be implemented by hardware, software, or a combination of hardware and software. The processing device 32 is mainly formed of one or plurality of server computers each including, for example, a CPU, a RAM, a ROM, an auxiliary storage device, an RTC, a predetermined communication interface, and the like. Hereinafter, this also applies to a processing device 52 (described later) of the delivery management server 50, a processing device 62 (described later) of the EC server 60, a processing device 72 (described later) of the C2C car sharing management server 70, and a processing device 82 (described later) of the B2C car sharing management server 80. The processing device 32 includes, for example, a communication processing unit 321, a condition determination unit 322, and an authentication key issuance unit 323 as functional units that are implemented by executing one or more programs saved in the ROM or the auxiliary storage device on the CPU. The processing device 32 also includes, for example, a storage unit 320 that is implemented as a storage area defined in the auxiliary storage device of the corresponding server computer, an external storage device that is connected to the corresponding server computer, or other storage devices. A process of saving (storing) various data in the storage unit 320 is implemented by a program stored in the ROM or the auxiliary storage device. Hereinafter, this also applies to storage units 520, 620, 720, 820 (described later).

[0104] The communication processing unit 321 controls the communication device 31, and exchanges various signals, such as control signals and information signals, with each of the vehicles 10, the mobile terminals 20, and the service management servers

40.

[0105] The condition determination unit 322 determines whether an authentication key acquisition request is a regular authentication key acquisition request in response to reception of the authentication key acquisition request, received by the communication processing unit 321, from the mobile terminal 20. The condition determination unit 322 also determines whether an authentication key arrangement request is a regular authentication key arrangement request in response to reception of the authentication key arrangement request from any one of the service management servers 40.

[0106] When the condition determination unit 322 determines that the authentication key acquisition request is a regular authentication key acquisition request or determines that the authentication key arrangement request is a regular authentication key arrangement request, the authentication key issuance unit 323 (an example of a key information delivery unit) identifies the specifications of an authentication key to be issued, and issues an authentication key corresponding to the identified specifications. For example, the authentication key issuance unit 323 identifies the vehicle 10 intended to be locked or unlocked with an authentication key or identifies the key unit 12, or the like, corresponding to the intended vehicle 10. For example, the authentication key issuance unit 323 also identifies the permission of the authentication key on an effective (available) period of the authentication key and the number of times the authentication key is available. For example, the authentication key issuance unit 323 also identifies the permission of the authentication key for unlocking the vehicle 10 or starting the vehicle 10, such as which door is allowed to be locked or unlocked and whether the vehicle 10 is allowed to be started. For example, the authentication key issuance unit 323 also identifies the permission of the authentication key on temporary key sharing, such as whether the authentication key is allowed to be shared with another one of the mobile terminals 20 through temporary key sharing (described later), a period during which the authentication key is allowed to be shared with another one of the mobile terminals 20, and the number of times the authentication key is allowed to be shared with another one of the mobile

terminals 20. Hereinafter, the permission of the authentication key on an available period, the available number of times, and the like, the permission of the authentication key for unlocking the vehicle 10 or starting the vehicle 10, and the permission of the authentication key on temporary key sharing are collectively simply referred to as various types of permission of the authentication key. The authentication key issuance unit 323 delivers the authentication key issued for the intended mobile terminal 20 via the communication processing unit 321.

Details of Components Related to Key Sharing Service

[0107] Next, components related to the key sharing service in the authentication key management system 1 will be described with reference to FIG. 3.

[0108] FIG. 3 is a block diagram that mainly shows an example of components related to the key sharing service in the authentication key management system 1. Hereinafter, for FIG. 3, components related to the key sharing service in the authentication key management system 1 will be mainly described, and the overlap description of components that overlap with the above-described components related to locking and unlocking of the vehicle 10 and starting of the vehicle 10 is omitted as much as possible. Hereinafter, the same applies to the description of FIG. 4 to FIG. 6.

[0109] As described above, the processing device 23 of the mobile terminal 20Aa owned by the owner user of the vehicle 10A includes the communication processing unit 231, the communication processing unit 232, the authentication key acquisition unit 233, the authentication requesting unit 234, and the lock/unlock requesting unit 235. The processing device 23 of the mobile terminal 20Aa further includes a user registration requesting unit 236, a service registration requesting unit 237, a service use status requesting unit 238, and a key sharing requesting unit 239.

[0110] In the present embodiment, description will be made on the assumption that the functions of the user registration requesting unit 236, service registration requesting unit 237, service use status requesting unit 238 and key sharing requesting unit 239 of the mobile terminal 20Aa become available to the owner user when the key application is launched and user authentication based on bidirectional communication with

the center server 30 is successful. Description will be made on the assumption that the user authentication is performed on the center server 30 based on an ID prescribed for the owner user (hereinafter, referred to as owner user ID) and a password corresponding to the owner user ID.

[0111] The user registration requesting unit 236 requests registration of a regular user of the vehicle 10A, who uses various services using the vehicle 10A (the key sharing service, the trunk delivery service, and the C2C car sharing service), to the center server 30 in response to a predetermined operation of the owner user. For example, the user registration requesting unit 236 transmits a user registration request including the owner user ID, the password, and attribute information that identifies a child user to be registered (for example, a name, an age, a relation with the owner user, and the like) to the center server 30 via the communication processing unit 232.

[0112] When a notification that registration of the child user has completed (user registration completion notification) has been received from the center server 30 by the communication processing unit 232, the user registration requesting unit 236 saves an ID of the child user (hereinafter, referred to as child user ID) and a password, included in the user registration completion notification, in the storage unit 230. At this time, the user registration requesting unit 236 may transmit the child user ID and the password to the mobile terminal 20Ab owned by the registered child user via the communication processing unit 231 in response to a predetermined operation of the owner user.

[0113] The service registration requesting unit 237 requests registration of the regular users of the vehicle 10A with various services using the vehicle 10A to the center server 30 in response to a predetermined operation of the owner user. That is, as described above, the service registration requesting unit 237 requests registration of authentication key arrangement permission of the key sharing management unit 327 and service management servers 40 corresponding to various services, for the regular users of the vehicle 10A to use the various services. For example, the service registration requesting unit 237 transmits the owner user ID, the password, information that identifies the vehicle 10A that is used in various services, information that identifies an intended

service, and a service registration request including the ID of the regular user who uses the intended service (the owner user ID or the child user ID) to the center server 30 via the communication processing unit 232. Hereinafter, the owner user ID and the child user ID may be collectively referred to as regular user IDs. Thus, the service registration requesting unit 237 is able to register a child user who uses the key sharing service in the center server 30.

[0114] The service registration requesting unit 237 receives a notification that registration with a service based on the service registration request has completed from at least one of the center server 30 and the service management servers 40 with the use of the communication processing unit 232. The service registration requesting unit 237 causes the display 24 to display the fact that registration of the regular user of the vehicle 10A with a specific service based on a predetermined operation of the owner user has completed. Thus, the owner user is informed of the fact that registration of the regular user with the specific service has completed.

[0115] The service use status requesting unit 238 requests information related to the use statuses of various services, including the key sharing service, with which the regular user of the vehicle 10A has registered in association with the owner user ID (service use status information), to the center server 30 in response to a predetermined operation of the owner user. For example, the service use status requesting unit 238 transmits a service use status request including the owner user ID and the password to the center server 30 via the communication processing unit 232. When the service use status information has been received from the center server 30 by the communication processing unit 232, the service use status requesting unit 238 displays the service use status information on the display 24. Thus, the owner user is able to monistically see information related to the use statuses of various services with which the regular users register in the center server 30 in association with the owner user ID.

[0116] The key sharing requesting unit 239 requests delivery of an authentication key for locking or unlocking the vehicle 10A or starting the vehicle 10A to the child user registered with the key sharing service, to the center server 30 in response to a

predetermined operation of the owner user. For example, the key sharing requesting unit 239 transmits a key sharing request to the center server 30 via the communication processing unit 232. The key sharing request includes the owner user ID, the password, information related to the vehicle 10A to be locked or unlocked with the use of the authentication key, information related to the intended child user to deliver (share) the authentication key to (for example, the child user ID). At this time, the key sharing request may include use period information related to an available period of the authentication key to be delivered (for example, a use start date and time, a use end date and time, or the like), which is set by a predetermined operation of the owner user. The key sharing request may also include permission information related to various types of permission of authentication keys, which may be designated in response to a predetermined operation of the owner user. The various types of permission of the authentication keys include the permission of an authentication key on an available period, the available number of times, or the like, the permission of an authentication key for unlocking the vehicle or starting the vehicle, the permission of an authentication key on temporary key sharing (described later), and the like. Thus, as will be described later, when the owner user sets appropriate permission information in the case where an authentication key available at the same time is shared between the plurality of mobile terminals 20, usage of the vehicle 10A by a user other than the owner user is able to be limited. For this reason, it is possible to improve the security of the vehicle 10A.

[0117] The key sharing requesting unit 239 may request delivery of authentication keys of which available periods conflict with each other to the center server 30 in response to a predetermined operation of the owner user while the mobile terminals 20 (that is, each of which is at least one of the mobile terminals 20Aa, 20Ab) of the plurality of regular users of the vehicle 10A are set for delivery destinations. That is, in the key sharing request, a plurality of regular users to which authentication keys are delivered may be designated, and the plurality of regular users may include the owner user. In the key sharing request, available periods of authentication keys for a plurality of regular users to be designated may conflict with each other. Thus, an authentication key

of the vehicle 10A available at the same time may be shared between the plurality of regular users. For this reason, for example, when two or more persons get on the vehicle 10A and go on a trip or go camping, each of the passengers is allowed to, for example, lock or unlock the vehicle 10A without lending or borrowing the mobile terminal 20 in which the authentication key is saved, so it is possible to improve convenience of the users.

[0118] The key sharing requesting unit 239 may share the already delivered authentication key with another one of the mobile terminals 20 (that is, the mobile terminal 20 onto which the key application is installed) in response to a predetermined operation of the owner user (hereinafter, a manner of sharing the authentication key is referred to as temporary key sharing). At this time, another one of the mobile terminals 20 may be the mobile terminal 20Ab of the child user or may be the mobile terminal 20 of a user other than the child user, that is, a user who temporarily uses the vehicle 10A.

[0119] For example, the key sharing requesting unit 239 transmits the authentication key (specifically, a copy of the authentication key) to another one of the mobile terminals 20 through the communication processing unit 231. Thus, even when two or more persons suddenly decide to get on the vehicle 10A to go on a trip, or the like, the owner user of the vehicle 10A is allowed to share the authentication key with another user. In addition, the mobile terminal 20Aa is directly able to share the authentication key available to another one of the mobile terminals 20 at the same time. For this reason, for example, even when the mobile terminal 20Aa is located in a place of a poor communication condition in a wireless mobile communication network or outside a communication range, the owner user of the vehicle 10A is allowed to share the authentication key with another user.

[0120] At this time, the key sharing requesting unit 239 may transmit an authentication key to another one of the mobile terminals 20 through the communication processing unit 231, and the authentication key has limited permission of the authentication key on an available period or the available number of times or limited permission for unlocking the vehicle 10A or starting the vehicle 10A. Each time of permission is set based on a predetermined operation of the owner user or defined in

advance. Specifically, for example, an authentication key with permission that limits an available period to 30 minutes, or the like, or that limits the available number of times to once, or the like, or an authentication key with permission that limits doors to be locked or unlocked to doors for getting on or off the vehicle 10A only or that prohibits the vehicle 10A from starting may be transmitted to another one of the mobile terminals 20. Hereinafter, this also applies to the case of temporary key sharing that is performed via the center server 30. Thus, it is possible to improve the security of the vehicle 10A in temporary key sharing.

[0121] When temporary key sharing is performed, the key sharing requesting unit 239 may cause the center server 30 to deliver an authentication key to another one of the mobile terminals 20 as in the case of normal key sharing. At this time, the key sharing requesting unit 239 may cause the center server 30 to deliver the authentication key of the vehicle 10A to another one of the mobile terminals 20 by transmitting a temporary key sharing request, including information that identifies the delivered authentication key (for example, an issued ID embedded in the authentication key, or the like) and information that designates another one of the mobile terminals 20 as a delivery destination, to the center server 30 through the communication processing unit 232.

[0122] For example, when another one of the mobile terminals 20 is the mobile terminal 20Ab of the child user, the key sharing requesting unit 239 may transmit a temporary key sharing request including the child user ID to the center server 30 through the communication processing unit 232.

[0123] For example, the key sharing requesting unit 239 also acquires predetermined identification information (for example, a QR code (registered trademark) corresponding to the user of another one of the mobile terminals 20, who is registered in the center server 30 as an installed user of the key application) from the another one of the mobile terminals 20 through the communication processing unit 231, or the like. The key sharing requesting unit 239 may transmit a temporary key sharing request that designates another one of the mobile terminals 20, which is identified based on the identification information, as a delivery destination to the center server 30.

[0124] The mobile terminal 20Aa may acquire the identification information with another method. For example, the mobile terminal 20Aa may acquire identification information corresponding to the user of another one of the mobile terminals 20 by recognizing identification information that is displayed on the display 24 of the another one of the mobile terminals 20 with the use of an onboard camera function. For example, the mobile terminal 20Aa may also acquire identification information transmitted from the user of another one of the mobile terminals 20 to a mail address or SNS account of the owner user.

[0125] For example, the key sharing requesting unit 239 also transmits a candidate terminal information request to the center server 30 through the communication processing unit 232 in response to a predetermined operation of the owner user. The candidate terminal information request is to request candidate terminal information related to a candidate terminal that is a candidate of another one of the mobile terminals 20 and that is located around a current location of the mobile terminal 20Aa. When the candidate terminal information has been received from the center server 30 by the communication processing unit 232, the key sharing requesting unit 239 also causes the display 24 to display the candidate terminal information. At this time, the candidate terminal information that is returned from the center server 30 may include information that identifies a candidate terminal on which a specific operation or action is being performed among the candidate terminals. Thus, the owner user of the vehicle 10A is allowed to identify another one of the mobile terminals 20, intended for key sharing, from among the candidate terminals that are displayed on the display 24 of the mobile terminal 20Aa as the user of the another one of the mobile terminals 20 performs a specific operation or action on the another one of the mobile terminals 20. The key sharing requesting unit 239 may transmit a temporary key sharing request that designates the another one of the mobile terminals 20, identified from among the candidate terminals, as a delivery destination to the center server 30 in response to a predetermined operation of the owner user.

[0126] The key sharing requesting unit 239 may also transmit link information based on a uniform resource locator (URL) scheme for launching the key application and

causing another one of the mobile terminals 20 to acquire an authentication key from the center server 30 (hereinafter, simply referred to as link information) to a mail address or SNS account of the user of the another one of the mobile terminals 20 through the communication processing unit 232 in response to a predetermined operation of the owner user. At this time, the key sharing requesting unit 239 transmits a temporary key sharing request that designates the acquired authentication key to the center server 30 through the communication processing unit 232 in response to a predetermined operation of the owner user, and acquires link information that is returned from the center server 30 in response to the temporary key sharing request. Thus, the key sharing requesting unit 239 is able to deliver an authentication key from the center server 30 to another one of the mobile terminals 20.

[0127] Temporary key sharing may be configured to be executable from the mobile terminal 20Ab of the child user, to which the authentication key has been already delivered. That is, the functions of the key sharing requesting unit 239, related to temporary key sharing, may be included in the functions of the key application that is installed onto the processing device 23 of the mobile terminal 20Ab of the child user. Thus, even in the case where two or more persons except the owner user get on the vehicle 10A, it is not necessary to lend or borrow the mobile terminal 20Ab of the child user who has already acquired the authentication key among the two or more persons, so it is possible to further improve the convenience of the child user of the vehicle 10A. Hereinafter, description will be made on the assumption that temporary key sharing is available from the mobile terminal 20Ab of the child user.

[0128] As described above, the processing device 32 of the center server 30 includes the communication processing unit 321, the condition determination unit 322, the authentication key issuance unit 323, and the storage unit 320. The processing device 32 (an example of an information processing device) of the center server 30 includes, for example, a location information management unit 324, a schedule management unit 325, a registration management unit 326, and the key sharing management unit 327 as functional units that are implemented by executing one or more programs stored in the ROM or the

auxiliary storage device on the CPU.

[0129] When the communication processing unit 321 has received an authentication key acquisition request from any one of the mobile terminals 20Aa, 20Ab, the condition determination unit 322 performs authentication based on the regular user ID and the password, included in the authentication key acquisition request. For example, the condition determination unit 322 compares the regular user ID and password registered in the storage unit 320 with the regular user ID and password included in the authentication key acquisition request. When the registered regular user ID and password match the regular user ID and password included in the authentication key acquisition request, the condition determination unit 322 determines that authentication is successful, that is, the authentication key acquisition request is a regular authentication key acquisition request.

[0130] The condition determination unit 322 also determines whether an authentication key arrangement request that is transferred from the key sharing management unit 327 (described later) is a regular authentication key arrangement request. For example, when authentication is successful based on authentication information (for example, the ID and the password) included in the authentication key arrangement request from the key sharing management unit 327, the condition determination unit 322 may determine that the authentication key arrangement request is a regular authentication key arrangement request.

