UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/482,781	01/16/2018	9871671	SUC01-01C3	3524

66478 7590 12/27/2017

Smartpat PLC
Axel Nix
1420 Washington Blvd.
Suite 301
Detroit, MI 48226

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

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

Sucxess LLC, Birmingham, MI;
Axel Nix, Birmingham, MI;

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

66478 7590 11/29/2017

Smartpat PLC
Axel Nix
1420 Washington Blvd.
Suite 301
Detroit, MI 48226

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/482,781	04/09/2017	Axel Nix	SUC01-01C3	3524

TITLE OF INVENTION: Method, apparatus and system for retrofitting a vehicle

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	02/28/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
TRAN, CONGVAN	2645	710-313000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Smartpat PLC
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Sucxess LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Birmingham, MI

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☒ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

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

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

☐ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

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

Authorized Signature /Axel Nix/ Date 06-Dec-2017

Typed or printed name Axel Nix Registration No. 59184

Electronic Patent Application Fee Transmittal

Application Number:	15482781
Filing Date:	09-Apr-2017
Title of Invention:	Method, apparatus and system for retrofitting a vehicle
First Named Inventor/Applicant Name:	Axel Nix
Filer:	Bernd Axel Nix
Attorney Docket Number:	SUC01-01C3

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	480	480

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**480**

Electronic Acknowledgement Receipt

EFS ID:	31139562
Application Number:	15482781
International Application Number:	
Confirmation Number:	3524
Title of Invention:	Method, apparatus and system for retrofitting a vehicle
First Named Inventor/Applicant Name:	Axel Nix
Customer Number:	66478
Filer:	Bernd Axel Nix
Filer Authorized By:	
Attorney Docket Number:	SUC01-01C3
Receipt Date:	06-DEC-2017
Filing Date:	09-APR-2017
Time Stamp:	08:38:11
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$480
RAM confirmation Number	120617INTEFSW08384000
Deposit Account	
Authorized User	

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

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	20171206-PTOL-85.pdf	108681 2aed5f029a179a55c9612cd3397d59ea5b1afa7e	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30359 d90ba998bea04b02c7085d32340f814c5aa096ca	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	139040		

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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www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

66478 7590 11/29/2017

Smartpat PLC
Axel Nix
1420 Washington Blvd.
Suite 301
Detroit, MI 48226

EXAMINER
TRAN, CONGVAN

ART UNIT	PAPER NUMBER
2645	

DATE MAILED: 11/29/2017

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/482,781	04/09/2017	Axel Nix	SUC01-01C3	3524

TITLE OF INVENTION: Method, apparatus and system for retrofitting a vehicle

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	02/28/2018

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.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

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CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

66478 7590 11/29/2017

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Axel Nix
1420 Washington Blvd.
Suite 301
Detroit, MI 48226

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/482,781	04/09/2017	Axel Nix	SUC01-01C3	3524

TITLE OF INVENTION: Method, apparatus and system for retrofitting a vehicle

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EXAMINER	ART UNIT	CLASS-SUBCLASS
TRAN, CONGVAN	2645	710-313000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

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

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

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

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

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❑ Applicant changing to regular undiscounted fee status.

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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. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/482,781	04/09/2017	Axel Nix	SUC01-01C3	3524

66478 7590 11/29/2017

Smartpat PLC
Axel Nix
1420 Washington Blvd.
Suite 301
Detroit, MI 48226

EXAMINER	
TRAN, CONGVAN	
ART UNIT	PAPER NUMBER
2645	

DATE MAILED: 11/29/2017

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

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

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

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

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

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

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

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

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

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

Notice of Allowability	Application No. 15/482,781	Applicant(s) NIX, AXEL	
	Examiner CongVan Tran	Art Unit 2645	AIA (First Inventor to File) Status No

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

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Aug. 31, 2017*.
   ☐ 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 *1-13, 15-20 have been renumbered to 1-19 respectively*. 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 _____.

/CongVan Tran/
Primary Examiner, Art Unit 2645

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15482781	NIX, AXEL
	Examiner	**Art Unit**
	CONG TRAN	2645

CPC						
Symbol					**Type**	**Version**
H04L		12	/	40	F	2013-01-01
B60R		21	/	01	I	2013-01-01
B60T		7	/	12	I	2013-01-01
G06F		13	/	4282	I	2013-01-01
H04L		2012	/	40215	A	2013-01-01
B60R		2021	/	0027	A	2013-01-01
			/			
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 19	
/CONG TRAN/ Primary Examiner.Art Unit 2645 (Primary Examiner)	11/17/2017 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 4 & 6

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15482781	NIX, AXEL
	Examiner	**Art Unit**
	CONG TRAN	2645

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
455	404.2	H	0	4	W	4 / 22 (2009.01.01)						

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
455	521				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	19	
/CONG TRAN/ Primary Examiner.Art Unit 2645	11/17/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4 & 6

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15482781	NIX, AXEL
	Examiner	**Art Unit**
	CONG TRAN	2645

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

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	16	17												
2	2	17	18												
3	3	18	19												
4	4	19	20												
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-	14														
14	15														
15	16														

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 19	
/CONG TRAN/ Primary Examiner.Art Unit 2645 (Primary Examiner)	11/17/2017 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 4 & 6

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15482781	NIX, AXEL
	Examiner	Art Unit
	CONG TRAN	2645

CPC- SEARCHED		
Symbol	Date	Examiner
H04W 76/007; H04B1/3822; H04W 4/22	5/16/17	CT

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
455	404.1 -2; 435.2; 435.3; 455/521; 445; 466; 527; 552.1	5/15/17	CT

* 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
identifier with bit near3 "11" with vehicle	5/15/17	CT
navigat$3 with ($4phone mobile wireless ue) with (car vehic$4) with (ID idenf$4 identity identification) and @ad<="20070430" and (emergency alert$4) near3 (device apparatus)	5/16/17	CT
data adj bus near5 (class adj 2 CAN) with vehicle and @ad<="20070430" and ("11" adj bit or "29" adj bit) with CAN	8/07/17	CT
Search Updated	8/22/17	CT

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
H04L 12/40	H04W 76/007; H04B1/3822; H04W 4/22	11/17/17	CT

	/CONG TRAN/ Primary Examiner.Art Unit 2645

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Axel Nix
Application Number	:	15/482,781
Filing Date	:	2017-04-09
Docket Number	:	SUC01-01C3
Examiner	:	Congvan TRAN
Title	:	Method, apparatus and system for retrofitting a vehicle

AMENDMENT

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

Sir:

In Response to the Office Action dated 08/30/2017, please amend the above identified application as follows:

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

Remarks begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) A method, comprising:

providing a vehicle having a factory-installed first apparatus ~~(200)~~ including a processor, programmed to communicate with a factory-installed second apparatus ~~(218)~~ through a vehicle data bus ~~(212)~~ with a first message having an identifier;

electrically disconnecting the vehicle data bus ~~(212)~~ between the factory-installed first apparatus ~~(200)~~ and the factory-installed second apparatus ~~(218)~~;

adding a second data bus to the vehicle;

electrically connecting a retrofit apparatus ~~(214)~~ to the vehicle data bus ~~(212)~~ and to the second data bus;

electrically connecting the factory-installed first apparatus to the second data bus; and

transmitting a second message from the retrofit apparatus ~~(214)~~ to the factory-installed first apparatus ~~(200)~~ through the second data bus, the second message being indistinguishable from the first message.

2. (original) The method as in claim 1, wherein the second message uses the identifier of the first message.

3. (currently amended) The method as in claim 1, further comprising receiving the first message in the retrofit apparatus ~~(214)~~.

4. (currently amended) The method as in claim 3, wherein the retrofit apparatus ~~(214)~~ re-transmits messages received on the vehicle data bus ~~(212)~~ to the factory-installed first apparatus ~~(200)~~ through the second data bus.

5. (original) The vehicle that has been retrofitted according to the method as in claim 1.

6. (currently amended) A vehicle, comprising:

a factory-installed first apparatus ~~(200)~~ including a first processor which is programmed to receive a first message on a vehicle data bus ~~(212)~~ from a factory-installed second apparatus ~~(218)~~; and

a retrofit apparatus ~~(214)~~ connected to the vehicle data bus ~~(212)~~ including a second processor programmed to transmit a second message which mimics the first message through a second data bus.

7. (original) The vehicle as in claim 6, wherein the first message comprises a message identifier that has been assigned to the factory-installed second apparatus and wherein the second processor is programmed to transmit the second message with the same message identifier.

8. (original) The vehicle as in claim 7, wherein the message identifier is an 11 bit or 29 bit CAN ID.

9. (currently amended) The vehicle as in claim 6, wherein the vehicle data bus ~~(212)~~ is a CAN network.

10. (currently amended) A vehicle, comprising:

a factory-installed first apparatus ~~(200)~~ including a first processor, programmed to receive a first message via a vehicle data bus ~~(212)~~ from a factory-installed second apparatus ~~(218)~~, the first message having a message identifier; and

a retrofit apparatus ~~(214)~~, operatively connected to the vehicle data bus ~~(212)~~, including a second processor programmed to send a second message having the same message identifier.

wherein the factory-installed first apparatus communicates with the retrofit apparatus through a second data bus.

11. (currently amended) The vehicle as in claim 10, wherein the second message originating from the retrofit apparatus ~~(214)~~ is indistinguishable to the first apparatus ~~(200)~~ from the first message which the first processor is programmed to receive ~~received~~ from the second apparatus ~~(218)~~.

12. (currently amended) The vehicle as in claim 10, wherein the factory-installed first apparatus ~~(200)~~ responds to the second message originating from the retrofit apparatus ~~(214)~~ as if it were the first message which the first processor is programmed to receive ~~received~~ from the factory-installed second apparatus ~~(218)~~.

13. (currently amended) The vehicle as in claim 10, wherein the factory-installed first apparatus ~~(200)~~ is electrically disconnected from the vehicle data bus ~~(212)~~.

14. (canceled).

15. (currently amended) The vehicle as in claim ~~14~~ 10, wherein the retrofit apparatus ~~(214)~~ is a gateway through which the factory-installed first apparatus ~~(200)~~ transmits and/or receives messages from the vehicle data bus ~~(212)~~.

16. (currently amended) The vehicle as in claim ~~14~~ 10, wherein the retrofit apparatus ~~(214)~~ selectively suppresses forwarding messages received from the factory-installed first apparatus ~~(200)~~ to the vehicle data bus.

17. (original) The vehicle as in claim 10, wherein the factory-installed second apparatus is an object sensor capable of detecting objects in a frontal area of the vehicle.

18. (original) The vehicle as in claim 10, wherein the factory-installed second apparatus is part of an automatic braking system.

19. (original) The vehicle as in claim 10, wherein the factory-installed second apparatus is part of a parking aid system.

20. (new) The vehicle as in claim 10, wherein the second data bus is added to the vehicle during a retrofit.

REMARKS

Claims 1–13 and 15–20 are pending, with claims 1, 6, and 10 being independent. Claim 14 has been cancelled. Claims 1, 3, 4, 6, 9–13, 15, and 16 have been amended. Claim 20 has been added. No new subject matter has been added.

Double Patenting

Claims 1-19 have been provisionally rejected as claiming the same invention as copending application 15/442,640 ("the '640 application"). The same provisional double-patenting rejection has been made in the '640 application over the present application.

By this amendment claims 1-13 and 17-19 no longer claim identical subject matter as the '640 application. However, claim 10 of the present application is still identical to claim 14 of the '640 application and claims 15 and 16 are identical in this and the '640 application.

The applicant respectfully requests that the provisional double patenting rejection in the present application, which the applicant suggests leads in prosecution over the '640 application, be withdrawn and the claims be allowed to mature into a patent. The applicant plans to address the remaining double-patenting concerns in response to the double patenting rejection in the '640 application.

Allowable Subject Matter

The Office Action of 8/30/2017 indicated that claims 14-16 would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. The indication of allowability is noted with appreciation. In the interest of timely allowance the Applicant has amended the independent claims to add the allowable subject matter thereto.

In particular, the limitation of claim 14 has been added to claim 10 from which it depended and which is hence deemed allowable. Claim 14 has been canceled. All claims depending from claim 14 have been amended to now depend from claim 10.