[0131] When the condition determination unit 322 determines that the authentication key acquisition request is a regular authentication key acquisition request or the authentication key arrangement request is a regular authentication key arrangement request, the authentication key issuance unit 323 issues an authentication key, and delivers the authentication key to the intended mobile terminal 20 through the communication processing unit 321.

[0132] The location information management unit 324 acquires location information from the vehicle 10A via the communication processing unit 321, and keeps track of a travel status of the vehicle 10A by monitoring the location information of the vehicle 10A in real time. Thus, for example, the location information management unit

324 is able to inform the owner user of the location information of the vehicle 10A lent to the child user via the communication processing unit 321. For example, the location information management unit 324 is able to inform the mobile terminal 20Ab of the child user of information, such as whether the vehicle 10A scheduled to be lent to the child user is heading toward a designated location (home, or the like) and how long does it take to get to the designated location, via the communication processing unit 321.

[0133] The schedule management unit 325 manages the use of the vehicle 10A in various services. For example, the schedule management unit 325 periodically acquires a use schedule of the vehicle 10A in the key sharing service, specifically, information related to an available date and time of the authentication key that is delivered by the key sharing service, from the key sharing management unit 327. The schedule management unit 325 also acquires a use schedule of the vehicle 10A in each of the trunk delivery service and the C2C car sharing service from the delivery management server 50 and the C2C car sharing management server 70 via the communication processing unit 321. The schedule management unit 325 generates information related to a use schedule of the vehicle 10A over a plurality of services (vehicle use schedule information) based on the acquired use schedule of the vehicle 10A in the various services, and updates old vehicle use schedule information saved in the storage unit 320.

[0134] The registration management unit 326 registers the regular user (child user) who uses various services in response to a user registration request that is received from the mobile terminal 20Aa of the owner user by the communication processing unit 321. For example, the registration management unit 326 compares the owner user ID and password included in the user registration request from the mobile terminal 20Aa with the owner user ID and password saved in the storage unit 320. When the owner user ID and password included in the user registration request match the saved owner user ID and password, the registration management unit 326 determines that the user registration request is a regular user registration request, that is, authentication is successful. The registration management unit 326 registers the child user ID included in the regular user registration request in a user and service registration information database (DB) in the

storage unit 320 as a regular user who is allowed to use various services.

[0135] The registration management unit 326 (an example of a registration unit) registers the regular user of the vehicle 10A with various services in response to a service registration request that is received from the mobile terminal 20Aa of the owner user by the communication processing unit 321. That is, the registration management unit 326 registers authentication key arrangement permission of the key sharing management unit 327 and service management servers 40 corresponding to various services in response to the service registration request. The authentication key arrangement permission is permission for the user of the vehicle 10A to use the various services. For example, the registration management unit 326 determines whether the service registration request is a regular service registration request by executing an authentication process similar to the above-described process based on the owner user ID and password included in the service registration request from the mobile terminal 20Aa. When the service registration request is a regular service registration request, the registration management unit 326 also determines whether the regular user ID included in the service registration request has been already registered in the user and service registration information DB. When the regular user ID included in the service registration request has been already registered in the user and service registration information DB, the registration management unit 326 registers an intended service, which is identified by the service registration request, in the user and service registration information DB in the storage unit 320 as a service available to the regular user corresponding to the regular user ID.

[0136] Specifically, the registration management unit 326 constructs the user and service registration information DB that associates service unique information, vehicle unique information, the regular user ID, and service link information with the owner user ID. The service unique information identifies an intended service. The vehicle unique information identifies the vehicle 10A. The regular user ID identifies the regular user who uses a service. The service link information associates the vehicle unique information and the regular user ID, corresponding to the vehicle 10A, with the intended service.

[0137] The service unique information is, for example, a service ID that is defined for each service. Specifically, for example, when there is a plurality of business operators that provide the C2C car sharing service, a service ID unique to each of the business providers is defined. For example, when the same business operator provides a plurality of C2C car sharing services, an ID unique to each of the services that the same business operator provides is defined. When the trunk delivery service is provided by a combination between a plurality of delivery service providers and a plurality of EC business operators, a unique service ID may be defined for each combination of a delivery service provider and an EC business operator, or an intended service may be identified by a combination of a unique service ID that is defined for each of a plurality of delivery service providers and a unique service ID that is defined for each of the plurality of EC business operators.

[0138] The vehicle unique information may be any information as long as the vehicle unique information is able to identify the vehicle 10A to be locked or unlocked or to be started with an authentication key. The vehicle unique information may be, for example, identification information, such as a vehicle ID and a VIN, that is defined for each vehicle 10A. The vehicle unique information may be, for example, identification information, such as a key unit ID, that is defined for each in-vehicle device, such as the key unit 12, that is related to locking or unlocking of doors or starting of the vehicle 10A based on an authentication key and that is mounted on the vehicle 10A. Hereinafter, description will be made on the assumption that the vehicle unique information is a key unit ID.

[0139] The service link information is information that is required to cause the authentication key issuance unit 323 to issue an authentication key and deliver the authentication key to the intended mobile terminal 20 as any one of the key sharing management unit 327, the delivery management server 50 and EC server 60, and the C2C car sharing management server 70 that respectively manage various services transmits an authentication key arrangement request. That is, the authentication key issuance unit 323 is able to identify the vehicle 10A to be locked or unlocked or to be started with an

authentication key and issue an appropriate authentication key by receiving an authentication key arrangement request including service link information from any one of the key sharing management unit 327, the delivery management server 50 and EC server 60, and the C2C car sharing management server 70.

[0140] The service link information may be any information as long as the service link information is able to associate an intended service with the vehicle 10A and a user who uses the service in the center server 30. Examples of the service link information may include a login ID of a regular user on each of user-oriented websites for various services corresponding to the key sharing management unit 327, the delivery management server 50, the EC server 60, and the C2C car sharing management server 70 (hereinafter, referred to as service login ID for the sake of convenience). In this case, the service registration requesting unit 237 of the mobile terminal 20Aa transmits a service registration request including the service login IDs of a regular user to be registered, corresponding to various services, to the center server 30 via the communication processing unit 232. When a regular user to be registered has not acquired service login IDs corresponding to various services yet, the processing device 23 of the mobile terminal 20Aa may launch a predetermined browser and cause the regular user to acquire service login IDs of the websites for the various services. Thus, when a user (a regular user of the vehicle 10A) logs onto a website at the time of requesting an intended service, the delivery management server 50 or the C2C car sharing management server 70 is able to find a service login ID corresponding to service link information and easily arrange for an authentication key related to provision of the service. Hereinafter, description will be made on the assumption that the service link information related to the trunk delivery service and the C2C car sharing service is the above-described service login ID.

[0141] In the case of a regular user who regularly uses the plurality of vehicles 10A, the center server 30 is able to identify the regular user but is not able to identify the vehicle 10A with only the service login ID. For this reason, the service link information includes not only a service login ID but also information for indirectly identifying the vehicle 10A (for example, information obtained by encrypting vehicle unique information

in a predetermined manner, or the like).

[0142] When the registration management unit 326 has completed registration with various services, the registration management unit 326 provides a notification of the completion to the mobile terminal 20Aa or the mobile terminal 20Ab, corresponding to a regular user to be registered, via the communication processing unit 321. When the registration management unit 326 has completed registration with various services, the registration management unit 326 also provides a service registration completion notification including service link information to any one of the key sharing management unit 327 and the service management servers 40, which manages operations of the registered service.

[0143] A notification of completion of registration with various services to the mobile terminal 20Aa or the mobile terminal 20Ab may be transmitted from any one of the service management servers 40, which has received a service registration completion notification.

[0144] When the communication processing unit 321 has received a service use status request from the mobile terminal 20Aa, the registration management unit 326 generates service use status information based on the user and service registration information DB of the storage unit 320, the vehicle use schedule information that is managed by the schedule management unit 325, and the like, and delivers the service use status information to the mobile terminal 20Aa via the communication processing unit 321.

[0145] The key sharing management unit 327 manages operations of the key sharing service.

[0146] For example, the key sharing management unit 327 arranges for an authentication key to the mobile terminal 20Aa or mobile terminal 20Ab corresponding to a regular user ID that is designated by a key sharing request in response to the key sharing request that is received from the mobile terminal 20Aa of the owner user by the communication processing unit 321. Specifically, the key sharing management unit 327 compares the owner user ID and password included in the key sharing request with the owner user ID and password saved in the storage unit 320. When the owner user ID and

password included in the key sharing request match the saved owner user ID and password, the key sharing management unit 327 determines that the key sharing request is a regular key sharing request. The key sharing management unit 327 also makes an inquiry to the schedule management unit 325, and determines whether there is inconsistency between use period information included in the key sharing request and the latest vehicle use schedule information, that is, whether there is a date and time conflict in relation to usage of the vehicle 10A among a plurality of services, and a plurality of regular users. When there is no date and time conflict, the key sharing management unit 327 transfers an authentication key arrangement request to the authentication key issuance unit 323. The authentication key arrangement request includes information related to a regular user and the vehicle 10A, and permission information, which are identified from information included in the key sharing request. The regular user corresponds to the mobile terminal 20Aa or the mobile terminal 20Ab, which is a delivery destination of an authentication key. The vehicle 10A is to be locked or unlocked or to be started with the authentication key. The permission information includes information about an available period of the intended mobile terminal 20Aa or mobile terminal 20Ab, the number of times the intended mobile terminal 20Aa or mobile terminal 20Ab is available, unlockable doors of the intended mobile terminal 20Aa or mobile terminal 20Ab, whether the intended mobile terminal 20Aa or mobile terminal 20Ab is allowed to start the vehicle 10A, and the like. Thus, the authentication key issuance unit 323 is able to identify the regular user ID corresponding to the mobile terminal 20Aa or mobile terminal 20Ab, which is a delivery destination of an authentication key, and the vehicle 10A to be locked or unlocked or to be started with an authentication key, and issue an appropriate authentication key.

[0147] The key sharing management unit 327 also checks, for example, attribute information (for example, an age, whether the user has a driver's license, and the like) of the user of the mobile terminal 20Aa or mobile terminal 20Ab, which is a delivery destination of an authentication key and which is designated by the key sharing request. The attribute information is stored in the storage unit 320. When the user of the mobile terminal 20Aa or mobile terminal 20Ab, which is a delivery destination of an

authentication key (the regular user of the vehicle 10A), is a user that is determined not to be able to drive the vehicle 10A, the key sharing management unit 327 issues an authentication key, with permission not allowing the user to start the vehicle 10A, to the mobile terminal 20 of the user. Examples of the user who is not allowed to drive the vehicle 10A include a user who has not reached a minimum driving age for a driver's license, and a user who has no driver's license. Specifically, the key sharing management unit 327 transfers an authentication key arrangement request to the authentication key issuance unit 323, and the authentication key arrangement request includes permission information that corresponds to the mobile terminal 20Aa or mobile terminal 20Ab, corresponding to the user who is determined to be not allowed to drive the vehicle 10A, and that includes an instruction to prohibit the vehicle 10A from starting. Thus, since the authentication key issuance unit 323 is able to deliver an authentication key with permission to prohibit the vehicle 10A from starting, to the mobile terminal 20Aa or mobile terminal 20Ab of the user who is not allowed to drive the vehicle 10A, it is possible to improve the security of the vehicle 10A in the key sharing service.

[0148] For example, the key sharing management unit 327 delivers the authentication key of the vehicle 10A to another one of the mobile terminals 20, designated by the temporary key sharing request, based on the temporary key sharing request that is received from the mobile terminal 20Aa of the owner user by the communication processing unit 321. Specifically, the key sharing management unit 327 identifies an ID of an installed user (hereinafter, referred to as installed user ID) corresponding to another one of the mobile terminals 20, which is a delivery destination, based on an installed user information DB of the key application, stored in the storage unit 320. The key sharing management unit 327 transfers the authentication key arrangement request including the identified installed user ID and information corresponding to the authentication key designated by the temporary key sharing request (for example, an issued ID of the authentication key included in the temporary key sharing request, or the like) to the authentication key issuance unit 323. Thus, the authentication key issuance unit 323 is able to identify another one of the mobile terminals 20, which is a delivery destination,

based on the installed user ID, the issued ID of the authentication key, and the like, and deliver the authentication key to the another one of the mobile terminals 20 via the communication processing unit 321.

[0149] The functions of the key sharing management unit 327 may be transferred to a server outside the center server 30 (key sharing management server), as well as the other services using the vehicle 10A. The key sharing management server may be included in the service management servers 40.

[0150] As described above, the mobile terminal 20Ab owned by the child user includes the communication processing unit 231, the communication processing unit 232, the authentication key acquisition unit 233, the authentication requesting unit 234, the lock/unlock requesting unit 235, and the storage unit 230.

[0151] In the present embodiment, description will be made on the assumption that the function of the authentication key acquisition unit 233 of the mobile terminal 20Ab becomes available to the child user as the key application is launched and user authentication based on bidirectional communication with the center server 30 is successful. Description will be made on the assumption that the user authentication is performed on the center server 30 based on the child user ID and the password. Description will be made on the assumption that the functions of the authentication requesting unit 234, lock/unlock requesting unit 235, and the like, of the mobile terminal 20Ab become available to the child user as the key application is launched.

[0152] As described above, the authentication key acquisition unit 233 acquires an authentication key that is delivered from the center server 30 in response to a key sharing request that is transmitted from the mobile terminal 20Aa to the center server 30 via the communication processing unit 232. Thus, the mobile terminal 20Ab is able to lock or unlock the doors of the vehicle 10A and start the vehicle 10A based on the functions of the communication processing unit 231, authentication requesting unit 234 and lock/unlock requesting unit 235. That is, with the key sharing service, the child user who owns the mobile terminal 20Ab is allowed to directly use the vehicle 10A, for example, lock or unlock the vehicle 10A or drive the vehicle 10, with the use of the mobile

terminal 20Ab without handing over a key to or from the owner user. Similarly, the owner user is allowed to lend the vehicle 10A to the child user without handing over a key to or from the child user. For this reason, it is possible to improve convenience in lending or borrowing the vehicle 10A between the owner user and child user of the vehicle 10A with the key sharing service in the authentication key management system 1.

[0153] As described above, the authentication key acquisition unit 233 acquires an authentication key that is delivered from the center server 30 in response to a temporary key sharing request that is transmitted from the mobile terminal 20Aa to the center server 30 via the communication processing unit 232. This also applies to the case where an authentication key is delivered to the mobile terminal 20 other than the mobile terminal 20Ab of the child user in response to a temporary key sharing request. Thus, the other mobile terminals 20 including the mobile terminal 20Ab are able to lock or unlock the doors of the vehicle 10A or start the vehicle 10A based on the functions of the communication processing unit 231, authentication requesting unit 234 and lock/unlock requesting unit 235. That is, for example, when two or more persons including another regular user get on the vehicle 10A and go out, and even when the child user who owns the mobile terminal 20Ab has not acquired an authentication key in advance, the child user is not required to borrow the mobile terminal 20Aa or mobile terminal 20Ab to which the authentication key has been delivered, and is allowed to directly use the vehicle 10A, for example, lock or unlock the vehicle 10A or drive the vehicle 10A, with the use of the mobile terminal 20Ab. Similarly, even when the owner user has not made the mobile terminal 20Ab of the child user acquire an authentication key in advance, the owner user does not need to lend the own mobile terminal 20Aa to the child user. For this reason, it is possible to improve the convenience of users in the case where two or more persons including a regular user of the vehicle 10A get on the vehicle 10A and use the vehicle 10A with temporary key sharing in the authentication key management system 1.

Details of Components Related to Trunk Delivery Service

[0154] Next, components related to the trunk delivery service in the authentication key management system 1 will be described with reference to FIG. 4.

[0155] FIG. 4 is a block diagram that mainly shows an example of components related to the trunk delivery service in the authentication key management system 1. Hereinafter, for FIG. 4, components related to the trunk delivery service in the authentication key management system 1 will be mainly described, and the overlap description of components that overlap with the components related to the above-described key sharing service is omitted as much as possible.

[0156] As described above, the processing device 23 of the mobile terminal 20Aa owned by the owner user of the vehicle 10A includes the communication processing unit 232, the user registration requesting unit 236, the service registration requesting unit 237, and the service use status requesting unit 238.

[0157] As described above, the user registration requesting unit 236 requests registration of the regular user (child user) of the vehicle 10A, who uses various services including the trunk delivery service, to the center server 30 in response to a predetermined operation of the owner user.

[0158] As described above, the service registration requesting unit 237 requests registration of each registered regular user (the owner user or the child user) with various services including the trunk delivery service to the center server 30 in response to a predetermined operation of the owner user.

[0159] For example, the service registration requesting unit 237 transmits a service registration request for using the trunk delivery service to the center server 30. The service registration request includes a service login ID of a website for users who use the service of the delivery management server 50 (hereinafter, referred to as delivery site) and a service login ID of an EC site as service link information. The service login IDs correspond to the regular user of the vehicle 10A, who is to be registered.

[0160] As described above, the service use status requesting unit 238 requests information related to the use statuses of various services, including the trunk delivery service, by the regular users of the vehicle 10A, who have been registered in association with the owner user ID (service use status information), to the center server 30 in response to a predetermined operation of the owner user.

[0161] The delivery management server 50 includes a communication device 51 and the processing device 52.

[0162] The communication device 51 is any device that bidirectionally carries out communication with each of the mobile terminals 20, the center server 30, and the EC server 60 through a predetermined communication network.

[0163] The processing device 52 includes, for example, a communication processing unit 521, a service cooperation registration unit 522, a delivery accepting unit 523, and a delivery management unit 524 as functional units that are implemented by executing one or more programs stored in the ROM or the auxiliary storage device on the CPU. The processing device 52 also includes the storage unit 520 that is implemented as a storage area, such as the auxiliary storage device of the server computer.

[0164] The communication processing unit 521 controls the communication device 51, and exchanges various signals, such as control signals and information signals, with each of the mobile terminals 20, the center server 30, and the EC server 60.

[0165] The service cooperation registration unit 522 registers information for cooperation between the center server 30 and the delivery management server 50, related to usage of the trunk delivery service by the regular users of the vehicle 10A, in response to a service registration completion notification that is received from the center server 30 by the communication processing unit 521.

[0166] For example, the service cooperation registration unit 522 adds a flag to a service login ID (service link information) included in a service registration completion notification in a user management DB for managing users on the delivery site constructed in the storage unit 520. The flag indicates that the user corresponding to the service login ID is a user of the trunk delivery service. At the same time, the service cooperation registration unit 522 registers the service login ID included in the service registration completion notification in the user management DB of the storage unit 520 in association with a service login ID of the website corresponding to the EC server 60 (that is, EC site). The service login ID of the EC site is included in the service registration completion notification. Thus, when an order including a service login ID has been received from the

EC server 60 by the communication processing unit 521, the delivery management server 50 is able to identify the corresponding service login ID of the delivery site. The delivery management server 50 is able to cause the center server 30 to deliver an authentication key to the mobile terminal 20Ac of a delivery person, as will be described later, by transmitting an authentication key arrangement request including the identified service login ID to the center server 30.

[0167] The delivery accepting unit 523 receives information related to a request to deliver a package (delivery request information), including the service login ID of the EC site, from the EC server 60 via the communication processing unit 521. The service login ID corresponds to an orderer of a product on the EC site. The delivery request information that is received from the EC server 60 includes not only basic information, such as a name, address and telephone number of an orderer of a delivery address but also information related to a designated delivery address (delivery address information), information related to a designated delivery date and time (delivery date and time information), and the like.

[0168] The delivery management unit 524 manages operations of processes from receipt to delivery related to a delivery request received by the delivery accepting unit 523.

[0169] For example, as the delivery management unit 524 receives a notification that a package has arrived at a sales office that is in charge of a parking location of the vehicle 10A designated by the delivery address information of a delivery request, the delivery management unit 524 determines a date and time of departure for delivery of the package, a delivery person in charge, and the like, in accordance with the designated delivery time period.

[0170] Subsequently, the delivery management unit 524 makes an inquiry about the location information of the vehicle 10A to the center server 30 via the communication processing unit 521 before departure of the package (for example, 10 minutes before scheduled departure time). At this time, the inquiry includes a service login ID (that is, service link information) of the regular user of the vehicle 10A on the delivery site. The regular user of the vehicle 10A is a user of the trunk delivery service. This also applies to

an inquiry about location information (described later). The delivery management unit 524 acquires the current location information of the vehicle 10A from the center server 30 via the communication processing unit 521, and determines whether delivery is possible based on matching with the designated parking location, a relationship with an area in charge, and the like.

[0171] Subsequently, when the delivery management unit 524 determines that the package is deliverable, the delivery management unit 524 transmits a notification that the package is deliverable to the trunk of the vehicle 10A (deliverable notification), to the mobile terminal 20Ac of a delivery person via the communication processing unit 521.

[0172] Subsequently, as the communication processing unit 521 receives an authentication key acquisition request from the mobile terminal 20Ac that has received the deliverable notification, the delivery management unit 524 determines whether the authentication key acquisition request is a regular authentication key acquisition request. Specifically, the delivery management unit 524 may carry out the determination by comparing information related to a package to be delivered (hereinafter, delivery item information for the sake of convenience) with various pieces of information related to the package, registered in the storage unit 520. The delivery item information includes, for example, a delivery person, a delivery address (for example, a name or legal name of a recipient, or the like), the type of the package, a delivery time period, and a delivery place, which may be included in the authentication key acquisition request, As the delivery management unit 524 determines that the authentication key acquisition request is a regular authentication key acquisition request, the delivery management unit 524 transmits an authentication key arrangement request to the center server 30 via the communication processing unit 521. At this time, the authentication key arrangement request includes information for identifying the mobile terminal 20Ac of the delivery person. The information for identifying a delivery person may be, for example, an authentication ID for a delivery person to get user authentication in the center server 30 in order to use the functions of the key application, corresponding to the authentication key acquisition unit 233, and the like, of the mobile terminal 20Ac (hereinafter, referred to as delivery person

ID for the sake of convenience). Thus, the mobile terminal 20Ac of the delivery person is able to acquire an authentication key from the center server 30.

[0173] Subsequently, as the delivery management unit 524 receives an inquiry about the current location information of the vehicle 10A from the mobile terminal 20Ac of the delivery person who has left for delivery from a sales office via the communication processing unit 521, the delivery management unit 524 makes an inquiry about the current location information of the vehicle 10A to the center server 30. The delivery management unit 524 acquires the current location information of the vehicle 10A from the center server 30 via the communication processing unit 521, and transmits (forwards) the current location information of the vehicle 10A to the mobile terminal 20Ac of the delivery person. Thus, the on-the-road delivery person is allowed to compare the current location information of the vehicle 10A with the information related to the parking location of the vehicle 10A, designated by the delivery address information, and determine whether to deliver the package or bring back the package.

[0174] Lastly, as the delivery management unit 524 receives a delivery end notification that is received from the mobile terminal 20Ac of the delivery person who has finished delivery of the package via the communication processing unit 521, the delivery management unit 524 basically ends management of operations related to the trunk delivery service for the package. At this time, the delivery management unit 524 may provide a notification of end of delivery to the regular user of the vehicle 10A, who is a client (a purchaser of a product on the EC site) through an electric mail or a predetermined application that runs in cooperation with the delivery site and that is installed onto the mobile terminal 20Aa or the mobile terminal 20Ab.

[0175] As described above, when a door (trunk lid, or the like) for accessing the trunk of the vehicle 10A is unlocked and then locked, the DCM 14 of the vehicle 10A may determine that the delivery person has finished delivery, and may provide a notification of end of delivery to the center server 30. Thus, when the center server 30 has received the notification, the center server 30 is allowed to transmit a delivery end notification to the delivery management server 50. That is, the delivery end notification may be transmitted

from the center server 30 to the delivery management server 50.

[0176] The EC server 60 includes a communication device 61 and the processing device 62.

[0177] The communication device 61 is any device that bidirectionally carries out communication with each of the mobile terminals 20, the center server 30, and the delivery management server 50 through a predetermined communication network.

[0178] The processing device 62 includes, for example, a communication processing unit 621, a web resource transmission unit 622, a service cooperation registration unit 623, and an order receipt processing unit 624 as functional units that are implemented by executing one or more programs stored in the ROM or the auxiliary storage device on the CPU. The processing device 62 also includes the storage unit 620 that is implemented as a storage area, such as the auxiliary storage device of the server computer.

[0179] The communication processing unit 621 controls the communication device 61, and exchanges various signals, such as control signals and information signals, with each of the mobile terminals 20, the center server 30, and the delivery management server 50.

[0180] The web resource transmission unit 622 transmits resources to a browser of any one of terminals in a predetermined manner based on various pieces of information. The resources correspond to webpages to be displayed on a browser of the any one of the terminals of users who browse the EC site. The various pieces of information are resources of the EC site, and are saved in the storage unit 620. The terminals of the users include the mobile terminals 20Aa, 20Ab. The webpages that may be displayed on the EC site include a top page of the EC site, webpages corresponding to individual products that are carried on the EC site, an order input page that a user inputs various pieces of information at the time of ordering individual products, and the like. For example, the web resource transmission unit 622 transmits hypertext markup language (HTML) documents corresponding to the webpages and information under the HTML documents, such as images and moving images, to be displayed on the webpages, in parallel with each

other.

[0181] The service cooperation registration unit 623 registers information for cooperation between the center server 30 and the EC server 60, related to usage of the trunk delivery service by the regular users of the vehicle 10A, in response to a service registration completion notification that is received from the center server 30 by the communication processing unit 621. For example, the service cooperation registration unit 623 adds a flag to a service login ID included in the service registration completion notification in the user management DB for managing users on the EC site constructed in the storage unit 620. The flag indicates that the user corresponding to the service login ID is a user of the trunk delivery service. At the same time, the service cooperation registration unit 623 registers the service login ID included in the service registration completion notification in the user management DB in association with a service login ID of the website (that is, delivery site) corresponding to the delivery management server 50. The service login ID of the delivery site is included in the service registration completion notification. Thus, for example, when the communication processing unit 621 has received an inquiry, or the like, about an ordered product, including the service login ID of the delivery site, from the delivery management server 50, the EC server 60 is able to identify the corresponding service login ID of the EC site.

[0182] The order receipt processing unit 624 receives an order of a product from a user based on various input operations corresponding to the order of the product from the user on the EC site. At this time, when the trunk of the vehicle 10A has been selected as a delivery address on an order input page on the EC site, the order receipt processing unit 624 makes an inquiry about vehicle use schedule information to the center server 30 via the communication processing unit 621. Thus, the order receipt processing unit 624 is able to acquire the latest vehicle use schedule information via the communication processing unit 621, so, for example, when a designated delivery date and time already conflicts with another schedule, the order receipt processing unit 624 is able to take action, such as requesting a change of a delivery date and time.

[0183] As described above, a trunk delivery service intended for items other than

products ordered on the EC site is also conceivable. In this case, similarly, the delivery management server 50 just needs to acquire the latest vehicle use schedule information from the center server 30. Thus, when a delivery date and time of a package to the trunk of the vehicle 10A designated by a regular user of the vehicle 10A conflicts with another schedule, the delivery management server 50 is able to take action, such as requesting a change of the delivery date and time.

[0184] As described above, the processing device 32 of the center server 30 includes the communication processing unit 321, the condition determination unit 322, the authentication key issuance unit 323, the location information management unit 324, the schedule management unit 325, the registration management unit 326, and the storage unit 320.

[0185] When the condition determination unit 322 has received an authentication key arrangement request from the delivery management server 50 via the communication processing unit 321, the condition determination unit 322 determines whether the authentication key arrangement request is a regular authentication key arrangement request. For example, the condition determination unit 322 determines whether the authentication key arrangement request is a regular authentication key arrangement request based on the service login ID of the delivery site, included in the authentication key arrangement request, and predetermined authentication information (for example, an ID and a password, or the like) corresponding to the delivery management server 50.

[0186] When the condition determination unit 322 determines that the authentication key arrangement request is a regular authentication key arrangement request, the authentication key issuance unit 323 identifies the vehicle 10A corresponding to the authentication key arrangement request based on the user and service registration information DB of the storage unit 320. The authentication key issuance unit 323 issues an authentication key with limited permission that limits the number of times the authentication key is available (for example, the number of times the authentication key is available is one) and that only allows the trunk lid to be locked or unlocked for a limited time (for example, usable within only a time length of several minutes to several tens of

minutes from delivery of the authentication key). Thus, it is possible to prevent a delivery person from using the vehicle 10A without permission and improve security. The authentication key issuance unit 323 delivers an authentication key to the mobile terminal 20Ac of a delivery person via the communication processing unit 321. The delivery person is identified by the authentication key arrangement request.

[0187] For example, any method, such as a known mathematical method and a method using bidirectional communication between the center server 30 and the vehicle 10, may be employed as a method of limiting the available period of an authentication key, the number of times an authentication key is available, or the like.

[0188] The location information management unit 324 transmits a location information request to the vehicle 10A via the communication processing unit 321 in response to an inquiry about the current location of the vehicle 10A from the delivery management server 50. The inquiry is received by the communication processing unit 321. Thus, the DCM 14 of the vehicle 10A returns the location information of the vehicle 10A, which is input from the GPS module 13, to the center server 30 in response to the location information request from the center server 30. The location information management unit 324 is able to acquire the current location information of the vehicle 10A via the communication processing unit 321. The location information management unit 324 returns the current location information acquired from the vehicle 10A to the delivery management server 50 via the communication processing unit 321.

[0189] The schedule management unit 325 returns the latest vehicle use schedule information saved in the storage unit 320 to the EC server 60 via the communication processing unit 321 in response to an inquiry from the EC server 60. The inquiry is received by the communication processing unit 321.

[0190] As described above, the registration management unit 326 registers a regular user (child user) who uses various services including the trunk delivery service in response to a user registration request that is received from the mobile terminal 20Aa of the owner user by the communication processing unit 321. As described above, the registration management unit 326 also registers the regular user of the vehicle 10A with the

trunk delivery service in response to a service registration request that is received from the mobile terminal 20Aa of the owner user by the communication processing unit 321. As described above, when the registration management unit 326 has completed registration with various services including the trunk delivery service, the registration management unit 326 also provides a notification of completion of registration to the mobile terminal 20Aa or the mobile terminal 20Ab, corresponding to the regular user to be registered, via the communication processing unit 321. When the registration management unit 326 has completed registration with the trunk delivery service, the registration management unit 326 transmits a service registration completion notification including service link information to the delivery management server 50 and the EC server 60 that manage operations of the service intended for registration via the communication processing unit 321.

[0191] As described above, the processing device 23 of the mobile terminal 20Ac of a delivery person includes the communication processing unit 231, the communication processing unit 232, the authentication key acquisition unit 233, the authentication requesting unit 234, and the lock/unlock requesting unit 235.

[0192] In the present embodiment, description will be made on the assumption that the functions of the authentication key acquisition unit 233, authentication requesting unit 234, and lock/unlock requesting unit 235 of the mobile terminal 20Ac become available to the delivery person when the key application is launched.

[0193] The authentication key acquisition unit 233 transmits an authentication key acquisition request to the delivery management server 50 via the communication processing unit 232 in response to a predetermined operation of the delivery person. At this time, the authentication key acquisition request includes the above-described delivery item information saved in the storage unit 230 in advance. Thus, the delivery management server 50 transmits an authentication key arrangement request to the center server 30 in response to the authentication key acquisition request, and the center server 30 delivers an authentication key to the mobile terminal 20Ac in response to the authentication key arrangement request, with the result that the mobile terminal 20Ac

acquires the authentication key. Thus, since the mobile terminal 20Ac is able to lock or unlock the trunk lid of the vehicle 10A based on the functions of the communication processing unit 231, authentication requesting unit 234 and lock/unlock requesting unit 235, the delivery person is allowed to deliver a requested item to the trunk of the vehicle 10A, lock the trunk of the vehicle 10A as it was, and leave.

Details of Components Related to C2C Car Sharing Service

[0194] Next, components related to the C2C car sharing service in the authentication key management system 1 will be described with reference to FIG. 5.

[0195] FIG. 5 is a block diagram that mainly shows an example of components related to the C2C car sharing service in the authentication key management system 1. Hereinafter, for FIG. 5, components related to the C2C car sharing service in the authentication key management system 1 will be mainly described, and the overlap description of components that overlap with the components related to the above-described key sharing service, and the like, is omitted as much as possible.

[0196] As described above, the processing device 23 of the mobile terminal 20Aa owned by the owner user of the vehicle 10A includes the communication processing unit 232, the user registration requesting unit 236, the service registration requesting unit 237, and the service use status requesting unit 238.

[0197] As described above, the user registration requesting unit 236 requests registration of the regular user (child user) of the vehicle 10A, who uses various services including the C2C car sharing service, to the center server 30 in response to a predetermined operation of the owner user.

[0198] As described above, the service registration requesting unit 237 requests registration of each registered regular user (the owner user or the child user) with various services including the C2C car sharing service to the center server 30 in response to a predetermined operation of the owner user.

[0199] For example, the service registration requesting unit 237 transmits a service registration request for using the C2C car sharing service to the center server 30. The service registration request includes a service login ID of a website for users who use

the C2C car sharing service corresponding to the C2C car sharing management server 70 (hereinafter, referred to as C2C car sharing site) as service link information. The service login ID corresponds to the regular user of the vehicle 10A, who is to be registered.

[0200] As described above, the service use status requesting unit 238 requests information related to the use statuses of various services, including the C2C car sharing service, by the regular user of the vehicle 10A (service use status information) to the center server 30 in response to a predetermined operation of the owner user. The regular user of the vehicle 10A has been registered in association with the owner user ID.

[0201] The C2C car sharing management server 70 includes a communication device 71 and the processing device 72.

[0202] The communication device 71 is any device that bidirectionally carries out communication with each of the mobile terminals 20 and the center server 30 through a predetermined communication network.

[0203] The processing device 72 includes, for example, a communication processing unit 721, a service cooperation registration unit 722, a reservation management unit 723, and a vehicle management unit 724 as functional units that are implemented by executing one or more programs stored in the ROM or the auxiliary storage device on the CPU. The processing device 72 also includes the storage unit 720 that is implemented as a storage area, such as the auxiliary storage device of the server computer.