Claim 14 introduced a requirement that the factory-installed first apparatus communicates with the retrofit apparatus through a second data bus. Independent claim 1 has been amended and the requirement for a second data bus – the subject matter of claim 14 – has been added to claim 1. In particular, the method of claim 1 now requires **adding a second data** bus to the vehicle, electrically connecting a retrofit apparatus to the vehicle data bus **and to the second data bus**, and transmitting a second message from the retrofit apparatus to the factory-installed first apparatus **through the second data bus**. The Applicant respectfully submits that claim 1, as amended, is allowable for at least the same reasons as previous claim 14 (now claim 10).

Similarly, independent claim 6 has been amended to require that the second processor be programmed to transmit a second message which mimics the first message **through a second data bus**. Again, the Applicant respectfully submits that claim 6, as amended, is allowable for at least the same reason as previous claim 14 (now claim 10).

Claims 11 and 12 have been amended to improve clarity. Reference numerals have been removed from all claims to better comply with US practice.

New claim 20 is presented to address an aspect of the invention in a format depending from claim 10.

All claims not specifically discussed in this paper depend from a claim deemed allowable for the reasons stated above and are considered allowable for at least that reason.

Respectfully submitted,

Date: August 31, 2017

/Axel Nix/

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Electronic Acknowledgement Receipt

EFS ID:	30242070
Application Number:	15482781
International Application Number:	
Confirmation Number:	3524
Title of Invention:	Method, apparatus and system for retrofitting a vehicle
First Named Inventor/Applicant Name:	Axel Nix
Customer Number:	66478
Filer:	Bernd Axel Nix
Filer Authorized By:	
Attorney Docket Number:	SUC01-01C3
Receipt Date:	31-AUG-2017
Filing Date:	09-APR-2017
Time Stamp:	15:41:02
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		20170831-SUC01-01C3_ResponseAfterOA.pdf	113167 fd8f8e77b57ae9d3c95c1f09e7b8d396f6effe9d	yes	7

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	5
	Applicant Arguments/Remarks Made in an Amendment	6	7
Warnings:			
Information:			
	Total Files Size (in bytes):	113167	

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/482,781	Filing Date 04/09/2017	☐ 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 $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **08/31/2017**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 19	Minus	** 20	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

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

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

LIE
/DEANNA RORIE/

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/482,781	04/09/2017	Axel Nix	SUC01-01C3	3524

66478 7590 08/30/2017

Smartpat PLC
Axel Nix
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EXAMINER	
TRAN, CONGVAN	

ART UNIT	PAPER NUMBER
2645	

NOTIFICATION DATE	DELIVERY MODE
08/30/2017	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):

info@smartpat.net
a.nix@gmx.de

Office Action Summary	Application No. 15/482,781	Applicant(s) NIX, AXEL	
	Examiner CongVan Tran	Art Unit 2645	AIA (First Inventor to File) Status No

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

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on *Apr. 09, 2017*.

☐ 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) *1-19* 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) *1-13, 17-19* is/are rejected.

8)☒ Claim(s) *14-16* 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: _____.

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

Double Patenting

2. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process... may obtain a patent therefor..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the claims that are directed to the same invention so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

3. Claims 1-19 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-19 of copending Application No. 15/442,640. This is a provisional statutory double patenting rejection since the claims directed to the same invention have not in fact been patented.

Claim Rejections - 35 USC § 103

4. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1-7 and 10-13** are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Nagatani (2006/0017612) in view of Morita et al. (2006/0136291).

Regarding claims 1 and 5, Nagatani discloses a method, comprising: providing a vehicle having a ~~factory-installed~~ first apparatus (200 telephone) including a processor, programmed to communicate with a factory-installed second apparatus (218 navigation system) through **a vehicle data bus** (212) with **a first message having an identifier** (see abstract, fig.1, elements 30, 20, paragraphs [0018], [**0024**] and its description);

electrically disconnecting the vehicle data bus (212) between the ~~**factory-installed**~~ first apparatus (200) and the factory-installed second apparatus (**218**) (see fig.1, element 14, paragraphs [0021], [0025] and its description);

electrically connecting **a retrofit apparatus** (214) to the vehicle data bus (212) (see fig.1, elements 10, paragraph [0018] and its description); and

transmitting a second message from the retrofit apparatus (214) to the factory-installed first apparatus (200), the second message being **indistinguishable** from the first message (see abstract, fig.1, elements 10, paragraphs [0018], [0022], [0024-0025], **[0032]**, and its description). Nagatani fails to specifically disclose the first apparatus is a

factory-installed. However, Morita discloses a vehicle comprising: a factory-installed first apparatus including a first processor (see fig.15, element 51, 52, fig.16, elements 71/85, 83, 84, 72, paragraphs [0077], [0083] and its description). Thus, it would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention was made to use Morita's the factory-installed first apparatus teaching in Nagatani's invention in order to provide an option for customers of using telecommunication device.

Regarding claim 2, Nagatani further discloses the second message uses the identifier of the first message (see abstract, paragraphs [0018], [0022], [0024-0025], **[0032]**, and its description).

Regarding claim 3, Nagatani further discloses receiving the first message in the retrofit apparatus (see abstract, fig.1, elements 10, paragraphs [0018], [0022], [0024-0025], **[0032]**, and its description).

Regarding claim 4, Nagatani further discloses the retrofit apparatus (214) retransmits messages received on the vehicle data bus (212) to the factory-installed first apparatus (200) (see abstract, fig.1, elements 10, paragraphs [0018], [0022], [0024-0025], **[0032]**, and its description).

Regarding claim 6, Nagatani discloses **a vehicle** (see fig.1, element 1 and its description), comprising: **a ~~factory-installed~~ first apparatus** (**200**) including a first processor which is programmed to receive **a first message** on **a vehicle data bus** from **a factory-installed second apparatus** (see abstract, fig.1, elements 30, 20, paragraphs [0018], [**0024**] and its description); and **a retrofit apparatus** connected to

the vehicle data bus including **a second processor** programmed to transmit **a second message** which mimics the first message (see fig.1, elements 10, paragraph **[0022]**, [0026] and its description). Nagatani fails to specifically disclose the first apparatus is a factory-installed. However, Morita discloses a vehicle comprising: a factory-installed first apparatus including a first processor (see fig.15, element 51, 52, fig.16, elements 71/85, 83, 84, 72, paragraphs [0077], [0083] and its description). Thus, it would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention was made to use Morita's the factory-installed first apparatus teaching in Nagatani's invention in order to provide an option for customers of using telecommunication device.

Regarding claim 7, Nagatani further discloses the first message comprises a message identifier that has been assigned to the factory-installed **second apparatus** and wherein the second processor is programmed to transmit the second message with the same message identifier (see abstract, paragraphs [0018], [0022], [0024-0025], **[0032]**, and its description).

Regarding claim 10, Nagatani discloses **a vehicle** (see fig.1, element 1 and its description), comprising: **a first apparatus** including a first processor, programmed to receive **a first message** via **a vehicle data bus** from **a factory-installed second apparatus**, the first message having **a message identifier** (***position information***) (see abstract, fig.1, elements 30, 20, paragraphs [0018], [**0024**] and its description); and

a retrofit apparatus, operatively connected to the vehicle data bus, including **a second processor** programmed to send **a second message** having the same

message identifier **(*position information*)** (see fig.1, elements 10, paragraph **[0022]**, [0026] and its description). Nagatani fails to specifically disclose the first apparatus is a factory-installed. However, Morita discloses a vehicle comprising: a factory-installed first apparatus including a first processor (see fig.15, element 51, 52, fig.16, elements 71/85, 83, 84, 72, paragraphs [0077], [0083] and its description). Thus, it would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention was made to use Morita's the factory-installed first apparatus teaching in Nagatani's invention in order to provide an option for customers of using telecommunication device.

Regarding claim 11, Nagatani further discloses the second message originating from the retrofit apparatus is indistinguishable to the first apparatus from the first message received from the second apparatus (see paragraph [0026]).

Regarding claim 12, Nagatani further discloses the factory-installed first apparatus (200) responds to the second message originating from the retrofit apparatus (214) as if it were the first message received from the factory-installed second apparatus (218) (see abstract, fig.1, elements 10, 20, 30, paragraphs [0018], [0022], [0024-0025], **[0032]**, and its description).

Regarding claim 13, Nagatani further discloses the factory-installed first apparatus is electrically disconnected from the vehicle data bus. (It is inherent when cellular is carried out the vehicle, see fig.1, element 30, paragraph [0018] and its description).

6. **Claims 8-9** are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Nagatani (2006/0017612) in view of Morita et al. (2006/0136291) in further view of Nielsen (6,665,601).

Regarding claim 8, Nagatani and Morita disclose all subject matters described above, except for the message identifier is an 11 bit or 29 bit CAN ID. However, Nielsen discloses a communication system for managing across a vehicle data bus comprising the message identifier is an ~~11 bit or~~ 29 bit CAN ID (see col2, line 38). Thus, it would have been obvious to one having ordinary skill in the at the time the invention was made to use Nielsen's the 29 bit CAN ID in order to allow electronic control units and devices to communicate with each other in applications without a host computer.

Regarding claim 9, Nielsen further discloses vehicle data bus is a CAN network (see fig.2, element 40, col.5, line 15 and its description).

7. **Claims 17-19** are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Nagatani (2006/0017612) in view of Morita et al. (2006/0136291) in further view of Schramm et al. (2008/0093150).

Regarding claim 17, Nagatani and Morita disclose all subject matters described above, except for an object sensor. However, Schramm discloses a vehicle an object sensor capable of detecting objects in a frontal area of the vehicle (see fig.2, element 144, paragraph [0016] and its description). Thus, it would have been obvious to one having ordinary skill in the at the time the invention was made to use Schramm's an object sensor for preventing impact.

Regarding claims 18-19, the Examiner takes Official notice that these features

is structurally integrated with vehicle is notoriously well known in the art.

Allowable Subject Matter

8. **Claims 14-16** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Examiner's Note

Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

When responding to this Office Action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present, in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections See 37 CFR 1.111 (c).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CongVan Tran whose telephone number is (571)272-7871. The examiner can normally be reached on monday-thursday.

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, George Eng can be reached on (571) 272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/CongVan Tran/
Primary Examiner, Art Unit 2645

Notice of References Cited	Application/Control No. 15/482,781	Applicant(s)/Patent Under Reexamination NIX, AXEL	
	Examiner CongVan Tran	Art Unit 2645	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-2006/0017612 A1	01-2006	Nagatani; Yoshinori	G01S5/0027	342/357.64
*	B	US-2004/0260458 A1	12-2004	Park, Sang-Ho	G01C21/36	701/428
*	C	US-2002/0022489 A1	02-2002	Odashima, Masahiro	H04W88/02	455/456.1
*	D	US-6,028,537 A	02-2000	Suman; Michael J.	B60K35/00	340/426.14
*	E	US-6,665,601 B1	12-2003	Nielsen; Brad	H04L12/40	701/50
*	F	US-2006/0136291 A1	06-2006	Morita; Kenichi	G06Q30/02	705/13
*	G	US-2008/0093150 A1	04-2008	Schramm; Michael R.	B60R21/0134	180/274
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15482781	NIX, AXEL
	Examiner	Art Unit
	CONG TRAN	2645

CPC- SEARCHED		
Symbol	Date	Examiner
H04W 76/007; H04B1/3822; H04W 4/22	5/16/17	CT

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
455	404.1 -2; 435.2; 435.3; 455/521; 445; 466; 527; 552.1	5/15/17	CT

* 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
identifier with bit near3 "11" with vehicle	5/15/17	CT
navigat$3 with ($4phone mobile wireless ue) with (car vehic$4) with (ID idenf$4 identity identification) and @ad<="20070430" and (emergency alert$4) near3 (device apparatus)	5/16/17	CT
data adj bus near5 (class adj 2 CAN) with vehicle and @ad<="20070430" and ("11" adj bit or "29" adj bit) with CAN	8/07/17	CT
Search Updated	8/22/17	CT

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/CONG TRAN/ Primary Examiner.Art Unit 2645

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

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15482781
Filing Date	2017-04-09
First Named Inventor	Axel Nix
Art Unit	2645
Examiner Name	Congvan TRAN
Attorney Docket Number	SUC01-01C3

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	5572204		1996-11-01	Timm et al.	
	2	6028537		2000-02-01	Suman et al.	
	3	6330499		2001-12-01	Chou et al.	
	4	6493629		2002-12-01	Van Bosch	
	5	6617979		2003-09-01	Yoshioka	
	6	6690302		2004-02-01	Inomata	
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	8	6812832		2004-11-01	Lobaza et al.	