[0204] Description will be made on the assumption that information that identifies the vehicle 10A for rent has been already registered (saved) in the storage unit 720 through the C2C car sharing site by the regular user (owner user) of the vehicle 10A in association with a service login ID.

[0205] The communication processing unit 721 controls the communication device 71, and exchanges various signals, such as control signals and information signals, with each of the mobile terminals 20 and the center server 30.

[0206] The service cooperation registration unit 722 registers information for cooperation between the center server 30 and the C2C car sharing management server 70, related to usage of the C2C car sharing service by the regular user of the vehicle 10A, in

response to a service registration completion notification that is received from the center server 30 by the communication processing unit 721.

[0207] For example, the service cooperation registration unit 722 adds a flag to a service login ID included in a service registration completion notification in the user management DB for managing users on the C2C car sharing site constructed in the storage unit 720. The flag indicates that the user corresponding to the service login ID is a letter of the vehicle 10A in the C2C car sharing service. Thus, the C2C car sharing management server 70 is able to cause the center server 30 to deliver an authentication key to the mobile terminal 20Ad of a renter, as will be described later, by transmitting an authentication key arrangement request including a service login ID corresponding to the regular user of the vehicle 10A, who is a letter, to the center server 30.

[0208] The reservation management unit 723 manages reservations for the use of the vehicle 10A. The reservations are made through the C2C car sharing site, or the like.

[0209] For example, the reservation management unit 723 receives registration of a rentable date and time of the vehicle 10A from the regular user of the vehicle 10A through the C2C car sharing site, or the like, and registers (saves) the received rentable date and time in the storage unit 720. At this time, the reservation management unit 723 makes an inquiry about vehicle use schedule information to the center server 30 via the communication processing unit 721. Thus, the reservation management unit 723 is able to acquire the latest vehicle use schedule information via the communication processing unit 721. For this reason, for example, when the rentable date and time received from the regular user of the vehicle 10A already conflicts with another schedule, the C2C car sharing management server 70 is able to take action, such as requesting a change of the rentable date and time and registering the date and time obtained by excluding the conflicting time from the received rentable date and time as a rentable date and time.

[0210] For example, the reservation management unit 723 also receives a reservation for the use of the vehicle 10A within the rentable date and time of the vehicle 10A. The rentable date and time of the vehicle 10A is saved in the storage unit 720. As the reservation management unit 723 receives a reservation for the use of the vehicle 10A

from a user who is a renter through the C2C car sharing site, the reservation management unit 723 updates information pertaining to a rental schedule of the vehicle 10A (rental schedule information). The rental schedule information is saved in the storage unit 720.

[0211] For example, when the communication processing unit 721 has received an authentication key acquisition request from the mobile terminal 20Ad of the renter of the vehicle 10A, the reservation management unit 723 determines whether the authentication key acquisition request is a regular authentication key acquisition request. Specifically, the reservation management unit 723 may carry out the determination based on the service login ID and password of the C2C car sharing site, included in the authentication key acquisition request, and a relation with a reservation date and time (for example, whether the date and time of receipt of the authentication key acquisition request falls within the reservation date and time, whether a period of time from the date and time of receipt of the authentication key acquisition request to a start date and time is shorter than a predetermined time, or the like). When the authentication key acquisition request is a regular authentication key acquisition request, the reservation management unit 723 transmits an authentication key arrangement request to the center server 30 via the communication processing unit 721. At this time, the authentication key arrangement request includes information for identifying the mobile terminal 20Ad of the renter of the vehicle 10A. The information for identifying the renter of the vehicle 10A may be, for example, an authentication ID to get user authentication (hereinafter, referred to as renter ID for the sake of convenience) in the center server 30 in order for the renter of the vehicle 10A to use the function of the authentication key acquisition unit 233 of the mobile terminal 20Ad. Thus, the mobile terminal 20Ad of the renter of the vehicle 10A is able to acquire an authentication key from the center server 30.

[0212] The vehicle management unit 724 manages the vehicle 10A for rent.

[0213] For example, the vehicle management unit 724 makes an inquiry about the current location information of the vehicle 10A to the center server 30 via the communication processing unit 721 before a reservation date and time of the vehicle 10A (for example, a period from several tens of minutes before to just before). The vehicle

management unit 724 acquires the current location information of the vehicle 10A via the communication processing unit 721. The current location information is returned from the center server 30 in response to the inquiry. Thus, before a scheduled rental date and time (reservation date and time) of the vehicle 10A, it is possible to determine, for example, whether the vehicle 10A has returned to a designated place. For this reason, when the vehicle 10A has not returned to a designated place, the C2C car sharing management server 70 is able to take action, such as issuing an alarm to the regular user who is the letter of the vehicle 10A to return to the designated place through an electric mail or a predetermined application that cooperates with the C2C car sharing site and that is installed onto the mobile terminal 20Aa or the mobile terminal 20Ab.

[0214] As described above, the processing device 32 of the center server 30 includes the communication processing unit 321, the condition determination unit 322, the authentication key issuance unit 323, the location information management unit 324, the schedule management unit 325, the registration management unit 326, and the storage unit 320.

[0215] When the communication processing unit 321 has received an authentication key arrangement request from the C2C car sharing management server 70, the condition determination unit 322 determines whether the authentication key arrangement request is a regular authentication key arrangement request. For example, the condition determination unit 322 determines whether the authentication key arrangement request is a regular authentication key arrangement request based on service link information (a service login ID of the C2C car sharing site, or the like) included in the authentication key arrangement request or predetermined authentication information (for example, an ID and a password, or the like) corresponding to the C2C car sharing management server 70.

[0216] When the condition determination unit 322 determines that the authentication key arrangement request is a regular authentication key arrangement request, the authentication key issuance unit 323 identifies the vehicle 10A corresponding to the authentication key arrangement request based on the user and service registration

information DB of the storage unit 320. The authentication key issuance unit 323 issues an authentication key for a limited time (for example, an authentication key available only within a reservation date and time of the vehicle 10A, included in the authentication key arrangement request, and buffer periods before and after the reservation date and time). The authentication key issuance unit 323 delivers the authentication key to the mobile terminal 20Ad of the renter of the vehicle 10A via the communication processing unit 321. The renter of the vehicle 10A is identified by the authentication key arrangement request.

[0217] The C2C car sharing service may include, for example, a service for renting only the trunk of the vehicle 10A (C2C trunk sharing service). In the case of a vehicle trunk rental service, the authentication key issuance unit 323 just needs to issue an authentication key with limited permission that only allows the trunk lid to be locked or unlocked. Thus, it is possible to limit an object for rent in C2C car sharing to the trunk only. Thus, for example, a trunk delivery service for allowing a person to rent the trunk of the vehicle 10A for rent during a trip and get delivery of purchased products for use during the trip to the rented trunk may be realized.

[0218] The location information management unit 324 transmits a location information request to the vehicle 10A via the communication processing unit 321 in response to an inquiry about the current location of the vehicle 10A. The inquiry is received from the C2C car sharing management server 70 by the communication processing unit 321. Thus, the location information management unit 324 is able to acquire the current location information from the vehicle 10A via the communication processing unit 321. The location information management unit 324 returns the current location information acquired from the vehicle 10A to the C2C car sharing management server 70 via the communication processing unit 321.

[0219] The schedule management unit 325 transmits the latest vehicle use schedule information to the vehicle 10A via the communication processing unit 321 in response to the inquiry about the current location of the vehicle 10A. The inquiry is received from the C2C car sharing management server 70 by the communication processing unit 321.

[0220] As described above, the registration management unit 326 registers a regular user (child user) who uses various services including the C2C car sharing service in response to a user registration request that is received from the mobile terminal 20Aa of the owner user by the communication processing unit 321. As described above, the registration management unit 326 also registers the regular user of the vehicle 10A with the C2C car sharing service in response to a service registration request that is received from the mobile terminal 20Aa of the owner user by the communication processing unit 321. As described above, when the registration management unit 326 has completed registration with various services including the C2C car sharing service, the registration management unit 326 also provides a notification of completion of registration to the mobile terminal 20Aa or the mobile terminal 20Ab, corresponding to the regular user to be registered, via the communication processing unit 321. When the registration management unit 326 has completed registration with the C2C car sharing service, the registration management unit 326 transmits a service registration completion notification including service link information to the C2C car sharing management server 70 that manages operations of the service intended for registration.

[0221] As described above, the processing device 23 of the mobile terminal 20Ad of the renter of the vehicle 10A includes the communication processing unit 231, the communication processing unit 232, the authentication key acquisition unit 233, the authentication requesting unit 234, the lock/unlock requesting unit 235, and the storage unit 230.

[0222] The authentication key acquisition unit 233 transmits an authentication key acquisition request to the C2C car sharing management server 70 via the communication processing unit 232 in response to a predetermined operation of the renter of the vehicle 10A. At this time, the authentication key acquisition request includes a service login ID of the C2C car sharing site. The service login ID corresponds to the renter of the vehicle 10A. Thus, the C2C car sharing management server 70 transmits an authentication key arrangement request to the center server 30 in response to the authentication key acquisition request, and the center server 30 delivers an authentication

key to the mobile terminal 20Ad in response to the authentication key arrangement request, with the result that the mobile terminal 20Ad acquires the authentication key. Thus, the mobile terminal 20Ad is able to lock or unlock the doors of the vehicle 10A based on the functions of the communication processing unit 231, authentication requesting unit 234 and lock/unlock requesting unit 235. That is, with the C2C car sharing service, the renter of the vehicle 10A, who owns the mobile terminal 20Ad, is allowed to directly use the vehicle 10A, for example, lock or unlock the vehicle 10A or drive the vehicle 10A, with the use of the mobile terminal 20Ad without handing over a key to or from the regular users of the vehicle 10A. Similarly, each regular user of the vehicle 10A is allowed to rent the vehicle 10A to a person other than the regular users without handing over a key. For this reason, it is possible to improve convenience in renting the vehicle 10A between each regular user of the vehicle 10A and a person other than the regular users with the C2C car sharing service in the authentication key management system 1.

Details of Components Related to B2C Car Sharing Service

[0223] Next, components related to the B2C car sharing service in the authentication key management system 1 will be described with reference to FIG. 6.

[0224] FIG. 6 is a block diagram that mainly shows an example of components related to the B2C car sharing service in the authentication key management system 1. Hereinafter, for FIG. 6, components related to the B2C car sharing service in the authentication key management system 1 will be mainly described, and the overlap description of components that overlap with the components related to the above-described key sharing service, and the like, is omitted as much as possible.

[0225] The B2C car sharing management server 80 includes a communication device 81 and the processing device 82.

[0226] The communication device 81 is any device that bidirectionally carries out communication with each of the mobile terminal 20B and the center server 30 through a predetermined communication network.

[0227] The processing device 82 includes, for example, a communication processing unit 821, a reservation management unit 822, and a vehicle management unit

823 as functional units that are implemented by executing one or more programs stored in the ROM or the auxiliary storage device on the CPU. The processing device 82 also includes the storage unit 820 that is implemented as a storage area, such as the auxiliary storage device of the server computer.

[0228] The communication processing unit 821 controls the communication device 81, and exchanges various signals, such as control signals and information signals, with each of the mobile terminal 20B and the center server 30.

[0229] The reservation management unit 822 manages reservations for the use of the vehicle 10B. The reservations are made through the B2C car sharing site, or the like.

[0230] For example, the reservation management unit 822 receives a reservation for the use of the vehicle 10B from a user who wants to rent the vehicle 10B (hereinafter, referred to as rent user) through a website that is operated by a business operator of the B2C car sharing management server 80, or the like (hereinafter, referred to as B2C car sharing site for the sake of convenience). The reservation management unit 822 saves information related to the received reservation for the use of the vehicle 10B (use reservation information) in the storage unit 820. At this time, the use reservation information includes, for example, information that identifies the intended vehicle 10B, information related to a use reservation date and time (a start date and time and an end date and time), a service login ID of the rent user on the B2C car sharing site, and the like.

[0231] For example, each time the reservation management unit 822 receives a reservation for the use of the vehicle 10B, the reservation management unit 822 updates information related to a use schedule of the vehicle 10B (vehicle use schedule information), saved in the storage unit 820. Thus, the B2C car sharing management server 80 is able to show available dates and times for reservation to the rent user by causing the B2C car sharing site to display the use schedule of the vehicle 10B.

[0232] For example, when the communication processing unit 821 has received an authentication key acquisition request from the mobile terminal 20B, the reservation management unit 822 determines whether the authentication key acquisition request is a regular authentication key acquisition request. Specifically, the reservation management

unit 822 may carry out the determination based on the service login ID and password of the B2C car sharing site, corresponding to the rent user and included in the authentication key acquisition request, and a relation with a reservation date and time (for example, whether the date and time of receipt of the authentication key acquisition request falls within the reservation date and time, whether a period of time from the date and time of receipt of the authentication key acquisition request to a start date and time is shorter than a predetermined time, or the like). When the authentication key acquisition request is a regular authentication key acquisition request, the reservation management unit 822 transmits an authentication key arrangement request to the center server 30 via the communication processing unit 821. At this time, the authentication key arrangement request includes information for identifying the mobile terminal 20B of the rent user who rents the vehicle 10B. The information for identifying the rent user who rents the vehicle 10B may be, for example, an authentication ID to get user authentication (hereinafter, referred to as rent user ID for the sake of convenience) in the center server 30 in order for the rent user who rents the vehicle 10B to use the functions of the key application, corresponding to the authentication key acquisition unit 233, and the like, of the mobile terminal 20B. Thus, the mobile terminal 20B of the rent user who rents the vehicle 10B is able to acquire an authentication key from the center server 30.

[0233] The vehicle management unit 823 manages the vehicle 10B for rent.

[0234] For example, the vehicle management unit 823 makes an inquiry about the vehicle 10B parked around (for example, within several hundreds of meters, or the like, from) a place designated in a reservation to the center server 30 via the communication processing unit 821 before a reservation date and time of the vehicle 10B for a rent user (for example, several tens of minutes before). The vehicle management unit 823 acquires the location information of the vehicle 10B parked around the designated place via the communication processing unit 821. The location information is returned from the center server 30 in response to the inquiry. Thus, before the date and time at which the renter starts using the vehicle 10B, the vehicle management unit 823 is able to identify one or plurality of vehicles 10B parked around the designated place, and determine, for example,

which vehicle 10B to rent.

[0235] For example, the vehicle management unit 823 makes an inquiry about the location information of the vehicle 10B in a designated area to the center server 30 via the communication processing unit 821 in response to a request to search for a vehicle 10B in the designated area from the rent user on the B2C car sharing site. The vehicle management unit 823 acquires the location information of the vehicle 10B in the designated area via the communication processing unit 821. The location information is returned from the center server 30 in response to the inquiry. Thus, the vehicle management unit 823 is, for example, able to show the location information of the intended vehicle 10B to the rent user who wants to immediately rent the vehicle 10B in the designated area on the B2C car sharing site.

[0236] As described above, the processing device 32 of the center server 30 includes the communication processing unit 321, the condition determination unit 322, the authentication key issuance unit 323, and the storage unit 320.

[0237] When the communication processing unit 321 has received an authentication key arrangement request from the B2C car sharing management server 80, the condition determination unit 322 determines whether the authentication key arrangement request is a regular authentication key arrangement request. For example, the condition determination unit 322 determines whether the authentication key arrangement request is a regular authentication key arrangement request based on whether the rent user ID included in the authentication key arrangement request is the authentication ID registered in the storage unit 320 or predetermined authentication information (for example, an ID and a password, or the like) corresponding to the B2C car sharing management server 80.

[0238] When the condition determination unit 322 determines that the authentication key arrangement request is a regular authentication key arrangement request, the authentication key issuance unit 323 issues an authentication key for a limited time (for example, an authentication key available only within a reservation date and time of the vehicle 10B, included in the authentication key arrangement request, and buffer periods

before and after the reservation date and time). The authentication key issuance unit 323 delivers the authentication key to the mobile terminal 20B of the rent user who rents the vehicle 10B via the communication processing unit 321. The rent user is identified by the authentication key arrangement request.

[0239] As described above, the processing device 23 of the mobile terminal 20B of the rent user who rents the vehicle 10B includes the communication processing unit 231, the communication processing unit 232, the authentication key acquisition unit 233, the authentication requesting unit 234, the lock/unlock requesting unit 235, and the storage unit 230.

[0240] The authentication key acquisition unit 233 transmits an authentication key acquisition request to the B2C car sharing management server 80 via the communication processing unit 232 in response to a predetermined operation of the rent user who rents the vehicle 10B. At this time, the authentication key acquisition request includes a service login ID of the B2C car sharing site, or the like. The service login ID corresponds to the rent user who rents the vehicle 10B. Thus, the B2C car sharing management server 80 transmits an authentication key arrangement request to the center server 30 in response to the authentication key acquisition request, and the center server 30 delivers an authentication key to the mobile terminal 20B in response to the authentication key arrangement request, with the result that the mobile terminal 20B acquires the authentication key. Thus, the mobile terminal 20B is able to lock or unlock the doors of the vehicle 10B based on the functions of the communication processing unit 231, authentication requesting unit 234 and lock/unlock requesting unit 235. That is, with the B2C car sharing service, the rent user who rents the vehicle 10B and owns the mobile terminal 20B is allowed to directly use the vehicle 10B, for example, lock or unlock the vehicle 10B or drive the vehicle 10B, with the use of the mobile terminal 20B without handing over a key to or from the business operator, or the like, of the vehicle 10B. For this reason, it is possible to improve convenience of the rent user who rents the vehicle 10B with the B2C car sharing service in the authentication key management system 1.