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	11	7206672		2007-04-01	Mueller	
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	1	20020046285		2002-04-01	Yasushi et al.	
	2	20020103622		2002-08-01	Burge	
	3	20020115423		2002-08-01	Hatae et al.	
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	Attorney Docket Number	SUC01-01C3

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	7	20060220806		2006-10-01	Nguyen	
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	12	20080143497		2008-06-01	Wasson et al.	
	13	20080162042		2008-07-01	Huber et al.	

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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Filing Date	2017-04-09
First Named Inventor	Axel Nix
Art Unit	2645
Examiner Name	Congvan TRAN
Attorney Docket Number	SUC01-01C3

CERTIFICATION STATEMENT

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

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SIGNATURE

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Signature	/Axel Nix/	Date (YYYY-MM-DD)	2017-07-03
Name/Print	Bernd Axel Nix	Registration Number	59184

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/482,781	04/09/2017	Axel Nix	SUC01-01C3

CONFIRMATION NO. 3524

66478
Smartpat PLC
Axel Nix
1420 Washington Blvd.
Suite 301
Detroit, MI 48226

PUBLICATION NOTICE

OC00000093067991

Title: Method, apparatus and system for retrofitting a vehicle

Publication No.US-2017-0214543-A1
Publication Date:07/27/2017

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

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(Not for submission under 37 CFR 1.99)

Application Number	15482781
Filing Date	2017-04-09
First Named Inventor	Axel Nix
Art Unit	2645
Examiner Name	Congvan TRAN
Attorney Docket Number	SUC01-01C3

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	2	6028537		2000-02-01	Suman et al.	
	3	6330499		2001-12-01	Chou et al.	
	4	6493629		2002-12-01	Van Bosch	
	5	6617979		2003-09-01	Yoshioka	
	6	6690302		2004-02-01	Inomata	
	7	6748211		2004-06-01	Isaac et al.	
	8	6812832		2004-11-01	Lobaza et al.	

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	9	7016656		2006-03-01	Odashima et al.	
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	11	7206672		2007-04-01	Mueller	
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	1	20020046285		2002-04-01	Yasushi et al.	
	2	20020103622		2002-08-01	Burge	
	3	20020115423		2002-08-01	Hatae et al.	
	4	20040091085		2004-05-01	Suganuma et al.	
	5	20040198466		2004-10-01	Walby et al.	

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	6	20060017612		2006-01-01	Nagatani		
	7	20060220806		2006-10-01	Nguyen		
	8	20070075919		2007-04-01	Breed		
	9	20070086579		2007-04-01	Lorello et al.		
	10	20070207772		2007-09-01	Huber et al.		
	11	20070298765		2007-12-01	Dickinson et al.		
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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	/Axel Nix/	Date (YYYY-MM-DD)	2017-07-03
Name/Print	Bernd Axel Nix	Registration Number	59184

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

Privacy Act Statement

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

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

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

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

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

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

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

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Axel Nix
Application Number	:	15/482,781
Filing Date	:	2017-04-09
Docket Number	:	SUC01-01C3
Examiner	:	Congvan TRAN
Title	:	Method, apparatus and system for retrofitting a vehicle

INFORMATION DISCLOSURE STATEMENT

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

Sir:

The applicant submits herewith form PTO/SB/08a Information Disclosure Statement together with copies of foreign patents, publications or other information of which the applicant is aware, which the applicant believes may be material to the examination of this application and for which there may be a duty to disclose in accordance with 37 CFR 1.56.

This Information Disclosure Statement is submitted

_X_ under 37 CFR 1.97(b) or

(Within three months of filing national application; or date of entry of international application; or before mailing date of first office action on the merits; whichever occurs last)

___ under 37 CFR 1.97(c) together with

___ a Statement under 37 CFR 1.97(e), or

___ a fee under 37 CFR 1.17(p), or

(After the CFR 1.97(b) time period, but before final action or notice of allowance, whichever occurs first)

___ under 37 CFR 1.97(d) together with a Statement under 37 CFR 1.97(e) and the fee set forth in 37 CFR 1.17(p).

(Filed after final action or notice of allowance, whichever occurs first, but before payment of the issue fee)

Consideration of the foregoing in relation to this application is respectfully requested.

Respectfully submitted,

Date: July 3, 2017

/Axel Nix/

Bernd Axel Nix
Registration No. 59184

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Electronic Acknowledgement Receipt

EFS ID:	29677093
Application Number:	15482781
International Application Number:	
Confirmation Number:	3524
Title of Invention:	Method, apparatus and system for retrofitting a vehicle
First Named Inventor/Applicant Name:	Axel Nix
Customer Number:	66478
Filer:	Bernd Axel Nix
Filer Authorized By:	
Attorney Docket Number:	SUC01-01C3
Receipt Date:	03-JUL-2017
Filing Date:	09-APR-2017
Time Stamp:	11:52:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	20170703_SUC0101C3-IDS.pdf	1054473 41a65605423b53c28e81a64c0fcc346e7fb64f53	no	6

Warnings:

Information:					
2	Transmittal Letter	20170703-SUC01-01C3_Prosecution_IDS-Transmittal.pdf	223630 5b905438a1597e91bc024bf74d7a89aff9afa17e	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	1278103	

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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.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Axel Nix
Application Number	:	15/482,781
Filing Date	:	2017-04-09
Docket Number	:	SUC01-01C3
Examiner	:	Congvan TRAN
Title	:	Method, apparatus and system for retrofitting a vehicle

AMENDMENT

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

Sir:

In Response to the Office Action dated 05/23/2017, please amend the above identified application as follows:

AMENDMENTS TO THE SPECIFICATION

Please amend paragraphs [0020] and [0040] of the specification as follows:

[0020] FIG. 3 is a block diagram illustrating a vehicle communication system showing an airbag control apparatus, a pre-impact system, a telecommunication apparatus, an emergency call apparatus and a navigation system communicating through a common vehicle data bus.

[0040] Referring now to Fig. 3, there is shown a block diagram illustrating an exemplary vehicle communication system **300** including the telecommunication apparatus **200**, an airbag control apparatus **302**, a pre-impact sytem **304**, the emergency call apparatus **214** and the navigation system **218**. As is shown, each system is in communication with the vehicle's data bus **212**, which may be a Class 2 or CAN vehicle data bus or any other suitable bus known in the art for electronic data communication.

Please add the following after paragraph [0040]:

[0040.2] Furthermore, the impact warning system **304** may also be chosen from existing object detection systems, forward collision warning (FCW) systems, etc., known to those skilled in the art. The impact warning system **304** may be shared by other subsystems in the vehicle such as stop-and-go, cut-in detection, automatic braking, parking aid, and the like, known to those skilled in the art. Particularly, the vehicle is configured with a sensor (or sensors) capable of detecting objects in the frontal area of the vehicle. The sensor not only detects the presence of an object, but also provides some quantitative information about the object such as range, range rate, and azimuth position of the object. Additional information related to the object (e.g., a lead vehicle in many instances) may include relative acceleration, the size of the object, the dimensions of the object, the direction of movement of the object, position of potential impact, etc. The object information may be obtained by means of laser technology and/or radar technology, for example. In addition to the gathered object data, the pre-impact system **304** also incorporates a threat assessment algorithm, generally known in the art, which evaluates the incoming data both from the sensor and the vehicle, analyzes the particular situation, and then determines if there is any imminent threat of impacting an object in the frontal area of the vehicle.

AMENDMENTS TO THE DRAWINGS

Please replace Figures 3 and 4 with the replacement sheet submitted herewith.

A "PRE-IMPACT SYSTEM" block 304 has been added to both Figures 3 and 4.

REMARKS

Claims 1-19 are pending. The claims have not been amended.

No new matter has been added to the application.

The indication of allowability of Claims 8 and 14-16 is noted with appreciation.

Claim Rejection – 35 USC §112

Claims 17-19 have been rejected under 35 U.S.C. 112 for failing to comply with the written description requirement. In particular, the Office Action points out that the phrases "detecting objects in a frontal area of the vehicle", "second apparatus is part of an automatic braking system" and "second apparatus is part of a parking aid system" are not supported in the specification.

The Applicant agrees. Claims 17-19 refer to subject matter not described in this application but incorporated by reference to US Patent 6,812,832 (Lobaza) in paragraph [0003]. By this amendment, the applicant adds direct support for claims 17-19 in the specification and in the drawings. More specifically, the submitted replacement sheet adds a pre-impact system 304 to Fig. 3 and Fig. 4, reflecting the depiction of a pre-impact system 104 in Lobaza's Fig. 3. The pre-impact system has been added to the description of Figure 3 in paragraph [0020] of the specification and is discussed in more detail in amended paragraph [0040] and new paragraph [0040.2]. The added description of the pre-impact system 304 in paragraphs [0040] and [0040.2] is a copy of Lobaza's disclosure in column 4, lines 42-67. The incorporation by reference of Lobaza's patent meets the requirements of 37 CFR 1.57 and therefore the amendment to the drawings and specification is not new matter.

The amendment provide a written description to support claims 17-19, rendering the rejection of those claims under 35 U.S.C. 112 moot. Withdrawl of the rejection is respectfully requested.

Claim Rejection – 35 USC §102

MPEP § 2131 states that "'[a] claim is anticipated only if **each and every element** as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.' Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)" (emphasis added). "'The identical invention must be shown in **as complete detail** as is contained in the ... claim.' Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)" (emphasis added). Moreover, "[e]very element of the claimed invention must be literally present, **arranged as in the claim**." Id. (emphasis added).

In the present case, claims 1-7, 9-13 and 17-19 have been rejected under pre-AIA 35 U.S.C. 102 (b). The Applicant believes the rejection to be in error since Kennedy III does not disclose each and every element of the Applicant's claims.

The Applicant has studied Kennedy III in light of the Office Action and as best understood believes that the Examiner considered the following relationships:

Element of claims 1 and 5	**Equivalent element in Kennedy III**
providing a vehicle	Vehicle 25
having a factory-installed first apparatus (200)	Cellular transceiver 42 and handset 92 included therein (element 42/92).
including a processor, programmed to communicate with	**Not disclosed by Kennedy III.**
a factory-installed second apparatus (218)	GPS device 48.
through a vehicle data bus (212)	Communication bus 32.
with a first message	**Not disclosed by Kennedy III**
having an identifier;	**Not disclosed by Kennedy III**
electrically disconnecting the vehicle data bus (212) between the factory-installed first apparatus (200) and the factory-installed second apparatus (218);	**Not disclosed by Kennedy III**
electrically connecting	**Not disclosed by Kennedy III**

a retrofit apparatus (214) to the vehicle data bus (212); and	User interface and buttons 36/22.
transmitting a second message from the retrofit apparatus (214) to the factory-installed first apparatus (200),	**Not disclosed by Kennedy III**
the second message being indistinguishable from the first message.	**Not disclosed by Kennedy III**

Kennedy III fails to disclose each and every element of claims 1 and 5. In particular:

1. Kennedy III's cellular transceiver 42/92 does not include a processor as required by claim 1. Kennedy III's processor 38 is external to the cellular transceiver 42/92.
2. Kennedy III fails to disclose a first message having a first identifier.
3. Kennedy III fails to disclose a step of electrically disconnecting the communication bus 32 between the cellular transceiver 42/92 and the GPS device 48.
4. Kennedy III fails to disclose a retrofit apparatus or distinguish between factory-installed and retrofitted elements. Kennedy specifically states that "[e]ach mobile unit 12 includes at least a user interface 22" (col. 3, line 58). The user interface device 22 is an essential part of the mobile unit 12 and can not be added separately from the cellular transceiver 42/92 and the GPS device 48. Nothing in Kennedy III suggests that the user interface device 22 is installed as part of a retrofit while the GPS device 48 and the element 42/92 are factory-installed.
5. Kennedy III fails to disclose a second message having a second identifier.
6. Even if, arguendo, the cellular transceiver 42 were to exchange a first message with the GPS device 48, there is no disclosure or reason to believe that a second message from the user interface device 22 would be **indistinguishable** from the message which is communicated between the transceiver and the GPS device.

Claim 2 requires that the second message uses the identifier of the first message. The Office Action appears to refer to physical buttons in Kennedy III as allegedly disclosing message identifiers. The Applicant is puzzled how the illustration of a button anticipates a message identifier. Clarification is respectfully requested.