Details of Characteristic Operations of Center Server

[0241] Next, the characteristic process flow of the center server 30 will be described with reference to FIG. 7 and FIG. 9.

[0242] FIG. 7 is a flowchart that schematically shows an example of a registration process for a regular user of the vehicle 10A to use the above-described various services (service registration process), which is executed by the center server 30 according to the present embodiment. A process according to this flowchart is repeatedly executed at predetermined processing intervals. Hereinafter, this also applies to the flowchart of FIG. 9.

[0243] In step S702, the registration management unit 326 determines whether the communication processing unit 321 has received a service registration request. When a service registration request has been received, the registration management unit 326 proceeds to step S704; otherwise, the registration management unit 326 ends the current process.

[0244] In step S704, the registration management unit 326 executes an authentication process using an owner user ID and password included in the service registration request received by the communication processing unit 321.

[0245] In step S706, the registration management unit 326 determines whether authentication is successful, that is, whether the service registration request is a regular service registration request. When the service registration request is a regular service registration request, the registration management unit 326 proceeds to step S708; otherwise, the registration management unit 326 proceeds to step S712.

[0246] In step S708, the registration management unit 326 registers (saves) service unique information (service ID) corresponding to an intended service, vehicle unique information (key unit ID) corresponding to a vehicle 10A, and a regular user ID (an owner user ID or a child user ID) corresponding to a regular user who uses the service in the user and service registration information DB of the storage unit 320 in association with the owner user ID included in the service registration request.

[0247] In step S710, the registration management unit 326 transmits a notification that registration with the intended service has completed (service registration completion

notification) to the key sharing management unit 327 or any one of the service management servers 40, corresponding to the intended service. Similarly, the registration management unit 326 provides a notification that registration with the intended service has completed to the mobile terminal 20Aa of the owner user and the mobile terminal 20Ab of the regular user (child user) to be registered. The registration management unit 326 ends the current process.

[0248] On the other hand, in step S712, the registration management unit 326 provides a notification that registration with the intended service is not allowed (that is, user authentication has failed) to the mobile terminal 20Aa of the owner user, and ends the current process.

[0249] For example, FIG. 8 is a view that schematically shows an example of the user and service registration information DB constructed in the storage unit 520 with the process of FIG. 7. Specifically, FIG. 8 is a view that shows a correspondence relation between an owner user ID and key unit IDs, regular user IDs, service IDs and pieces of service link information, associated with the owner user ID, which are registered in the user and service registration information DB of the storage unit 520.

[0250] In this example, the owner user owns two vehicles 10A, and one child user who is a member of the family, or the like, of the owner user is registered as a regular user who is allowed to use various services. Services that the owner user is allowed to use with the first vehicle 10A include a key sharing service, a trunk delivery service, and a C2C car sharing service, and services that the child user is allowed to use with the first vehicle 10A include the key sharing service and the trunk delivery service. Services that the owner user is allowed to use with the second vehicle 10A include the key sharing service and the trunk delivery service, and services that the child user is allowed to use with the second vehicle 10A include only the key sharing service.

[0251] In this way, the registration management unit 326 registers permission for each regular user of the vehicle 10A to use a predetermined service using the vehicle 10A in the user and service registration information DB. The permission is permission to cause the authentication key issuance unit 323 to deliver key information (authentication

key) to the mobile terminal 20Ac or the mobile terminal 20Ad, owned by a third party concerned with the service, other than each regular user of the vehicle 10A (authentication key arrangement permission) as an external device (any one of the service management servers 40, or the like) concerned with the service transmits a predetermined request signal (authentication key arrangement request).

[0252] Thus, the center server 30 by itself is able to manage permission to cause any one of the service management servers 40, concerned with the service, such as the C2C car sharing service and the trunk delivery service, to deliver an authentication key to the mobile terminal 20Ac or mobile terminal 20Ad of the third party concerned with the service, such as a renter of the vehicle 10A and a delivery person. For this reason, for example, even when authentication information, such as an ID and a password, or the like, for causing any one of the service management servers 40 to deliver an authentication key has leaked, since the ID and the password are unique to the corresponding service, it is not possible to perform registration with a new service with the use of the authentication information. In addition, the center server 30 normally often restricts access from a user other than the regular users of the vehicle 10A, and it is originally difficult for a third party in bad faith to perform registration with a service in the center server 30. Therefore, the center server 30 is able to reduce registration with a service using the vehicle 10A by a third party in bad faith without permission and usage of the vehicle 10A by a third party in bad faith without permission through a service registered without permission.

[0253] As shown in FIG. 8, the registration management unit 326 saves an intended vehicle 10A (key unit ID) that is used in a service, a regular user (regular user ID) of the vehicle 10A, who uses the service, the intended service (service ID), and service link information in the storage unit 520 in association with an owner user ID. The service link information associates the intended service with the vehicle 10A and the regular user. That is, the registration management unit 326 registers authentication key arrangement permission of each of the key sharing management unit 327 and the service management servers 40 for the regular user of the vehicle 10A to use a service using the vehicle 10A in association with an owner user ID.

[0254] Thus, the center server 30 is able to monistically manage information related to a service to be registered with an owner user ID as a source. The center server 30 is also able to manage authentication key arrangement permission in association with unique information (owner user ID) that corresponds to an owner user and that is commonly only available to the owner user. Therefore, since unique information corresponding to an owner user is required at the time of registration with a service, the center server 30 is able to reduce, for example, registration with a service using a vehicle 10A by a regular user of the vehicle 10A other than the owner user (for example, a member of a family of the owner user, a close friend of the owner user, or the like) without permission.

[0255] As shown in FIG. 8, the registration management unit 326 saves service link information for delivering an authentication key to the mobile terminal 20Ac or mobile terminal 20Ad of a third party (for example, a delivery person of the trunk delivery service or a renter of the C2C car sharing service) other than a regular user of a vehicle 10A, concerned with any one of various services, and information that identifies the vehicle 10A (key unit ID), different from the service link information, in the storage unit 520, in association with each other. Thus, the center server 30 by itself is able to manage service link information that is required for the mobile terminal 20Ac or mobile terminal 20Ad of a third party concerned with a service, such as a delivery person of the trunk delivery service and a renter of the C2C car sharing service, to acquire an authentication key. Specifically, the center server 30 is able to manage service link information in association with information unique to a vehicle 10A (vehicle unique information). For this reason, without providing a service provider with vehicle unique information for identifying a vehicle 10A, it is possible to identify the vehicle 10A to be locked or unlocked with an authentication key from service link information included in a request to deliver an authentication key (authentication key arrangement request), which is received from an external device concerned with the service (any one of the service management servers 40), a mobile terminal 20, or the like. That is, even if a third party in bad faith attempts to register a service in the center server 30 without permission, not only service

link information but also vehicle unique information that is commonly available to only a regular user, or the like, such as an owner user of a vehicle 10A, is required. Therefore, the center server 30 is able to reduce registration with a service using the vehicle 10A by a third party in bad faith without permission and usage of the vehicle 10A by a third party in bad faith without permission through a service registered without permission.

[0256] In this example, the vehicle unique information is a key unit ID unique to the key unit 12 mounted on each vehicle 10A. Thus, the center server 30 is able to manage service link information in association with unique information (key unit ID) of an in-vehicle device (key unit 12) concerned with the function of unlocking or starting the vehicle 10A upon reception of a signal transmitted from the mobile terminal 20, not in association with general information unique to the vehicle 10A, such as VIN. Therefore, since unique information of an in-vehicle device, which there is a limited opportunity for a third party to see, is employed, the center server 30 is able to further reduce registration with a service using the vehicle 10A without permission and usage of the vehicle 10A without permission through a service registered without permission.

[0257] Subsequently, FIG. 9 is a flowchart that schematically shows an example of a service use status information providing process that is executed by the center server 30.

[0258] In step S902, the registration management unit 326 determines whether the communication processing unit 321 has received a service use status request. When the communication processing unit 321 has received a service use status request, the registration management unit 326 proceeds to step S904; otherwise, the registration management unit 326 ends the current process.

[0259] In step S904, the registration management unit 326 generates service use status information of a type designated by the service use status request.

[0260] In step S906, the registration management unit 326 delivers the service use status information to the mobile terminal 20Aa via the communication processing unit 321, and ends the current process. Thus, an image corresponding to the service use status information (service use status image) delivered from the center server 30 is displayed on

the display 24 of the mobile terminal 20Aa. For this reason, the owner user is allowed to monistically see the use of each service using the vehicle 10A over a plurality of regular users and a plurality of services, which are registered in the storage unit 320 (user and service registration information DB) of the center server 30.

[0261] For example, FIG. 10 is a view that shows specific examples of service use status images that are displayed on the display 24 of the mobile terminal 20Aa of the owner user. Specifically, FIG. 10 shows specific examples, that is, five types of service use status images 1001, 1002, 1003, 1004, 1005 that are displayed on the display 24 of the mobile terminal 20Aa.

[0262] The service use status image 1001 shows a list of vehicles 10A to be used in various services. The vehicles 10A have been registered in the storage unit 520 (user and service registration information DB) of the center server 30 in association with the owner user ID. In this example, vehicle images that schematically show two vehicles 10A registered by the owner user are tiled vertically in the service use status image 1001.

[0263] The service use status image 1002 shows a list of services that have been registered in association with the owner user ID. In this example, business operator names that provide registered services are shown in the service use status image 1002, and, specifically, the service use status image 1002 shows that "XX Transport" that provides a trunk delivery service and "YY Car Sharing" that provides a C2C car sharing service have been registered.

[0264] The service use status image 1003 shows a list of regular users registered in association with the owner user ID. In this example, human images that schematically show two regular users (the owner user and a child user) who use various services are tiled vertically in the service use status image 1003. In addition, a vehicle image that schematically shows a vehicle 10A that is used in various services that each regular user uses is shown to the right side of the human image of a corresponding one of the regular users in the service use status image 1003, and, specifically, the service use status image 1003 shows that one regular user uses various services with the use of a vehicle 10A and the other user uses various services with the use of two vehicles 10A.

[0265] The service use status image 1004 shows a use schedule of a vehicle 10A over all the regular users and all the services. All the regular users and all the services have been registered in association with the owner user ID. In this example, a use schedule corresponding to various services of a vehicle 10A for two regular users is shown in the service use status image 1004.

[0266] The service use status image 1005 shows a list of history records of locking or unlocking of a vehicle 10A with an authentication key. The history records are registered in association with the owner user ID. In this example, dates and times at which the vehicle 10A was locked or unlocked with an authentication key and delivery destinations (persons who locked or unlocked the vehicle 10A) of the authentication key used are shown in the service use status image 1005.

[0267] In this way, the registration management unit 326 transmits information related to a service (service use status information) to the mobile terminal 20Aa in response to a request from the mobile terminal 20Aa having the owner user ID via the communication processing unit 321. The service corresponds to authentication key arrangement permission associated with the owner user ID. Thus, the center server 30 is able to transmit information related to a registered service to a terminal (mobile terminal 20Aa) of the owner user in response to a request from the terminal having unique information corresponding to the owner user (owner user ID), that is, a request from the terminal of the owner user. For this reason, the owner user is allowed to see information related to registered services (for example, a list of registered services, a use schedule of vehicles that are used in all the services, and the like), which is displayed on a display, or the like, of the terminal. Therefore, the center server 30 is able to cause the owner user to monistically see information related to the registered services.

[0268] The registration management unit 326 transmits service use status information to the mobile terminal 20Aa in response to a request from the mobile terminal 20Aa having the owner user ID via the communication processing unit 321. The service use status information includes information related to a regular user of the vehicle 10A, other than the owner user. The regular user of the vehicle 10A corresponds to

authentication key arrangement permission associated with the owner user ID. Thus, the center server 30 is able to transmit information related to the regular user of the vehicle 10A, other than the owner user, who uses registered services to a terminal of the owner user in response to a request from the terminal (mobile terminal 20Aa) of the owner user. For this reason, the owner user is allowed to see information related to the regular user of the vehicle 10A, other than the owner user, who uses registered services that are displayed on a display, or the like, of the terminal (for example, a list of users of various services, a use schedule of a vehicle over all the users, and the like). Therefore, the center server 30 is able to cause the owner user to monistically see information related to users of registered services (regular users of a vehicle, other than the owner user).

[0269] The embodiment of the disclosure is described in detail above; however, the disclosure is not limited to the specific embodiment. Various modifications or changes are applicable within the scope of the disclosure recited in the appended claims.

[0270] For example, in the above-described embodiment, the mobile terminal 20 transmits an authentication request including an authentication key to the key unit 12, the key unit 12 exchanges signals with the lock/unlock and start device 11 in response to an authentication result based on the authentication key, and locking or unlocking of the doors of the vehicle 10A or starting of the vehicle 10A is realized by the lock/unlock and start device 11; however, the disclosure is not limited to this mode.

[0271] Specifically, the function of the key unit 12 may be transferred to the mobile terminal 20, and locking or unlocking of the doors of the vehicle 10A or starting of the vehicle 10A may be realized by the lock/unlock and start device 11 as the mobile terminal 20 exchanges signals based on the above-described key information (internal key information) with a vehicle 10 (lock/unlock and start device 11) by LF radio waves and RF radio waves. In this case, the authentication key in the above-described embodiment just needs to be read as key information. That is, the center server 30 may issue key information instead of an authentication key and deliver the key information to the mobile terminal 20 with a similar method to the authentication key in the above-described embodiment. Thus, similar operation and advantageous effects to those of the

above-described embodiment are obtained.

[0272] The function of the key unit 12 may be integrated into the lock/unlock and start device 11, and components related to communication between the lock/unlock and start device 11 and the key unit 12 and authentication related to the communication (the LF radio wave transmitter 111, the RF radio wave receiver 112, the collation ECU 113, the LF radio wave receiver 121, and the RF radio wave transmitter 122) may be omitted. In this case, when authentication of the mobile terminal 20 is successful based on an authentication key, the key ECU 124 may directly output an unlock or lock instruction to the body ECU 114 or a start instruction to the engine ECU 116, instead of the collation ECU 113, and cause the body ECU 114 to lock or unlock the doors of the vehicle 10 and cause the engine ECU 116 to start the vehicle 10. Thus, similar operation and advantageous effects to those of the above-described embodiment are obtained.

WHAT IS CLAIMED IS:

1. A key information management device comprising:

an information processing device configured to

i) deliver key information to a mobile terminal as the mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle, and

ii) register permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to cause the information processing device to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle.

2. The key information management device according to claim 1, wherein the information processing device is configured to register the permission further in association with unique information corresponding to an owner user of the vehicle.

3. The key information management device according to claim 2, wherein:

the information processing device is configured to transmit information related to the predetermined service to the mobile terminal having the unique information corresponding to the owner user in response to a request from the mobile terminal having the unique information corresponding to the owner user; and

the predetermined service corresponds to the permission associated with the unique information corresponding to the owner user.

4. The key information management device according to claim 3, wherein:

the information processing device is configured to store the permission for each user of the vehicle in association with the unique information corresponding to the owner user;

the information processing device is configured to transmit information related to a user of the vehicle, other than the owner user, to the mobile terminal having the unique

information corresponding to the owner user in response to a request from the mobile terminal having the unique information corresponding to the owner user; and

the user of the vehicle, other than the owner user, corresponds to the permission associated with the unique information corresponding to the owner user.

5. The key information management device according to claim 1, further comprising a communication device configured to bidirectionally carry out communication with each of the vehicles, the mobile terminals, and the external server device through a predetermined communication network.

6. The key information management device according to claim 1, wherein the key information further includes information for locking the vehicle.

7. A key information management method that is executed by a key information management device, the key information management method comprising:

delivering key information to a mobile terminal as the mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle; and

registering permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle.

8. A non-transitory computer-readable recording medium comprising a key information management program recorded on the recording medium, the key information management program causing an information processing device to execute instructions for:

delivering key information to a mobile terminal as the mobile terminal transmits a predetermined transmission signal toward a vehicle, the key information being information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle; and

registering permission for a user of the vehicle to use a predetermined service using the vehicle, the permission being permission to deliver the key information to another third party mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle.

ABSTRACT

A key information management device includes an information processing device. The information processing device is configured to deliver key information to a mobile terminal as the mobile terminal transmits a predetermined transmission signal toward a vehicle. The key information is information for unlocking the vehicle, starting the vehicle, or unlocking and starting the vehicle. The information processing device is configured to register permission for a user of the vehicle to use a predetermined service using the vehicle. The permission is permission to cause the information processing device to deliver the key information to a mobile terminal of a third party concerned with the predetermined service, other than the user of the vehicle.