Claim 3 requires receiving the first message in the retrofit apparatus. The Office Action refers to col. 5, line 58 which reads "placed to a local '911' number". The quoted line appears to have no relationship with receiving a message in a retrofit apparatus. Clarification is respectfully requested. Claim 3 requires **receiving the first message** in the retrofit apparatus. I.e. the retrofit apparatus must receive the message communicated between the first apparatus and the second apparatus. Given the Applicant's understanding of the rejection, Kennedy III would have to disclose that the user interface 22 / buttons 36 receive a message that is communicated between the GPS device and the transceiver. The applicant respectfully submits that there is no such disclosure by Kennedy III nor is there any reason to believe that the buttons of a user interface **receive** messages at all.

Claim 4 requires that the retrofit apparatus **re-**transmits messages received on the vehicle data bus (212) to the factory-installed first apparatus (200). To anticipate claim 4, Kennedy III would have to disclose buttons which receive a message and then re-transmit that message on the communication bus 32. There is no such disclosure in the cited col. 11, line 4 ("In one embodiment, processor 38 determines the priority") nor anywhere else in Kennedy III.

Regarding claim 6, the Applicant believes the Office Action considered the following relationships:

Element of claims 6	**Equivalent element in Kennedy III**
A vehicle, comprising:	Vehicle 25.
a factory-installed first apparatus (200)	Cellular transceiver 42 and handset 92 included therein (element 42/92).
including a first processor	**Not disclosed by Kennedy III.**
which is programmed to receive a first message	**Not disclosed by Kennedy III.**
on a vehicle data bus (212)	Communication bus 32.

from a factory-installed second apparatus (218); and	GPS device 48.
the first message having a message identifier; and	**Not disclosed by Kennedy III.**
a retrofit apparatus (214) connected to the vehicle data bus (212)	Element 36/22 (user interface and buttons)
including a second processor	**Not disclosed by Kennedy III.**
programmed to transmit a second message	**Not disclosed by Kennedy III.**
which mimics the first message.	**Not disclosed by Kennedy III.**

Kennedy III fails to disclose each and every element of claim 6. In particular:

1. Kennedy III's cellular transceiver 42/92 does not include a first processor as required by claim 6. Kennedy III's processor 38 is external to the cellular transceiver 42/92.
2. Given that Kennedy III fails to disclose the first processor in the cellular transceiver, he inherently fails to disclose the first processor being programmed to receive a first message.
3. Kennedy III fails to disclose a retrofit apparatus or distinguish between factory-installed and retrofitted elements. Kennedy specifically states that "[e]ach mobile unit 12 includes at least a user interface 22" (col. 3, line 58). The user interface device 22 is an essential part of the mobile unit 12 and can not be added separately from the element 42/92 and the GPS device 48. The user interface 22 can thus not be considered a retrofit apparatus. Nothing in Kennedy III suggests that the user interface device 22 is installed as part of a retrofit while the GPS device 48 and the element 42/92 are factory-installed.
4. Kennedy III fails to disclose a second processor within the retrofit apparatus.
5. Given that Kennedy III fails to disclose the second processor in the user interface device he inherently fails to disclose the second processor being programmed to receive a second message.
6. Nothing in Kennedy III discloses or suggests a second message which mimics the first message.

Claim 7 requires that the first message comprises a message identifier that has been assigned to the factory-installed second apparatus and wherein the second processor is programmed to transmit the second message **with the same message identifier**. The Office Action points to physical elements in the drawings, in particular to the transceiver 42 and the GPS device 48, but fails to identify any messages or message identifiers. The Applicant respectfully submits that Kennedy III does not disclose two messages with the same identifier (i.e. a second message **spoofing** a first message) as required by claim 7.

In rejecting claim 9 the Office Action states that Kennedy III discloses the vehicle data bus being a network. While Kennedy III does recite a "wireline network" he fails to disclose specifically a **Controller Area Network (CAN)** network as required by claim 9.

Regarding claim 10, the Applicant believes the Office Action considered the following relationships:

Element of claims 10	**Equivalent element in Kennedy III**
A vehicle, comprising:	Vehicle 25.
a factory-installed first apparatus (200)	Cellular transceiver 42 and handset 92 included therein (element 42/92).
including a first processor,	**Not disclosed by Kennedy III.**
programmed to receive a first message	**Not disclosed by Kennedy III.**
via a vehicle data bus (212)	Communication bus 32.
from a factory-installed second apparatus (218),	GPS device 48.
the first message having a message identifier; and	**Not disclosed by Kennedy III.**
a retrofit apparatus (214), operatively connected to the vehicle data bus (212),	Element 36/22 (user interface and buttons)
including a second processor	**Not disclosed by Kennedy III.**
programmed to send a second	**Not disclosed by Kennedy III.**

message	
having the same message identifier.	**Not disclosed by Kennedy III.**

Kennedy III fails to disclose each and every element of claim 10. In particular:

1. Kennedy III's cellular transceiver 42/92 does not include a first processor as required by claim 10. Kennedy III's processor 38 is external to the cellular transceiver 42/92.
2. Given that Kennedy III fails to disclose the first processor in the cellular transceiver he inherently fails to disclose the first processor being programmed to receive a first message.
3. Kennedy III fails to disclose a retrofit apparatus or distinguish between factory-installed and retrofitted elements. Kennedy specifically states that "[e]ach mobile unit 12 includes at least a user interface 22" (col. 3, line 58). The user interface device 22 is an essential part of the mobile unit 12 and can not be added separately from the element 42/92 and the GPS device 48. The user interface 22 can thus not be considered a retrofit apparatus. Nothing in Kennedy III suggests that the user interface device 22 is installed as part of a retrofit while the GPS device 48 and the element 42/92 are factory-installed.
4. Kennedy III fails to disclose a second processor within the retrofit apparatus.
5. Given that Kennedy III fails to disclose the second processor in the user interface device he inherently fails to disclose the second processor being programmed to receive a second message.
6. Nothing in Kennedy III discloses or suggests a second message which mimics a first message.

Claim 11 requires that the second message originating from the retrofit apparatus (214) is **indistinguishable** to the first apparatus (200) from the first message received from the second apparatus (218). The Office Action points to the user interface 22, the variety of buttons 36 and more specifically to the phone button 212 and the emergency assistance button 214 as allegedly disclosing this limitation. The Applicant is, again, unclear how buttons relate to indistinguishable messages. Clarification is respectfully requested.

Claim 12 requires that the factory-installed first apparatus (200) responds to the second message originating from the retrofit apparatus (214) **as if it were the first message** received from the factory-installed second apparatus (218). Given the understanding of equivalency as above, the Examiner states that the cellular transceiver 42 responds to a message from the user interface 22 as if it were a message from the GPS device. Nothing in Kennedy III, and certainly not the drawings, disclose this limitation.

Claim 13 requires that the factory-installed first apparatus (200) is electrically disconnected from the vehicle data bus (212). Kennedy III does not show the cellular transceiver 42 being electrically disconnected from the bus 32.

Given the differences between the claimed subject matter and Kennedy III the claims, as previously presented, are allowable over Kennedy III. Withdrawl of the rejection under 35 U.S.C. 102 is respectfully requested. Should the Examiner have any questions or wish to discuss further this matter, please contact the undersigned at the telephone number provided below.

The USPTO is directed and authorized to charge all required fees or credit any overpayment to deposit account number 50-4614.

Respectfully submitted,

Date: May 25, 2017

/Axel Nix/

Axel Nix
Registration No. 59,184

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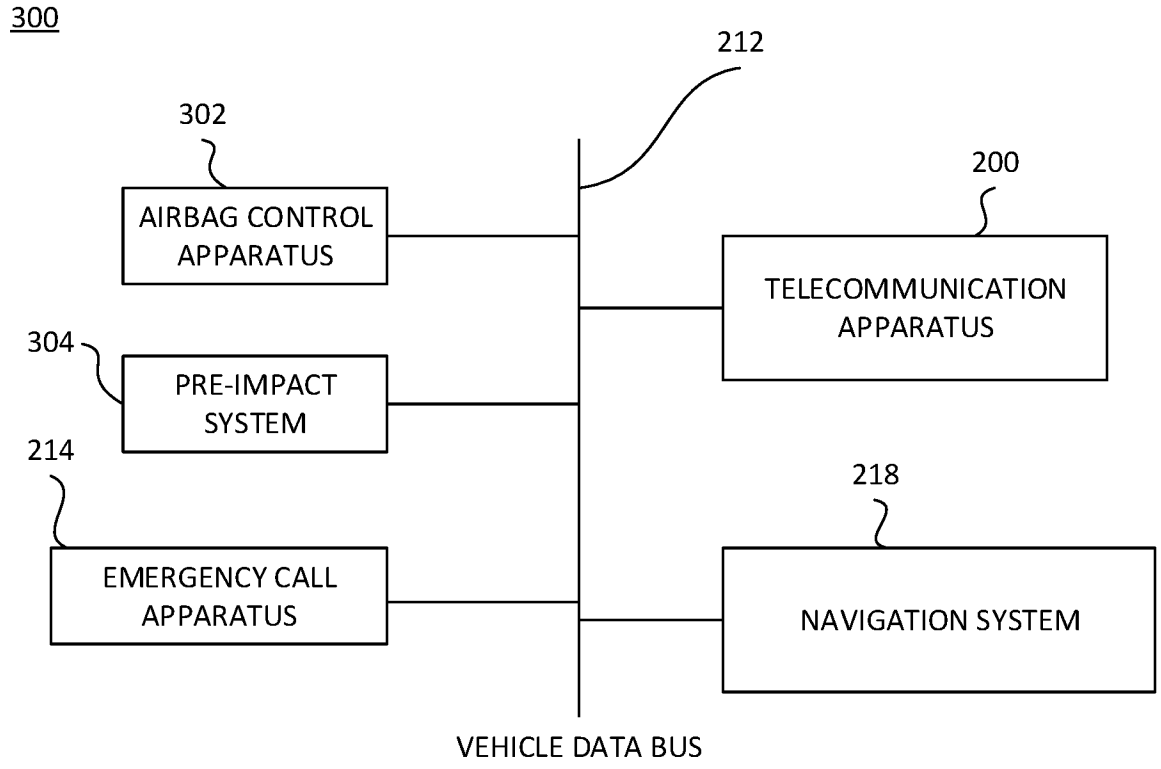
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212
302
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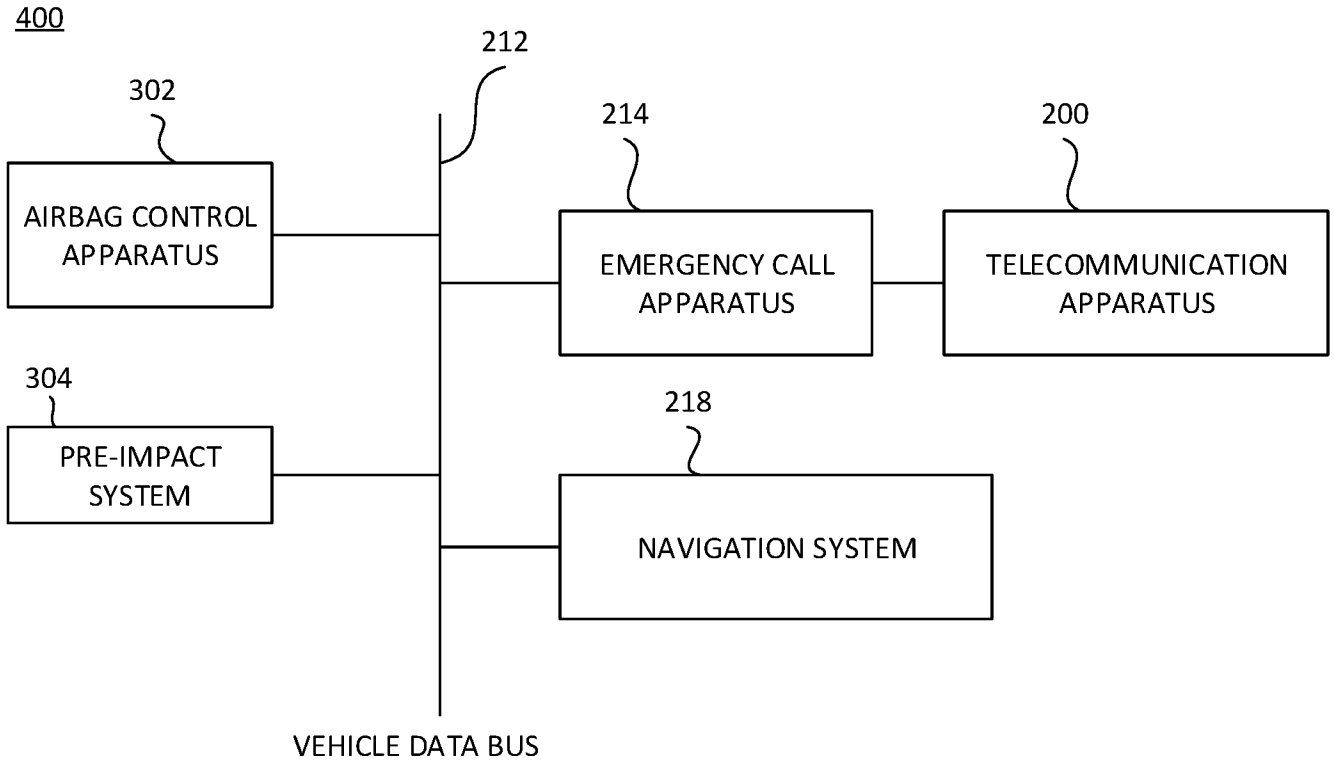
AIRBAG CONTROL APPARATUS
TELECOMMUNICATION APPARATUS
304
PRE-IMPACT SYSTEM
214
218
EMERGENCY CALL APPARATUS
NAVIGATION SYSTEM
VEHICLE DATA BUS

FIG. 3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212
302
214
200
AIRBAG CONTROL APPARATUS
EMERGENCY CALL APPARATUS
TELECOMMUNICATION APPARATUS
304
218
PRE-IMPACT SYSTEM
NAVIGATION SYSTEM
VEHICLE DATA BUS

FIG. 4

Electronic Acknowledgement Receipt

EFS ID:	29316859
Application Number:	15482781
International Application Number:	
Confirmation Number:	3524
Title of Invention:	Method, apparatus and system for retrofitting a vehicle
First Named Inventor/Applicant Name:	Axel Nix
Customer Number:	66478
Filer:	Bernd Axel Nix
Filer Authorized By:	
Attorney Docket Number:	SUC01-01C3
Receipt Date:	25-MAY-2017
Filing Date:	09-APR-2017
Time Stamp:	16:30:35
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		20170525-SUC01-01C3_ResponseAfterOA.pdf	240364 2bcd0a4908cfc260e61f1efc3c5b3cf8ede6f702	yes	11

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Specification	2	2
	Drawings-only black and white line drawings	3	3
	Applicant Arguments/Remarks Made in an Amendment	4	11

Warnings:					
Information:					
2	Drawings-only black and white line drawings	20170525-SUC01-01C3-Drawings-ReplacementSheet.pdf	177073 9e82537c8be49de27e8d7b2b3e8608a71a31ffca	no	1
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Information:					
		Total Files Size (in bytes):	417437		

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/482,781	04/09/2017	Axel Nix	SUC01-01C3	3524

66478 7590 05/23/2017

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EXAMINER	
TRAN, CONGVAN	

ART UNIT	PAPER NUMBER
2645	

NOTIFICATION DATE	DELIVERY MODE
05/23/2017	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):

info@smartpat.net
a.nix@gmx.de

Office Action Summary	Application No. 15/482,781	Applicant(s) NIX, AXEL	
	Examiner CongVan Tran	Art Unit 2645	AIA (First Inventor to File) Status No

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

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on *Apr. 09, 2017*.

☐ 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) *1-19* 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) *1-7, 9-13 and 17-19* is/are rejected.

8)☒ Claim(s) *8 and 14-16* 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 *Apr. 09, 2017* 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: _____.

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

> (a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 17-19 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention. The “detecting objects in a frontal area of the vehicle” and “the second apparatus is part an automatic braking system/a parking aid system” were not properly described in the application as filed.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of pre-AIA 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 –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1-7, 9-13 and 17-19** are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Kennedy, III et al. (6,535,743).

Regarding claim 1 and 5, Kennedy, III discloses a method, comprising: providing a vehicle having a factory-installed first apparatus including a processor, programmed to communicate with a factory-installed second apparatus through a vehicle data bus with a first message having an identifier (see fig,1, element 42/92, 32, 48, col.5, line 47, col.6, line 23 and its description); electrically disconnecting the vehicle data bus between the factory-installed first apparatus and the factory-installed apparatus (see fig.1, element 42/92, 32, 48, col.5, line 58 and its description); electrically connecting a retrofit apparatus to the vehicle data bus (see fig.1, 36/22, fig. 2, element 212/214, col.14, line 65 and its description); and transmitting a second message from the retrofit apparatus factory-installed first apparatus, the second message indistinguishable from the first message (see fig.1, 36/22, fig. 2, element 214, col.14, line 65 and its description).

Regarding claim 2, Kennedy, III further discloses the second message uses identifier of the first message (see fig.1, 36/22, fig. 2, element 214, col.14, line 65 and its description).

Regarding claim 3, Kennedy, III further discloses receiving the message in the retrofit apparatus (see col.5, line 58).

Regarding claim 4, Kennedy, III further discloses the retrofit apparatus transmits messages received on the vehicle data bus to the factory-installed first apparatus (see col.11, line 4),

Regarding claim 6, Kennedy, III discloses a vehicle (see fig.1, element 25, col.4, line 2 and its description) comprising: a factory-installed first apparatus including a first processor which is programmed to receive a first message on a vehicle data bus from a factory-installed second apparatus (see fig,1, element 42/92, 32, 48, col.5, line 47, col.6, line 23 and its description), and a retrofit apparatus connected to the vehicle data bus including a second processor programmed to transmit a second message which mimics the first message (see fig.1, 36/22, fig. 2, element 214, col.14, line 65 and its description).

Regarding claim 7, Kennedy, III further discloses the first message comprises a message identifier that has been assigned to the factory-installed apparatus and wherein the second processor is programmed to transmit the second message with the same message identifier (see fig.1, element **42/92**, 32, **48,** col.5, line 47, fig. 2, element 214, col.14, line 65 and its description).

Regarding claim 9, Kennedy, III further discloses the vehicle data bus is network (see fig.1, element 32, col.7, line 66 and its description).

Regarding claim 10, Kennedy, III discloses a vehicle, comprising: a factory-installed first apparatus including a first processor, programmed to receive a first message via a vehicle data from a factory-installed second apparatus, the first message having a message identifier (see fig,1, element **42/92**, 32, **48,** col.5, line 47, col.6, line 23 and its description); and a retrofit apparatus, operatively connected to the vehicle data bus , including a second processor programmed to send a second message having the same message identifier (see fig.1, 36/22, fig. 2, element 212/214, col.14, line 65 and its description).

Regarding claim 11, Kennedy, III further discloses the second message originating from the retrofit apparatus is indistinguishable to the first apparatus from the first message received from the second apparatus (see fig.1, 36/22, fig. 2, element 212/214, col.14, line 65 and its description)

Regarding claim 12, Kennedy, III further discloses the factory-installed first apparatus responds to the second message originating from the apparatus as if it were the first message received from the factory-installed second apparatus (see fig,1, element 42/92, 32, 48, col.5, line 47, col.6, line 23 and its description).

Regarding claim 13, Kennedy, III further discloses the factory-installed first apparatus is electrically disconnected from the vehicle data bus (see fig.1, element **42/92**, 32, **48,** col.5, line 58 and its description).

Regarding claims 17-19, Kennedy, III further discloses sensors including all limitations in claims 17-19 (see fig.1, element 26/28 and its description)

Allowable Subject Matter

6. **Claims 8 and 14-16** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Examiner's Note

7. Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

When responding to this Office Action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present, in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections See 37 CFR 1.111 (c).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CongVan Tran whose telephone number is (571)272-7871. The examiner can normally be reached on monday-thursday.

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, George Eng can be reached on (571) 272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

UNITED STATES PATENT AND TRADEMARK OFFICE

/CongVan Tran/
Primary Examiner, Art Unit 2645

Notice of References Cited	Application/Control No. 15/482,781	Applicant(s)/Patent Under Reexamination NIX, AXEL	
	Examiner CongVan Tran	Art Unit 2645	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6,535,743 B1	03-2003	Kennedy, III; William C.	G08G1/096883	340/988
*	B	US-2013/0159586 A1	06-2013	Kessler; Matthias	G06F13/38	710/305
*	C	US-2007/0112476 A1	05-2007	Obradovich; Michael L.	B60R16/0231	701/1
*	D	US-2004/0233045 A1	11-2004	Mays, Wesley M.	B60K35/00	340/425.5
*	E	US-2007/0174467 A1	07-2007	Ballou; Bernard L. JR.	H04L63/0838	709/227
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

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

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15482781	NIX, AXEL
	Examiner	Art Unit
	CONG TRAN	2645

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

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

CLAIM		DATE								
Final	Original	05/16/2017								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	O								
	9	✓								
	10	✓								
	11	✓								
	12	✓								
	13	✓								
	14	O								
	15	O								
	16	O								
	17	✓								
	18	✓								
	19	✓								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15482781	NIX, AXEL
	Examiner	Art Unit
	CONG TRAN	2645

CPC- SEARCHED		
Symbol	Date	Examiner
H04W 76/007; H04B1/3822; H04W 4/22	5/16/17	CT

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
455	404.1 -2; 435.2; 435.3; 455/521; 445; 466; 527; 552.1	5/15/17	CT

SEARCH NOTES		
Search Notes	Date	Examiner
identifier with bit near3 "11" with vehicle	5/15/17	CT
navigat$3 with ($4phone mobile wireless ue) with (car vehic$4) with (ID idenf$4 identity identification) and @ad<="20070430" and (emergency alert$4) near3 (device apparatus)	5/16/17	CT

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/CONG TRAN/ Primary Examiner.Art Unit 2645

UNITED STATES PATENT AND TRADEMARK OFFICE

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Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 3524

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/482,781	04/09/2017	710	2645	SUC01-01C3

APPLICANTS
Sucxess LLC, Birmingham, MI;

INVENTORS
Axel Nix, Birmingham, MI;

**** CONTINUING DATA ***************************
This application is a CON of 14/846,811 09/06/2015 PAT 9661664
which is a CON of 11/742,574 04/30/2007 PAT 9161195

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

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
04/18/2017

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /CONG TRAN/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		MI	7	19	3

ADDRESS
Smartpat PLC
Axel Nix
1180 Norfolk St.
Birmingham, MI 48009
UNITED STATES

TITLE
Method, apparatus and system for retrofitting a vehicle

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

SMARTPAT PLC
AXEL NIX
1180 NORFOLK ST.
BIRMINGHAM MI 48009

MAILED
APR 25 2017
OFFICE OF PETITIONS

Doc Code: TRACK1.GRANT

Decision Granting Request for Prioritized Examination (Track I or After RCE)	Application No.: 15/482,781

1. THE REQUEST FILED 4/9/17 IS **GRANTED.**

The above-identified application has met the requirements for prioritized examination

A. ☒ for an original nonprovisional application (Track I).
B. ☐ for an application undergoing continued examination (RCE).

2. **The above-identified application will undergo prioritized examination.** The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:

A. filing a **petition for extension of time** to extend the time period for filing a reply;

B. filing an **amendment to amend the application to contain more than four independent claims, more than thirty total claims**, or a multiple dependent claim;

C. filing a **request for continued examination**;

D. filing a notice of appeal;

E. filing a request for suspension of action;

F. mailing of a notice of allowance;

G. mailing of a final Office action;

H. completion of examination as defined in 37 CFR 41.102; or

I. abandonment of the application.

Telephone inquiries with regard to this decision should be directed to Cheryl Gibson-Baylor at (571)272-3213, Office of Petitions. In his/her absence, calls may be directed to Brian W. Brown, (571)272-5338.