IPR2024-00981
Emerging Auto EX2010

FIG. 1

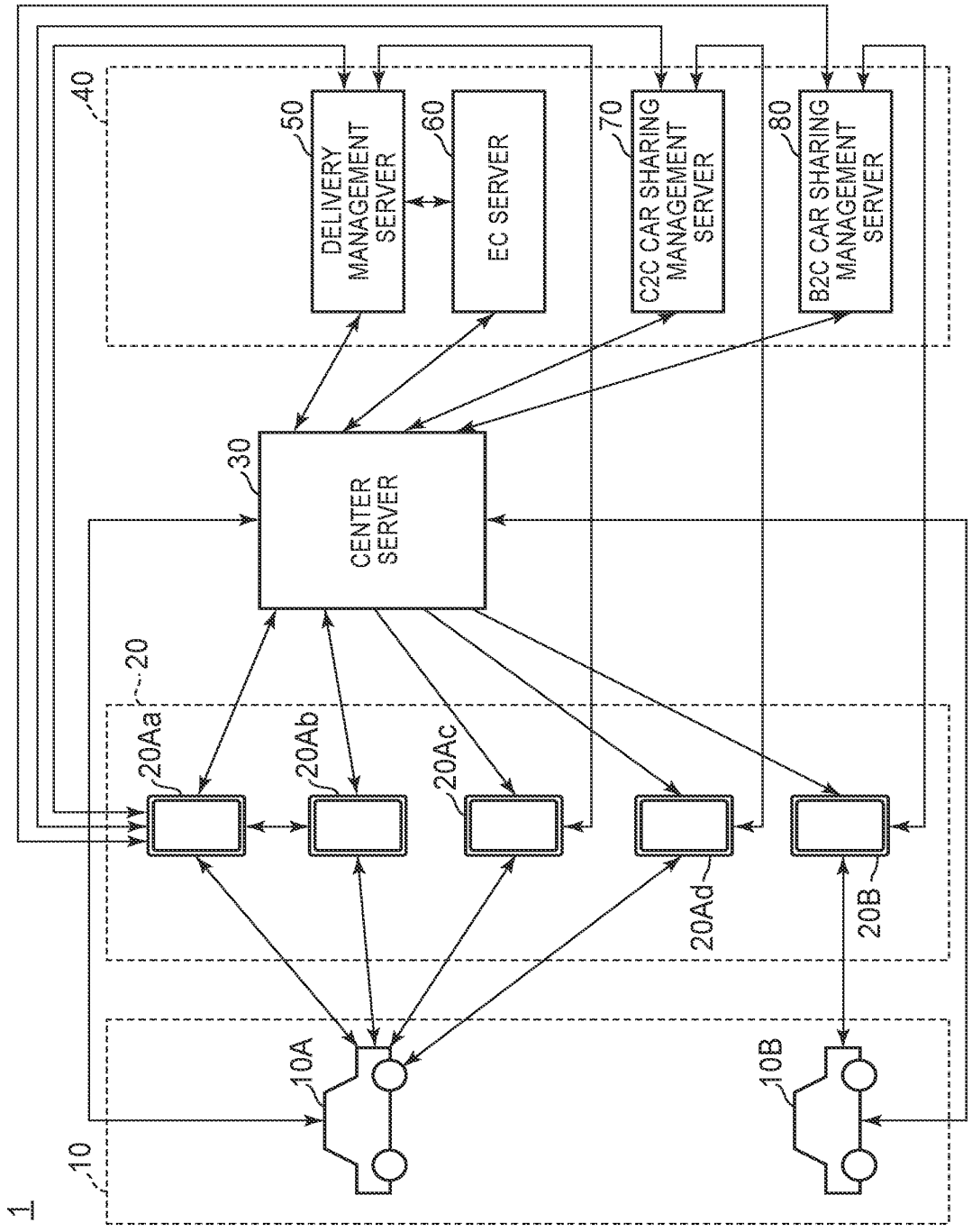

1
10
10A
10B
20
20Aa
20Ab
20Ac
20Ad
20B
30
CENTER SERVER
40
50
DELIVERY MANAGEMENT SERVER
60
EC SERVER
70
C2C CAR SHARING MANAGEMENT SERVER
80
B2C CAR SHARING MANAGEMENT SERVER

FIG. 2

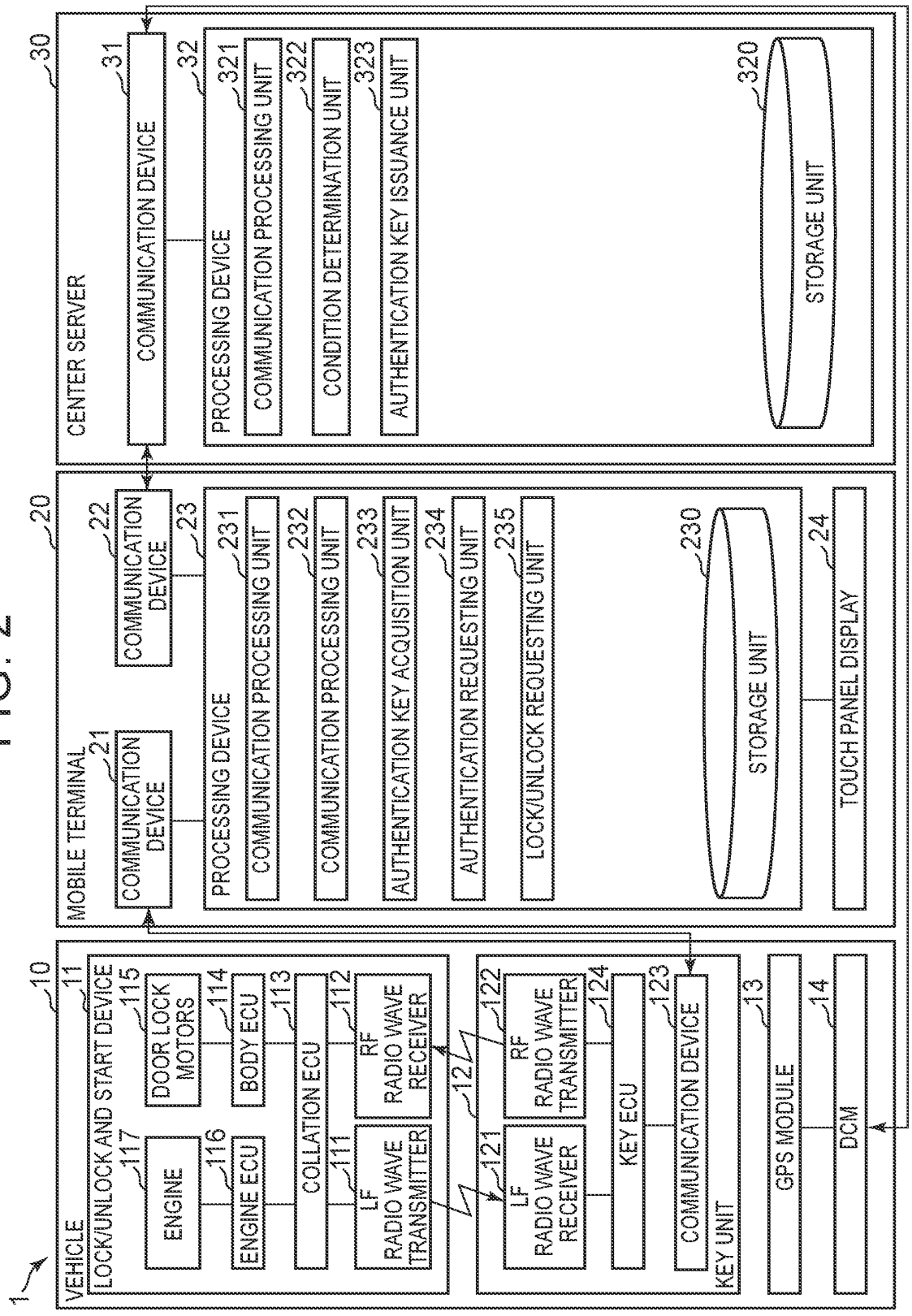

1
10
VEHICLE
11
LOCK/UNLOCK AND START DEVICE
115
DOOR LOCK MOTORS
114
BODY ECU
113
COLLATION ECU
112
RF RADIO WAVE RECEIVER
111
LF RADIO WAVE TRANSMITTER
117
ENGINE
116
ENGINE ECU
12
121
LF RADIO WAVE RECEIVER
122
RF RADIO WAVE TRANSMITTER
124
KEY ECU
123
COMMUNICATION DEVICE
KEY UNIT
13
GPS MODULE
14
DCM
20
MOBILE TERMINAL
21
COMMUNICATION DEVICE
22
COMMUNICATION DEVICE
23
PROCESSING DEVICE
231
COMMUNICATION PROCESSING UNIT
232
COMMUNICATION PROCESSING UNIT
233
AUTHENTICATION KEY ACQUISITION UNIT
234
AUTHENTICATION REQUESTING UNIT
235
LOCK/UNLOCK REQUESTING UNIT
230
STORAGE UNIT
24
TOUCH PANEL DISPLAY
30
CENTER SERVER
31
COMMUNICATION DEVICE
32
PROCESSING DEVICE
321
COMMUNICATION PROCESSING UNIT
322
CONDITION DETERMINATION UNIT
323
AUTHENTICATION KEY ISSUANCE UNIT
320
STORAGE UNIT

FIG. 3

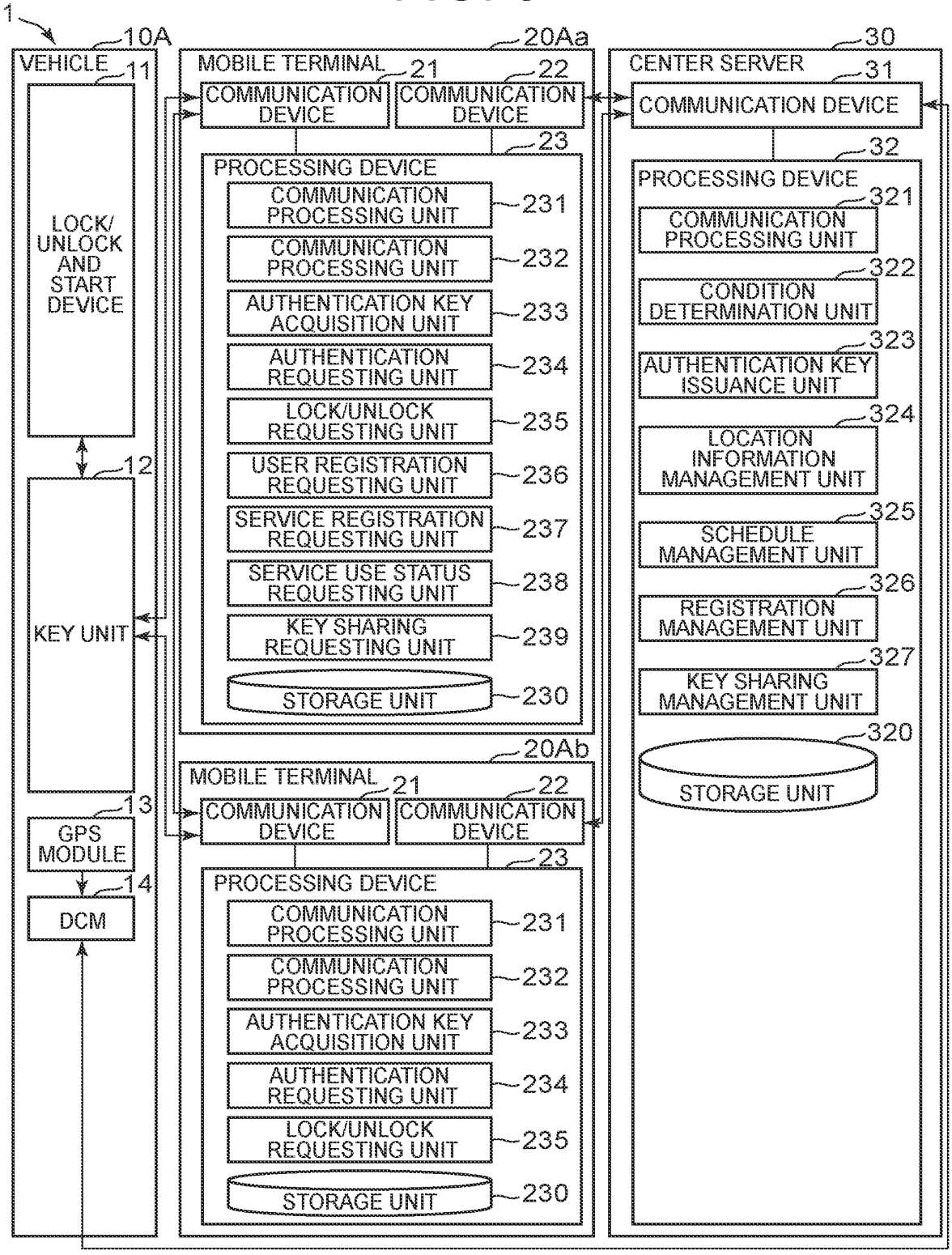

1
10A
VEHICLE
11
LOCK/ UNLOCK AND START DEVICE
12
KEY UNIT
13
GPS MODULE
14
DCM
20Aa
MOBILE TERMINAL
21
22
COMMUNICATION DEVICE
COMMUNICATION DEVICE
23
PROCESSING DEVICE
COMMUNICATION PROCESSING UNIT
231
COMMUNICATION PROCESSING UNIT
232
AUTHENTICATION KEY ACQUISITION UNIT
233
AUTHENTICATION REQUESTING UNIT
234
LOCK/UNLOCK REQUESTING UNIT
235
USER REGISTRATION REQUESTING UNIT
236
SERVICE REGISTRATION REQUESTING UNIT
237
SERVICE USE STATUS REQUESTING UNIT
238
KEY SHARING REQUESTING UNIT
239
STORAGE UNIT
230
20Ab
MOBILE TERMINAL
21
22
COMMUNICATION DEVICE
COMMUNICATION DEVICE
23
PROCESSING DEVICE
COMMUNICATION PROCESSING UNIT
231
COMMUNICATION PROCESSING UNIT
232
AUTHENTICATION KEY ACQUISITION UNIT
233
AUTHENTICATION REQUESTING UNIT
234
LOCK/UNLOCK REQUESTING UNIT
235
STORAGE UNIT
230
30
CENTER SERVER
31
COMMUNICATION DEVICE
32
PROCESSING DEVICE
321
COMMUNICATION PROCESSING UNIT
322
CONDITION DETERMINATION UNIT
323
AUTHENTICATION KEY ISSUANCE UNIT
324
LOCATION INFORMATION MANAGEMENT UNIT
325
SCHEDULE MANAGEMENT UNIT
326
REGISTRATION MANAGEMENT UNIT
327
KEY SHARING MANAGEMENT UNIT
320
STORAGE UNIT