Cheryl Gibson-Baylor
/Cheryl Gibson-Baylor/
[*Signature*]

Petitions Paralegal Specialist
(Title)

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
15/482,781	04/09/2017	3661	730	SUC01-01C3	19	3

CONFIRMATION NO. 3524

FILING RECEIPT

66478
Smartpat PLC
Axel Nix
1180 Norfolk St.
Birmingham, MI 48009

OC000000090709811

Date Mailed: 04/21/2017

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Axel Nix, Birmingham, MI;

Applicant(s)

Sucxess LLC, Birmingham, MI;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 14/846,811 09/06/2015
which is a CON of 11/742,574 04/30/2007 PAT 9161195

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/18/2017

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/482,781**

Projected Publication Date: 07/27/2017

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

Method, apparatus and system for retrofitting a vehicle

Preliminary Class

701

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

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.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign 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.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/482,781

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	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	19 minus 20 =	*	x 40 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 210 =	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	730		TOTAL	

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($)	ADDITIONAL FEE($)		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.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Axel Nix
Application Number	:	
Filing Date	:	
Docket Number	:	SUC01-01C3
Examiner	:	
Title	:	Method, apparatus and system for retrofitting a vehicle

PRELIMINARY AMENDMENT

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

Sir:

Prior to examination upon the merits, please amend the above identified application as follows:

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

Remarks begin on page 3 of this paper.

IN THE SPECIFICATION

Please substitute the originally filed specification with the substitute specification which is enclosed herewith. A comparison document showing the differences between the originally filed specification and the substitute specification is also enclosed herewith.

REMARKS

By this Preliminary Amendment, the Applicant amends the title, abstract, and description of the technical field to better reflect the scope of the claims pursued in the present application and to better comply with 37 CFR 1.72. No new matter has been added.

Favorable consideration on the merits is respectfully requested. The USPTO is directed and authorized to charge all required fees or credit any overpayment to deposit account number 50-4614.

Respectfully submitted,

Date: April 9, 2017

/Axel Nix/
Bernd Axel Nix

Smartpat PLC
1180 Norfolk St.
Birmingham, MI 48009
Tel.: (248) 854-2233
Email: axel.nix@smartpat.net

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	Method, apparatus and system for retrofitting a vehicle
First Named Inventor/Applicant Name:	Axel Nix
Filer:	Bernd Axel Nix
Attorney Docket Number:	SUC01-01C3

Filed as Small Entity

Filing Fees for Track I Prioritized Examination - Nonprovisional Application under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	70	70
UTILITY SEARCH FEE	2111	1	300	300
UTILITY EXAMINATION FEE	2311	1	360	360
REQUEST FOR PRIORITIZED EXAMINATION	2817	1	2000	2000
Pages:				
Claims:				
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
PROCESSING FEE, EXCEPT PROV. APPLS.	2830	1	70	70

Petition:	
Patent-Appeals-and-Interference:	
Post-Allowance-and-Post-Issuance:	
Extension-of-Time:	
Miscellaneous:	
Total in USD ($)	**2800**

Electronic Acknowledgement Receipt

EFS ID:	28872623
Application Number:	15482781
International Application Number:	
Confirmation Number:	3524
Title of Invention:	Method, apparatus and system for retrofitting a vehicle
First Named Inventor/Applicant Name:	Axel Nix
Customer Number:	66478
Filer:	Bernd Axel Nix
Filer Authorized By:	
Attorney Docket Number:	SUC01-01C3
Receipt Date:	09-APR-2017
Filing Date:	
Time Stamp:	17:18:24
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$2800
RAM confirmation Number	041017INTEFSW17190500
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	Drawings-only black and white line drawings	20150906_SUC01-01-Drawings.pdf	102561 cee3ef4bfc904c91cad219e8949be0cfec32c533	no	7
Warnings:					
Information:					
2		20170409_SUC01-01C3.pdf	371372 98d21a4b3c8fb7cbf925a74ae6179fcc8026a81e	yes	22

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	18
Claims	19	21
Abstract	22	22

Warnings:					
Information:					
3	Miscellaneous Incoming Letter	20170409_SUC01-01C3_Continuation-HakinRetraction.pdf	251582 51eb0ae3e41a7e20e861d0f3032483d53d5ecf66	no	2
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Information:					
4		20170409_SUC01-01C3-SubstituteSpec-Clean.pdf	360520 0a2195a867f5e8ffff44401752f9a5df8c3f5f1a	yes	19

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	18

	Abstract		19	19	
Warnings:					
Information:					
5	Applicant Arguments/Remarks Made in an Amendment	20170409_SUC01-01C3-SubstituteSpec-Markup.pdf	363088 a97d306fc6b45cabf3346aa6cf536f2a3805f1f8	no	19
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Information:					
6	TrackOne Request	20170409-sb0424.pdf	139981 3124d061945409cebd4ad8fd2d1024487c31e5ac	no	2
Warnings:					
Information:					
7	Oath or Declaration filed	20170409-SUC01-01C3_AIA01.pdf	180754 2b5fe3bc48aff010d4e3327be3107def7bab9efd	no	2
Warnings:					
Information:					
8	Application Data Sheet	20170409-SUC01-01C3_AIA14.pdf	1874678 e5611cca2625022941786749c67dc21e48bb54b8	no	8
Warnings:					
Information:					
9		20170409-SUC01-01C3_Preliminary_Amendment_with_Substitute_Spec.pdf	82522 c33802cf73fc4fb0eebc1c5e360afb552de38380	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Specification	2	2
	Applicant Arguments/Remarks Made in an Amendment	3	3

Warnings:	
Information:	

10	Fee Worksheet (SB06)	fee-info.pdf	40477 880a3fd940d0d6fa13cc5fee242a0ab446c39f62	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	3767535

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.

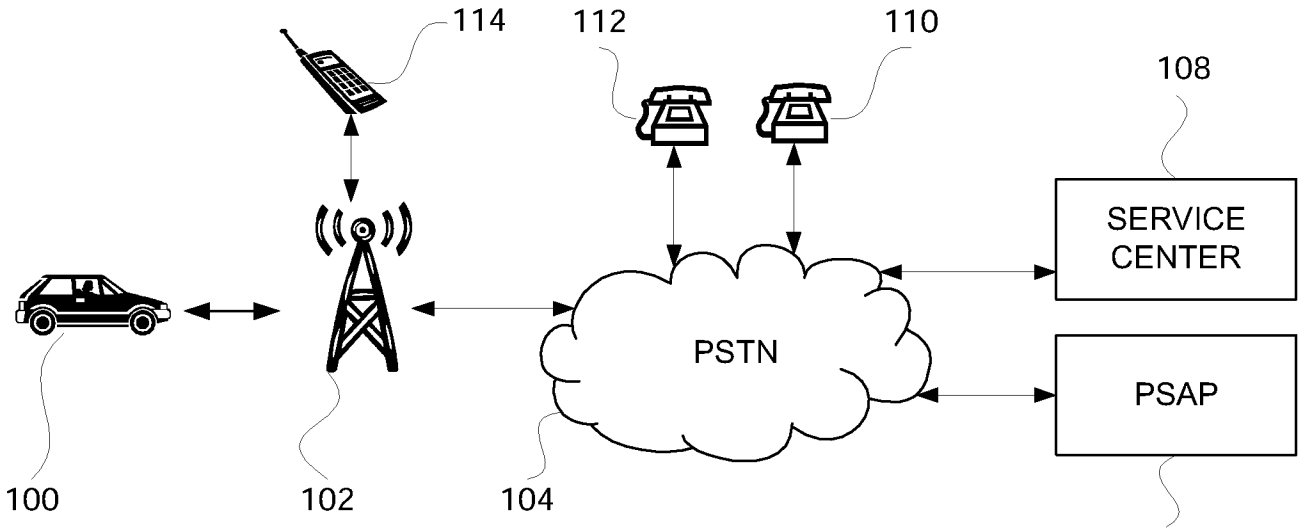
114
112
110
108
SERVICE CENTER
PSTN
PSAP
100
102
104
106

FIG. 1

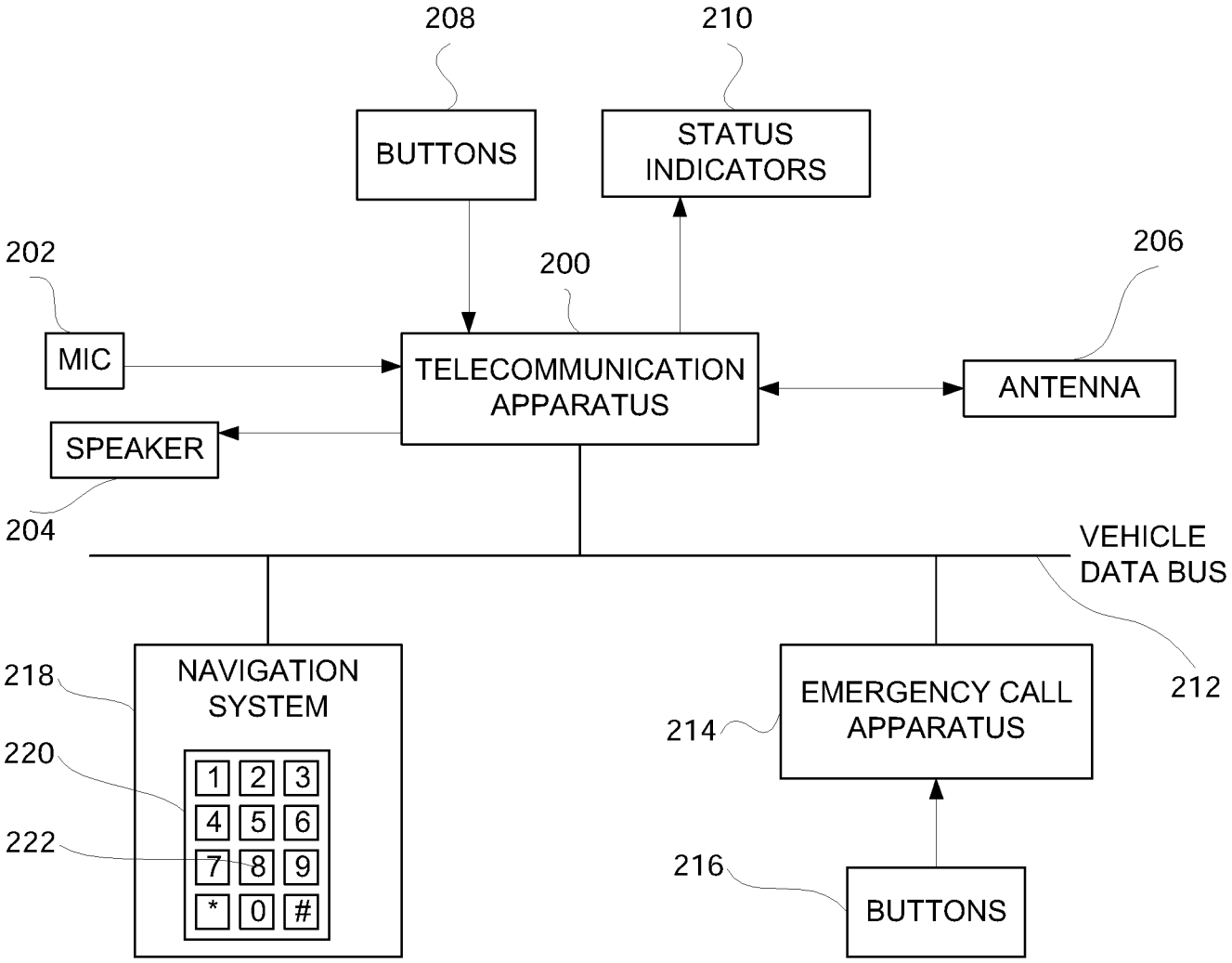
208
210
BUTTONS
STATUS INDICATORS
202
200
206
MIC
TELECOMMUNICATION APPARATUS
ANTENNA
SPEAKER
204
VEHICLE DATA BUS
218
NAVIGATION SYSTEM
1 2 3
4 5 6
7 8 9
* 0 #
220
222
212
214
EMERGENCY CALL APPARATUS
216
BUTTONS

FIG. 2A

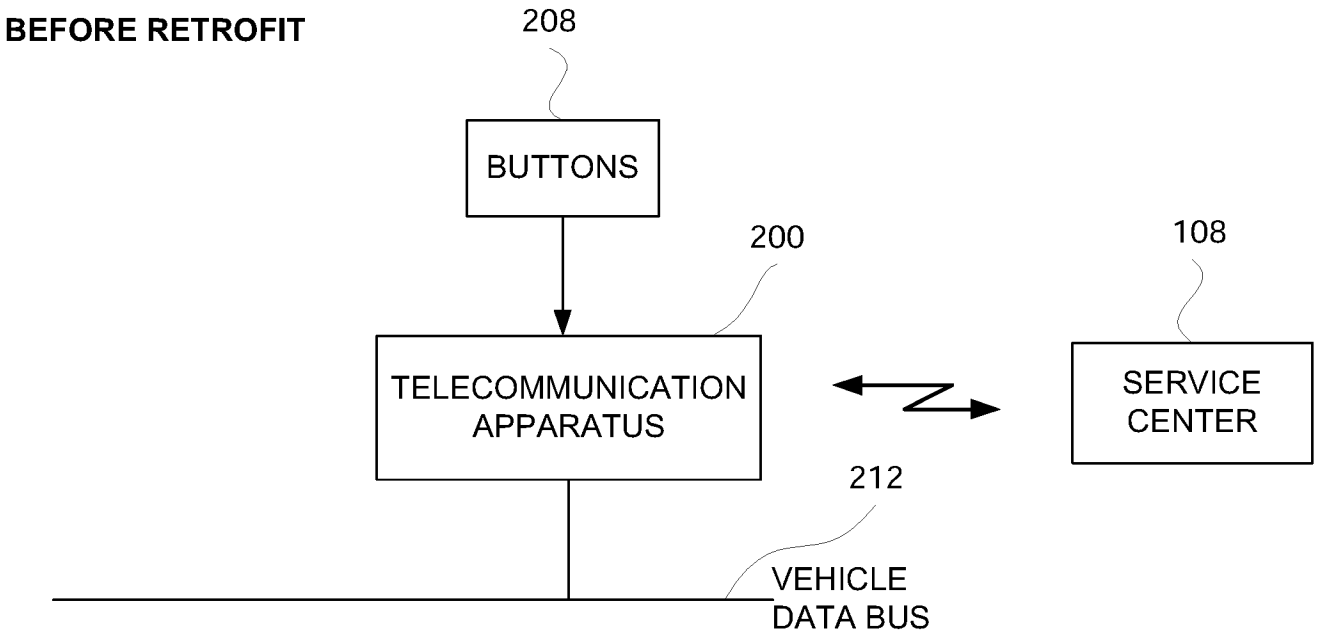

FIG. 2B (PRIOR ART)

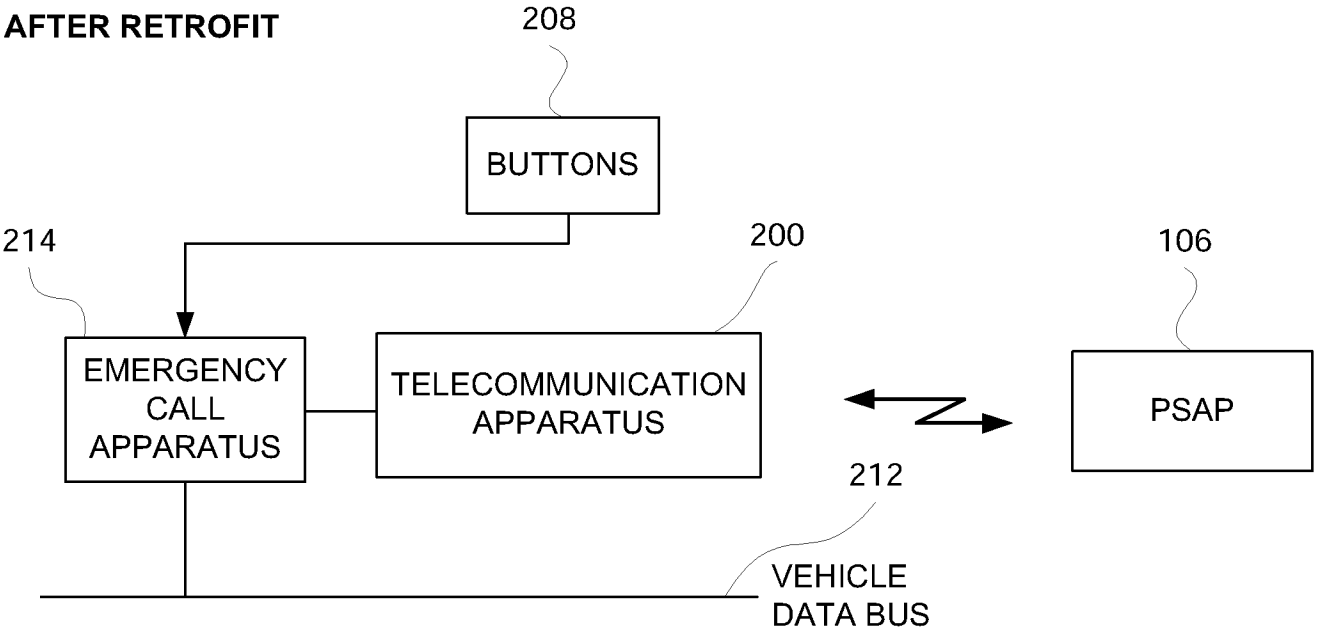

FIG. 2C

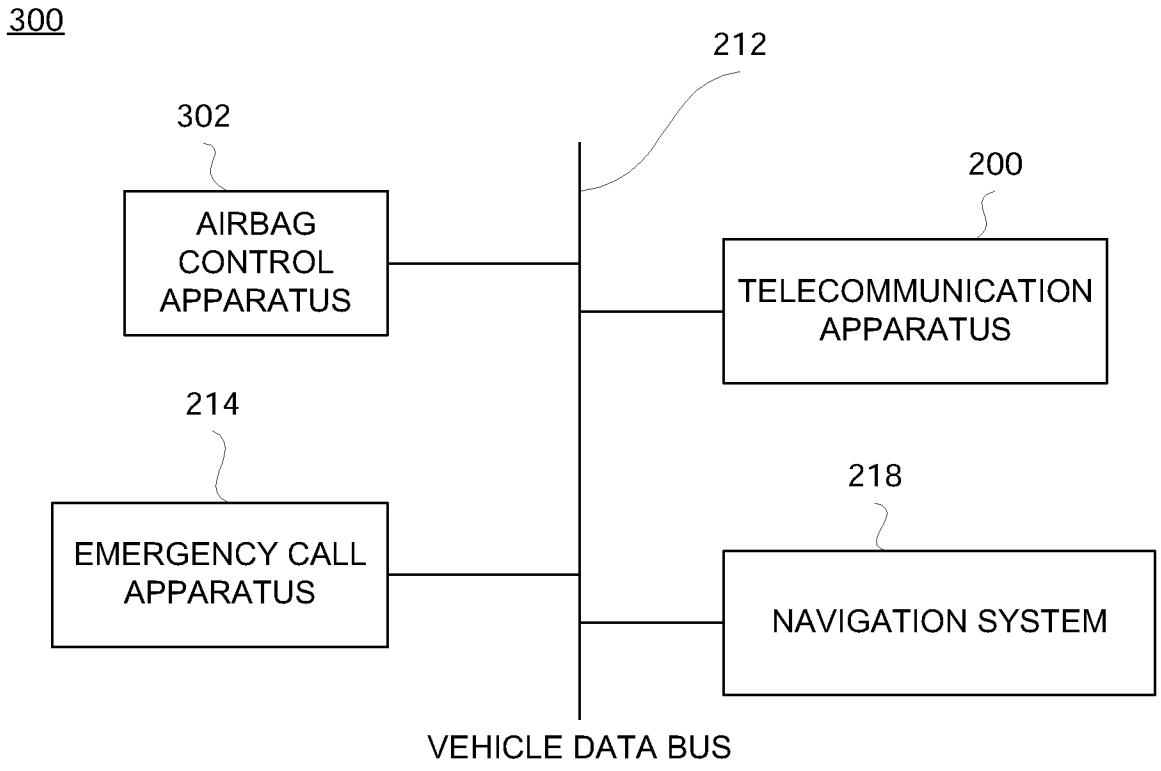
300
212
302
200
AIRBAG CONTROL APPARATUS
TELECOMMUNICATION APPARATUS
214
218
EMERGENCY CALL APPARATUS
NAVIGATION SYSTEM
VEHICLE DATA BUS

FIG. 3

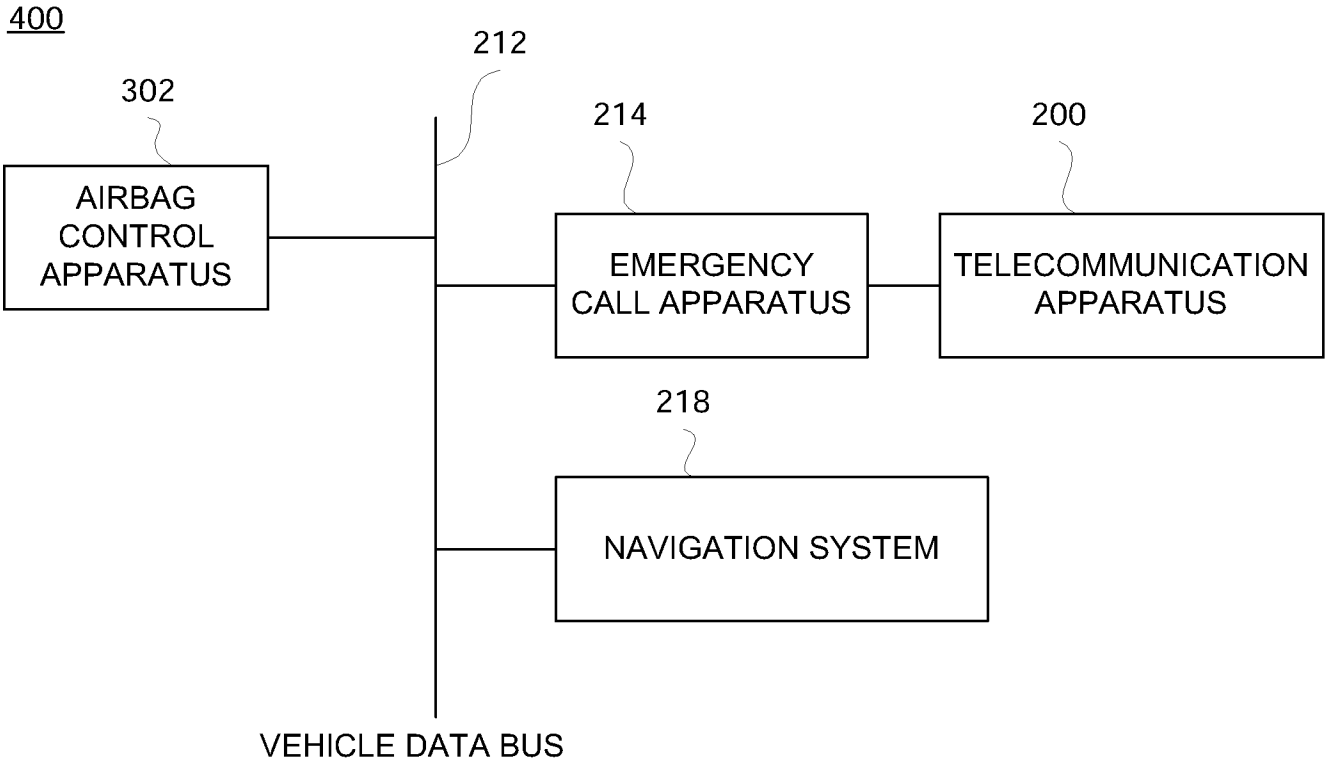
400
212
302
214
200
AIRBAG CONTROL APPARATUS
EMERGENCY CALL APPARATUS
TELECOMMUNICATION APPARATUS
218
NAVIGATION SYSTEM
VEHICLE DATA BUS