FIG. 4

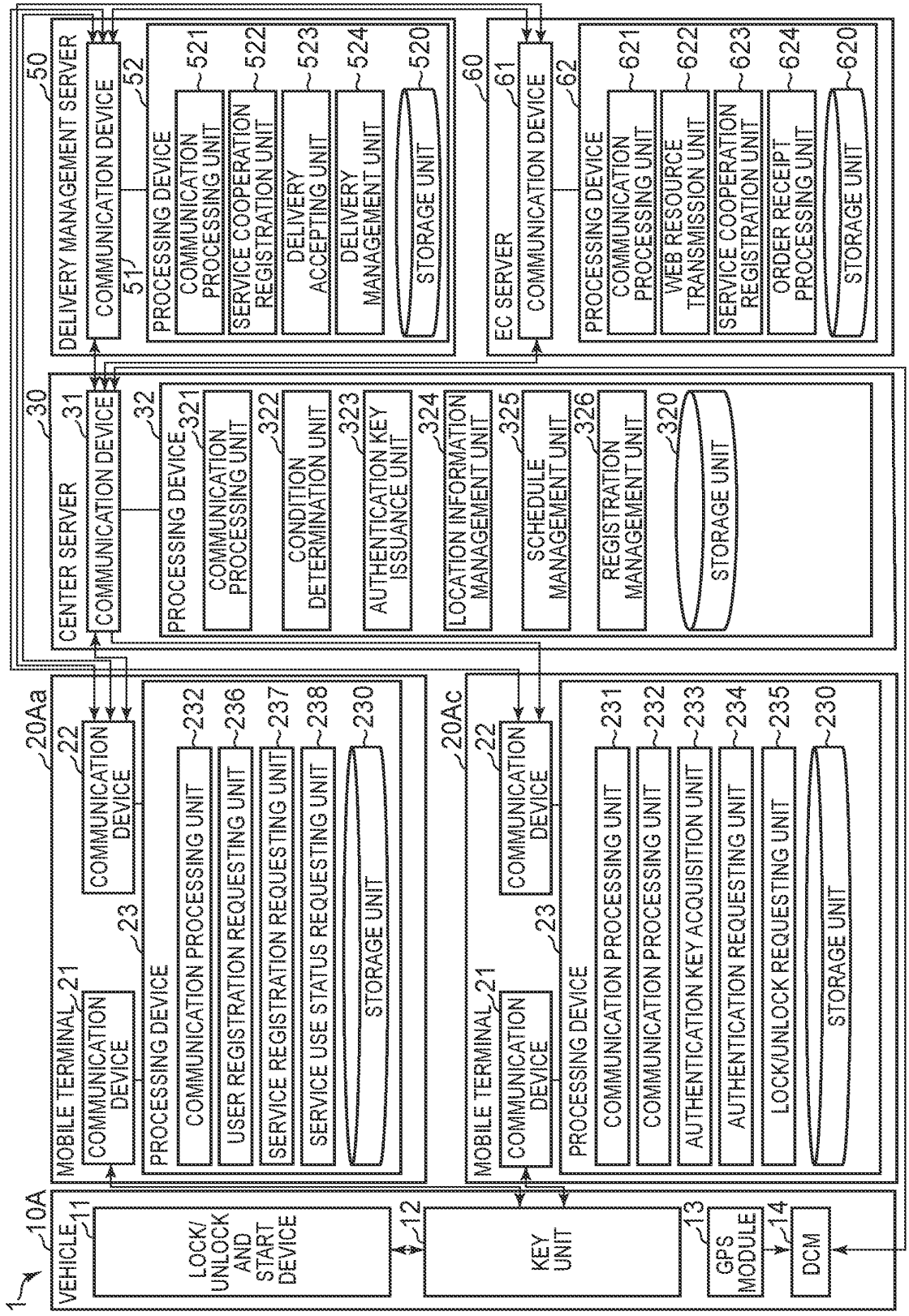

1
10A
VEHICLE 11
LOCK/ UNLOCK AND START DEVICE
12
KEY UNIT
13
GPS MODULE
14
DCM
20Aa
MOBILE TERMINAL 21
COMMUNICATION DEVICE
22
COMMUNICATION DEVICE
23
PROCESSING DEVICE
COMMUNICATION PROCESSING UNIT 232
USER REGISTRATION REQUESTING UNIT 236
SERVICE REGISTRATION REQUESTING UNIT 237
SERVICE USE STATUS REQUESTING UNIT 238
STORAGE UNIT 230
20Ac
MOBILE TERMINAL 21
COMMUNICATION DEVICE
22
COMMUNICATION DEVICE
23
PROCESSING DEVICE
COMMUNICATION PROCESSING UNIT 231
COMMUNICATION PROCESSING UNIT 232
AUTHENTICATION KEY ACQUISITION UNIT 233
AUTHENTICATION REQUESTING UNIT 234
LOCK/UNLOCK REQUESTING UNIT 235
STORAGE UNIT 230
30
CENTER SERVER 31
COMMUNICATION DEVICE
32
PROCESSING DEVICE
COMMUNICATION PROCESSING UNIT 321
CONDITION DETERMINATION UNIT 322
AUTHENTICATION KEY ISSUANCE UNIT 323
LOCATION INFORMATION MANAGEMENT UNIT 324
SCHEDULE MANAGEMENT UNIT 325
REGISTRATION MANAGEMENT UNIT 326
STORAGE UNIT 320
50
DELIVERY MANAGEMENT SERVER
COMMUNICATION DEVICE
51
52
PROCESSING DEVICE
COMMUNICATION PROCESSING UNIT 521
SERVICE COOPERATION REGISTRATION UNIT 522
DELIVERY ACCEPTING UNIT 523
DELIVERY MANAGEMENT UNIT 524
STORAGE UNIT 520
60
EC SERVER 61
COMMUNICATION DEVICE
62
PROCESSING DEVICE
COMMUNICATION PROCESSING UNIT 621
WEB RESOURCE TRANSMISSION UNIT 622
SERVICE COOPERATION REGISTRATION UNIT 623
ORDER RECEIPT PROCESSING UNIT 624
STORAGE UNIT 620

FIG. 5

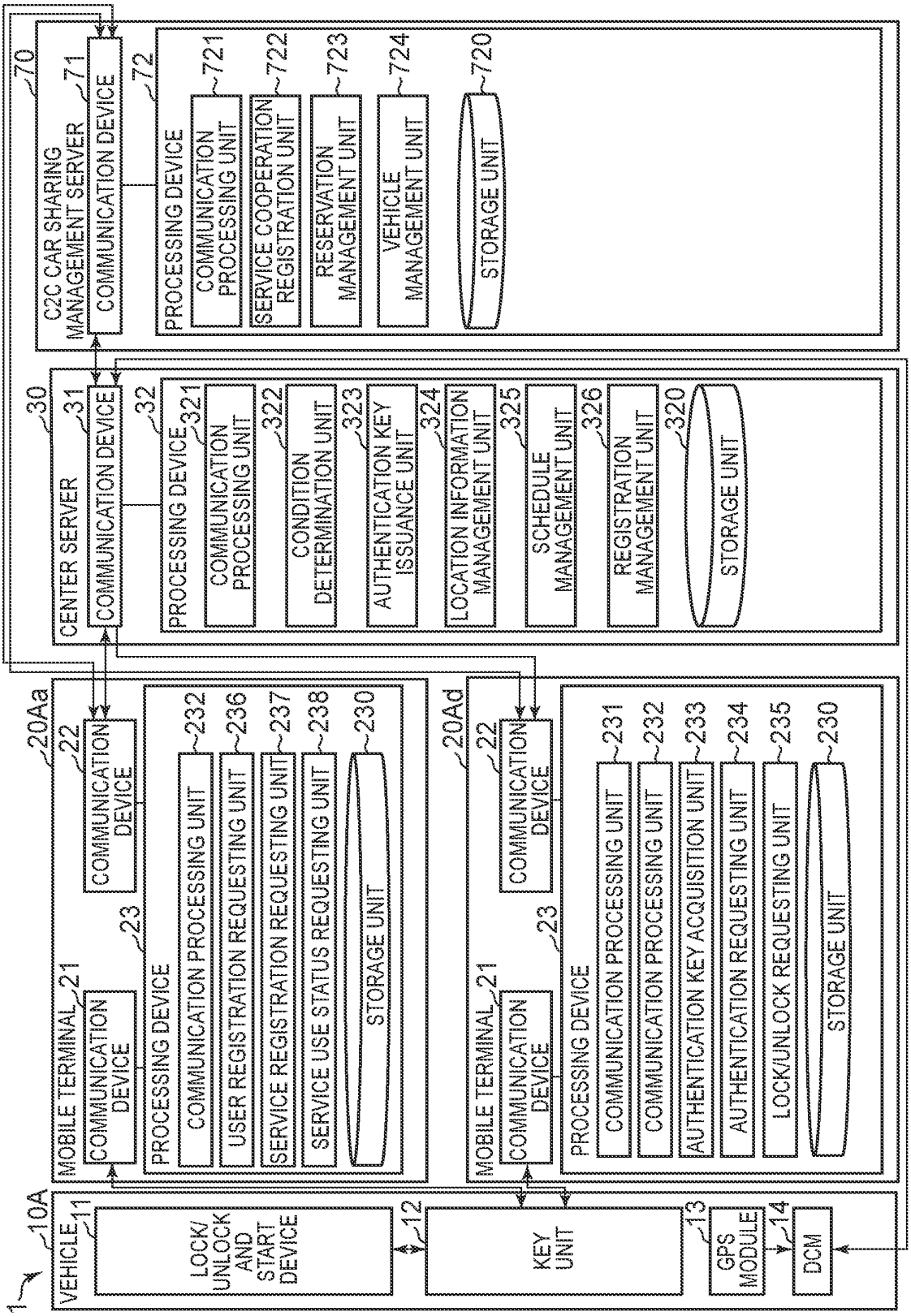

1
10A
VEHICLE
11
LOCK/ UNLOCK AND START DEVICE
12
KEY UNIT
13
GPS MODULE
14
DCM
20Aa
MOBILE TERMINAL
21
COMMUNICATION DEVICE
22
PROCESSING DEVICE
23
COMMUNICATION PROCESSING UNIT
232
USER REGISTRATION REQUESTING UNIT
236
SERVICE REGISTRATION REQUESTING UNIT
237
SERVICE USE STATUS REQUESTING UNIT
238
STORAGE UNIT
230
20Ad
MOBILE TERMINAL
21
COMMUNICATION DEVICE
22
PROCESSING DEVICE
23
COMMUNICATION PROCESSING UNIT
231
COMMUNICATION PROCESSING UNIT
232
AUTHENTICATION KEY ACQUISITION UNIT
233
AUTHENTICATION REQUESTING UNIT
234
LOCK/UNLOCK REQUESTING UNIT
235
STORAGE UNIT
230
30
CENTER SERVER
31
COMMUNICATION DEVICE
32
PROCESSING DEVICE
321
COMMUNICATION PROCESSING UNIT
322
CONDITION DETERMINATION UNIT
323
AUTHENTICATION KEY ISSUANCE UNIT
324
LOCATION INFORMATION MANAGEMENT UNIT
325
SCHEDULE MANAGEMENT UNIT
326
REGISTRATION MANAGEMENT UNIT
320
STORAGE UNIT
70
C2C CAR SHARING MANAGEMENT SERVER
71
COMMUNICATION DEVICE
72
PROCESSING DEVICE
721
COMMUNICATION PROCESSING UNIT
722
SERVICE COOPERATION REGISTRATION UNIT
723
RESERVATION MANAGEMENT UNIT
724
VEHICLE MANAGEMENT UNIT
720
STORAGE UNIT

FIG. 6

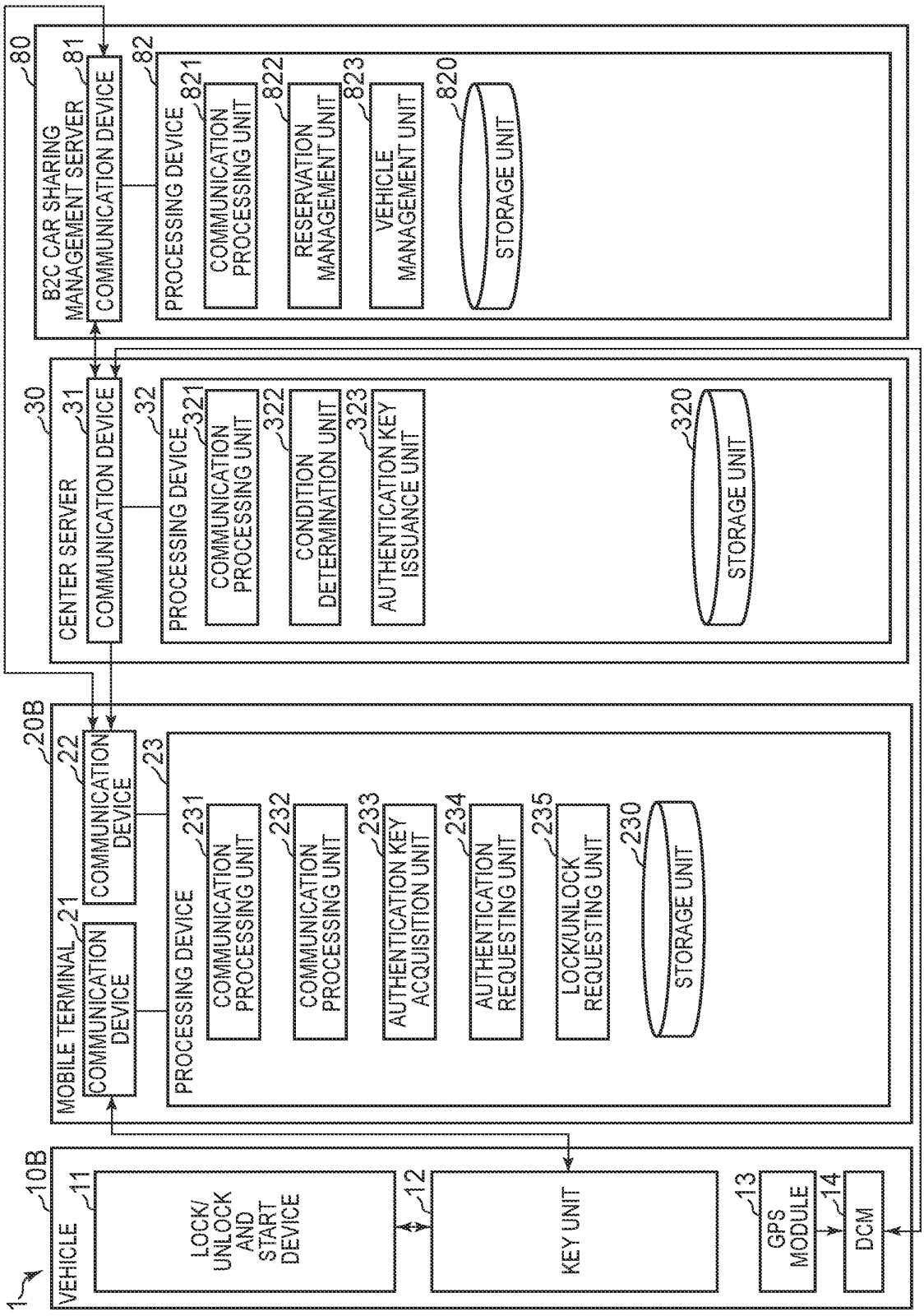

1
VEHICLE
10B
11
LOCK/ UNLOCK AND START DEVICE
12
KEY UNIT
13
GPS MODULE
14
DCM
MOBILE TERMINAL
20B
21
COMMUNICATION DEVICE
22
COMMUNICATION DEVICE
23
PROCESSING DEVICE
231
COMMUNICATION PROCESSING UNIT
232
COMMUNICATION PROCESSING UNIT
233
AUTHENTICATION KEY ACQUISITION UNIT
234
AUTHENTICATION REQUESTING UNIT
235
LOCK/UNLOCK REQUESTING UNIT
230
STORAGE UNIT
CENTER SERVER
30
31
COMMUNICATION DEVICE
32
PROCESSING DEVICE
321
COMMUNICATION PROCESSING UNIT
322
CONDITION DETERMINATION UNIT
323
AUTHENTICATION KEY ISSUANCE UNIT
320
STORAGE UNIT
B2C CAR SHARING MANAGEMENT SERVER
80
81
COMMUNICATION DEVICE
82
PROCESSING DEVICE
821
COMMUNICATION PROCESSING UNIT
822
RESERVATION MANAGEMENT UNIT
823
VEHICLE MANAGEMENT UNIT
820
STORAGE UNIT

FIG. 7

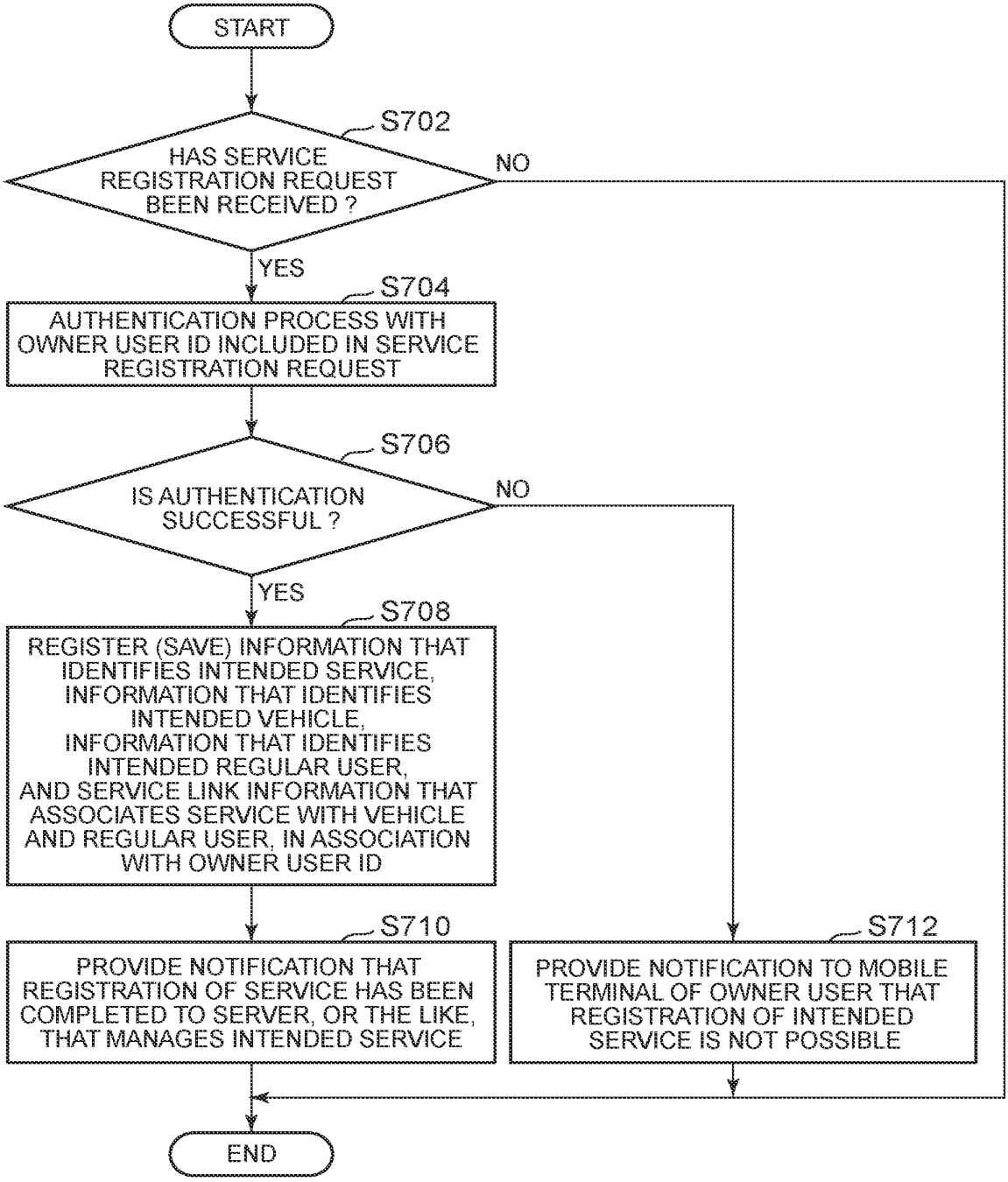

START
S702
HAS SERVICE REGISTRATION REQUEST BEEN RECEIVED ?
NO
YES
S704
AUTHENTICATION PROCESS WITH OWNER USER ID INCLUDED IN SERVICE REGISTRATION REQUEST
S706
IS AUTHENTICATION SUCCESSFUL ?
NO
YES
S708
REGISTER (SAVE) INFORMATION THAT IDENTIFIES INTENDED SERVICE, INFORMATION THAT IDENTIFIES INTENDED VEHICLE, INFORMATION THAT IDENTIFIES INTENDED REGULAR USER, AND SERVICE LINK INFORMATION THAT ASSOCIATES SERVICE WITH VEHICLE AND REGULAR USER, IN ASSOCIATION WITH OWNER USER ID
S710
PROVIDE NOTIFICATION THAT REGISTRATION OF SERVICE HAS BEEN COMPLETED TO SERVER, OR THE LIKE, THAT MANAGES INTENDED SERVICE
S712
PROVIDE NOTIFICATION TO MOBILE TERMINAL OF OWNER USER THAT REGISTRATION OF INTENDED SERVICE IS NOT POSSIBLE
END

FIG. 8

OWNER USER ID
KEY UNIT ID (X)
REGULAR USER ID (A)
SERVICE ID (α)
SERVICE LINK INFORMATION (a)
SERVICE ID (β)
SERVICE LINK INFORMATION (b)
SERVICE ID (γ)
SERVICE LINK INFORMATION (c)
REGULAR USER ID (B)
SERVICE ID (α)
SERVICE LINK INFORMATION (d)
SERVICE ID (β)
SERVICE LINK INFORMATION (e)
KEY UNIT ID (Y)
REGULAR USER ID (A)
SERVICE ID (α)
SERVICE LINK INFORMATION (f)
SERVICE ID (β)
SERVICE LINK INFORMATION (g)
REGULAR USER ID (B)
SERVICE ID (α)
SERVICE LINK INFORMATION (h)
REGULAR USER A: OWNER USER
REGULAR USER B: CHILD USER
SERVICE α : KEY SHARING SERVICE
SERVICE β : TRUNK DELIVERY SERVICE
SERVICE γ : C2C CAR SHARING SERVICE

FIG. 9

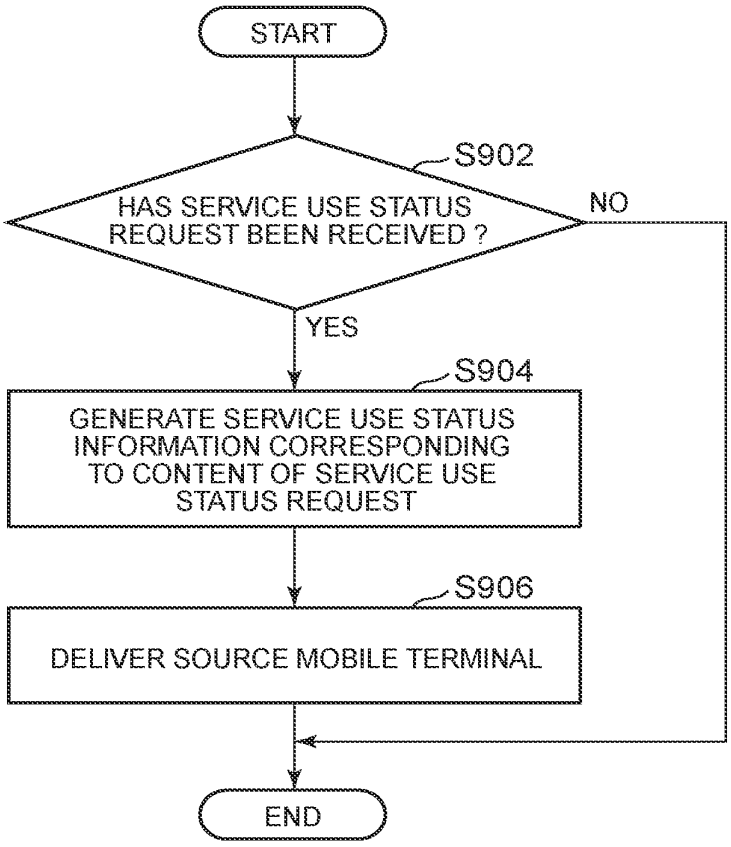
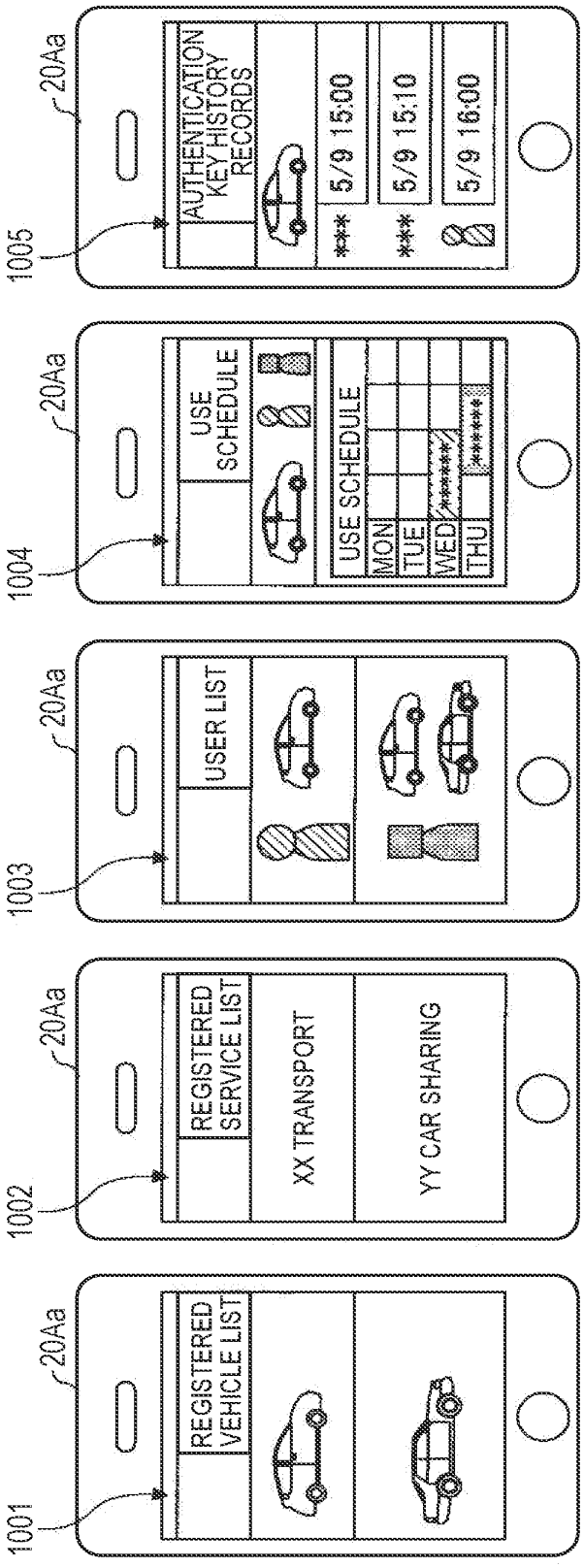

START
S902
HAS SERVICE USE STATUS REQUEST BEEN RECEIVED ?
NO
YES
S904
GENERATE SERVICE USE STATUS INFORMATION CORRESPONDING TO CONTENT OF SERVICE USE STATUS REQUEST
S906
DELIVER SOURCE MOBILE TERMINAL
END

FIG. 10


1001
20Aa
REGISTERED VEHICLE LIST
1002
20Aa
REGISTERED SERVICE LIST
XX TRANSPORT
YY CAR SHARING
1003
20Aa
USER LIST
1004
20Aa
USE SCHEDULE
USE SCHEDULE
MON
TUE
WED
THU
1005
20Aa
AUTHENTICATION KEY HISTORY RECORDS
5/9 15:00
5/9 15:10
5/9 16:00

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	115628.0000058
	Application Number	
Title of Invention	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Masato		ENDO	

Residence Information (Select One) US Residency ● Non US Residency Active US Military Service

City	Nagakute-shi	Country of Residence [i]	JP

Mailing Address of Inventor:

Address 1	c/o TOYOTA JIDOSHA KABUSHIKI KAISHA
Address 2	1, Toyota-cho, Aichi-ken

City	Toyota-shi	State/Province	
Postal Code	471-8571	Country [i]	JP

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Yuichiro		HARUNA	

Residence Information (Select One) US Residency ◉ Non US Residency Active US Military Service

City	Oyama-shi	Country of Residence [i]	JP

Mailing Address of Inventor:

Address 1	c/o TOYOTA JIDOSHA KABUSHIKI KAISHA
Address 2	1, Toyota-cho, Aichi-ken

City	Toyota-shi	State/Province	
Postal Code	471-8571	Country [i]	JP

Inventor 3 Remove

Legal Name

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	115628.0000058
	Application Number	
Title of Invention	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM	

Prefix	Given Name	Middle Name	Family Name	Suffix
	Masaki		OSHIMA	

Residence Information (Select One) US Residency ◉ Non US Residency Active US Military Service

City	Kitanagoya-shi	Country of Residence [i]	JP

Mailing Address of Inventor:

Address 1	c/o TOYOTA JIDOSHA KABUSHIKI KAISHA		
Address 2	1, Toyota-cho, Aichi-ken		
City	Toyota-shi	**State/Province**	
Postal Code	471-8571	**Country** [i]	JP

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	23838		
Email Address	dshanley@huntonak.com	Add Email	Remove Email

Application Information:

Title of the Invention	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM		
Attorney Docket Number	115628.0000058	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	10	**Suggested Figure for Publication (if any)**	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

[i]

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	115628.0000058
	Application Number	
Title of Invention	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and 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 international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	◯ Limited Recognition (37 CFR 11.9)
Customer Number	23838		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16139519	2018-09-24

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

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Emerging Auto EX2010

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	Application Number	
Title of Invention	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM	

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
2017-205675	JP	2017-10-24	A587

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	115628.0000058
	Application Number	
Title of Invention	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	115628.0000058
	Application Number	
Title of Invention	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 — Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	TOYOTA JIDOSHA KABUSHIKI KAISHA		
Mailing Address Information For Applicant:			
Address 1	1, Toyota-cho, Aichi-ken		
Address 2			
City	Toyota-shi	**State/Province**	
Country	JP	Postal Code	471-8571
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	115628.0000058
	Application Number	
Title of Invention	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	TOYOTA JIDOSHA KABUSHIKI KAISHA

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	1, Toyota-cho, Aichi-ken		
Address 2			
City	Toyota-shi	**State/Province**	
Country i	JP	Postal Code	471-8571
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Daniel G. Shanley/			Date (YYYY-MM-DD)	2020-02-25
First Name	Daniel	Last Name	Shanley	Registration Number	54863

Additional Signature may be generated within this form by selecting the Add button. Add

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	Application Number	
Title of Invention	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

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

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

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

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.

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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 CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IPR2024-00981
Emerging Auto EX2010

Attorney Docket No.:
Client Ref.: TSN201707414US00

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76) AND ASSIGNMENT FOR SINGLE ASSIGNEE

Title of Invention	KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM

As the below named inventor, I hereby declare that:

This declaration is directed to:

☒ The attached application, or

☐ United States application or PCT international application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the application for which this assignment with declaration is being submitted.

I am aware of the duty to disclose to the Office all information known to me to be material to patentability as defined in 37 CFR 1.56.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WHEREAS, TOYOTA JIDOSHA KABUSHIKI KAISHA, with offices at 1, Toyota-cho, Toyota-shi, Aichi-ken, 471-8571 Japan (hereinafter referred to as ASSIGNEE), is desirous of acquiring all interest in, to and under said invention, said application disclosing the invention and in, to and under any Letters Patent or similar legal protection which may be granted therefor in the United States and in any and all foreign countries;

NOW THEREFORE, in consideration of the sum of One Dollar ($1.00), and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, I by these presents do hereby assign, sell and transfer unto said ASSIGNEE, its successors, assigns, and legal representatives, the entire right, title and interest in said invention, said application, including any divisions and continuations thereof, and in and to any and all Letters Patent of the United States, and countries foreign thereto, which may be granted for said invention, and in and to any and all priority rights and/or convention rights under the International Convention for the Protection of Industrial Property, Inter-American Convention Relating to Patents, Designs and Industrial Models, and any other international agreements to which the United States of America adheres, and to any other benefits accruing or to accrue to me with respect to the filing of applications for patents or securing of patents in the United States and countries foreign thereto, and I hereby authorize and request the Commissioner of Patents to issue said United States Letters Patent to said ASSIGNEE, as the assignee of the whole right, title and interest thereto;

And I further agree to execute all necessary or desirable and lawful future documents, including assignments in favor of ASSIGNEE or its designee, as ASSIGNEE or its successors, assigns and legal representatives may from time-to-time present to me and without further remuneration, in order to perfect title in said invention, modifications, and improvements in said invention, applications and Letters Patent of the United States and countries foreign thereto;

And I further agree to properly execute and deliver and without further remuneration, such necessary or desirable and lawful papers for application for foreign patents, for filing subdivisions of said application for patent, and or, for obtaining any renewal or reissues of any Letters Patent which may be granted for my aforesaid invention, as said ASSIGNEE thereof shall hereafter require and prepare at its own expense;

And I further agree that ASSIGNEE will, upon its request, be provided promptly with all pertinent facts and documents relating to said application, said invention and said Letters Patent and legal equivalents in foreign countries as may be known and accessible to me and will testify as to the same in any interference or litigation related thereto;

And I hereby covenant that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this assignment and sale.

NAME OF SOLE OR FIRST INVENTOR:	
Given Name (first and middle [if any]) **Masato**	Family Name or Surname **ENDO**
Inventor's signature Masato Endo	Date Aug. 8, 2018
Residence: Nagakute-shi, Aichi-ken, Japan	
Mailing Address: c/o TOYOTA JIDOSHA KABUSHIKI KAISHA 1, Toyota-cho, Toyota-shi, Aichi-ken, 471-8571 Japan	
NAME OF SECOND INVENTOR:	
Given Name (first and middle [if any]) **Yuichiro**	Family Name or Surname **HARUNA**
Inventor's signature Yuichiro Haruna	Date Aug. 3, 2018
Residence: Oyama-shi, Tochigi-ken, Japan	
Mailing Address: c/o TOYOTA JIDOSHA KABUSHIKI KAISHA 1, Toyota-cho, Toyota-shi, Aichi-ken, 471-8571 Japan	
NAME OF THIRD INVENTOR:	
Given Name (first and middle [if any]) **Masaki**	Family Name or Surname **OSHIMA**
Inventor's signature Masaki Oshima	Date Aug 16, 2018
Residence: Kitanagoya-shi, Aichi-ken, Japan	
Mailing Address: c/o TOYOTA JIDOSHA KABUSHIKI KAISHA 1, Toyota-cho, Toyota-shi, Aichi-ken, 471-8571 Japan	

PTO/SB/80 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
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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.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

☑ Practitioners associated with the Customer Number: 23838

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

☑ The address associated with Customer Number: 23838

OR

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

Assignee Name and Address:

Toyota Jidosha Kabushiki Kaisha
1, Toyota-cho, Toyota-shi
Aichi 471-8571, JAPAN

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	2013/10/28
Name	Nobutoshi Mori	Telephone	+81-565-72-8950
Title	General Manager, IP Promotion Dept. No. 1, Intellectual Property Div.		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 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.

Privacy Act Statement

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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.
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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)).
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8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/AIA/96 (08-12)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: TOYOTA JIDOSHA KABUSHIKI KAISHA

Application No./Patent No.: Continuation of U.S. 16/139,519 Filed/Issue Date: February 25, 2020

Titled: KEY INFORMATION MANAGEMENT DEVICE, KEY INFORMATION MANAGEMENT METHOD, AND NON-TRANSITORY COMPUTER-READABLE RECORDING MEDIUM

TOYOTA JIDOSHA KABUSHIKI KAISHA, a corporation

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

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

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

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

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

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

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

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

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

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

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

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 047586, Frame 0561, or for which a copy thereof is attached.

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

   1. From: _____ To: _____

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

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

   2. From: _____ To: _____

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

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

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

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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

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

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

4. From: _____ To: _____

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

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

5. From: _____ To: _____

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

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

6. From: _____ To: _____

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

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

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

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

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

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

/Daniel G. Shanley/	February 25, 2020
Signature	Date
Daniel G. Shanley	54,863
Printed or Typed Name	Title or Registration Number

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