FIG. 4

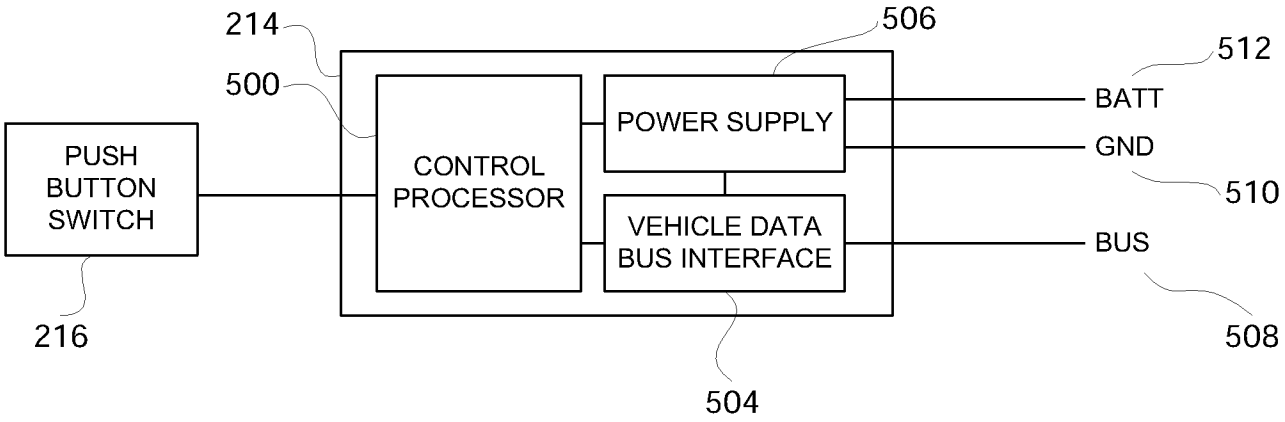

FIG. 5

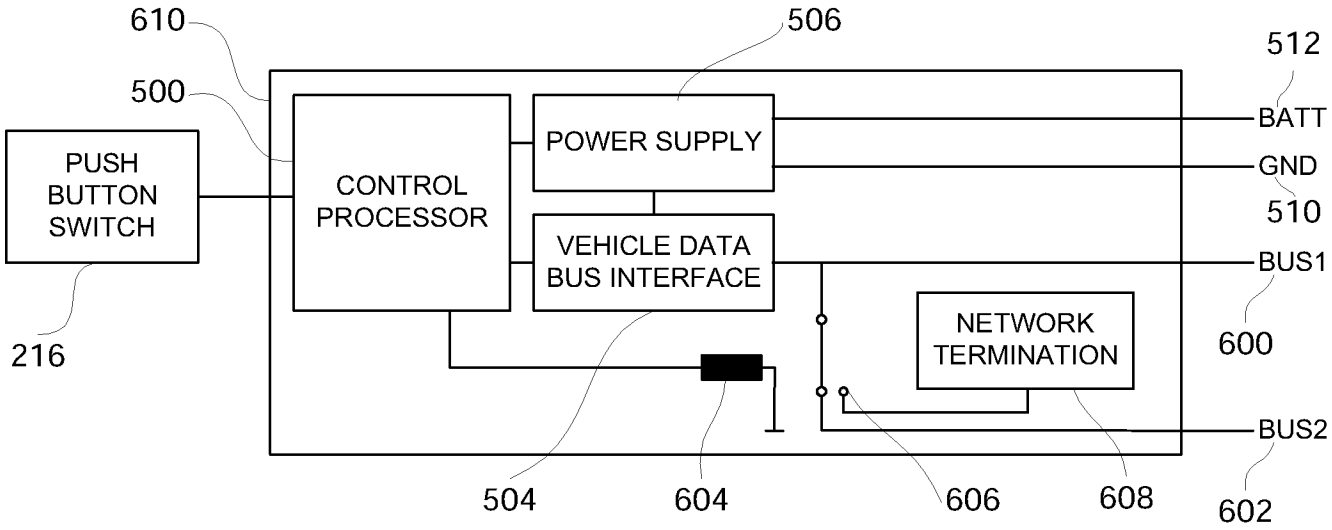

FIG. 6

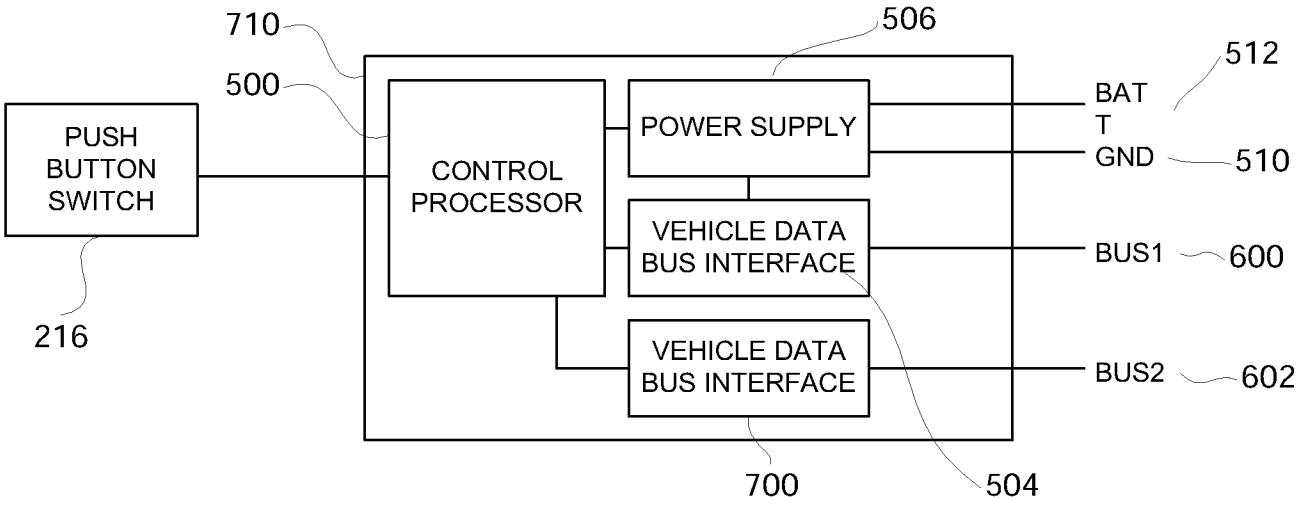

FIG. 7

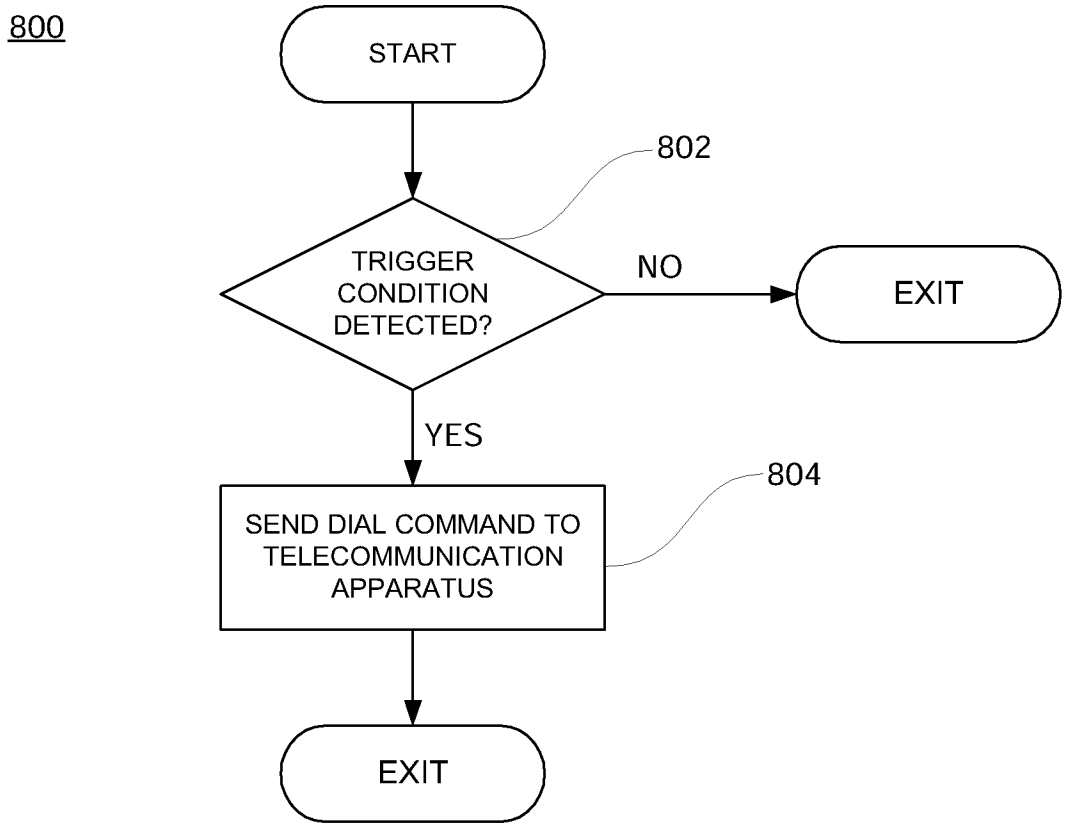
800
START
802
TRIGGER CONDITION DETECTED?
NO
EXIT
YES
804
SEND DIAL COMMAND TO TELECOMMUNICATION APPARATUS
EXIT

FIG. 8

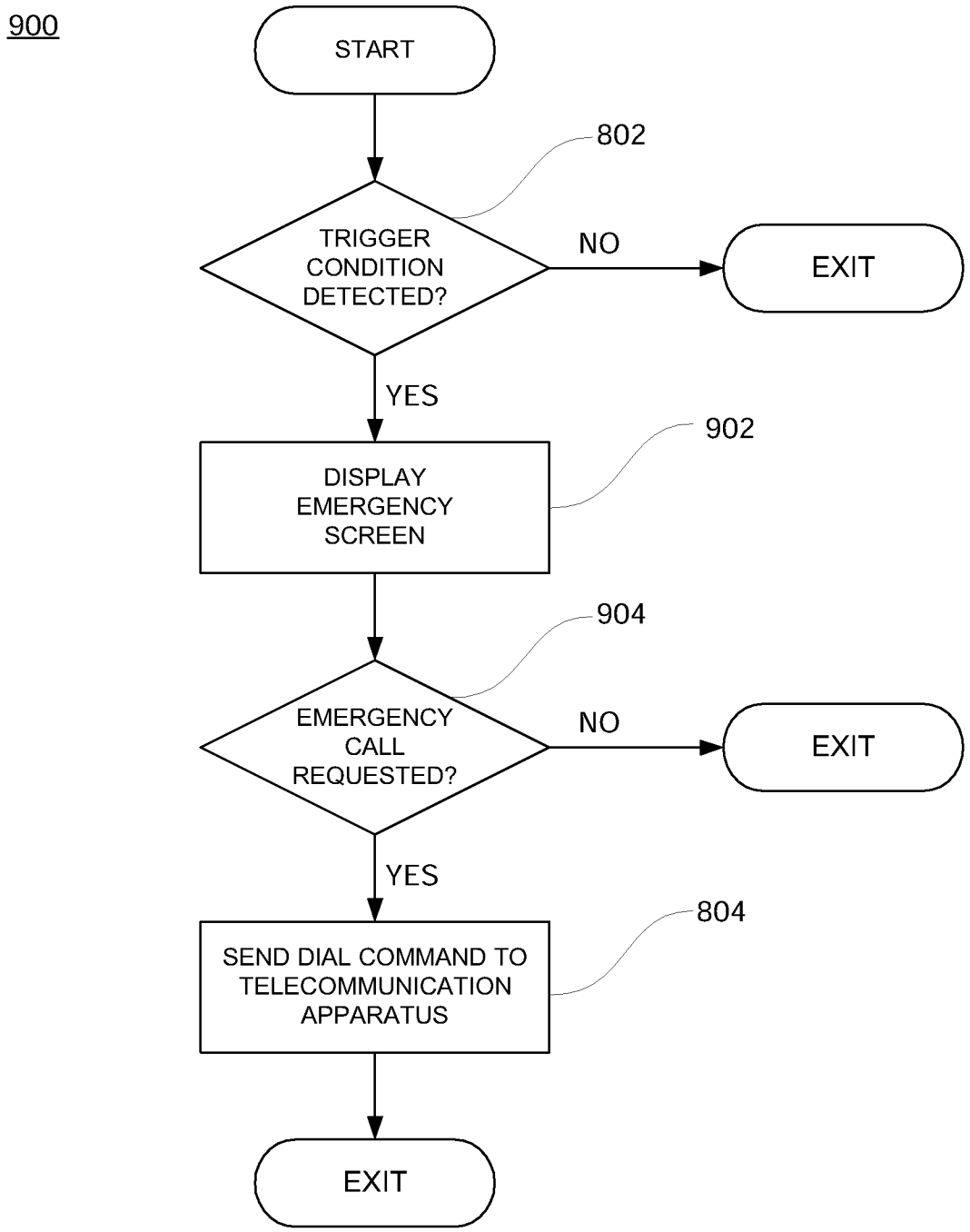
900
START
802
TRIGGER CONDITION DETECTED?
NO
EXIT
YES
902
DISPLAY EMERGENCY SCREEN
904
EMERGENCY CALL REQUESTED?
NO
EXIT
YES
804
SEND DIAL COMMAND TO TELECOMMUNICATION APPARATUS
EXIT

FIG. 9

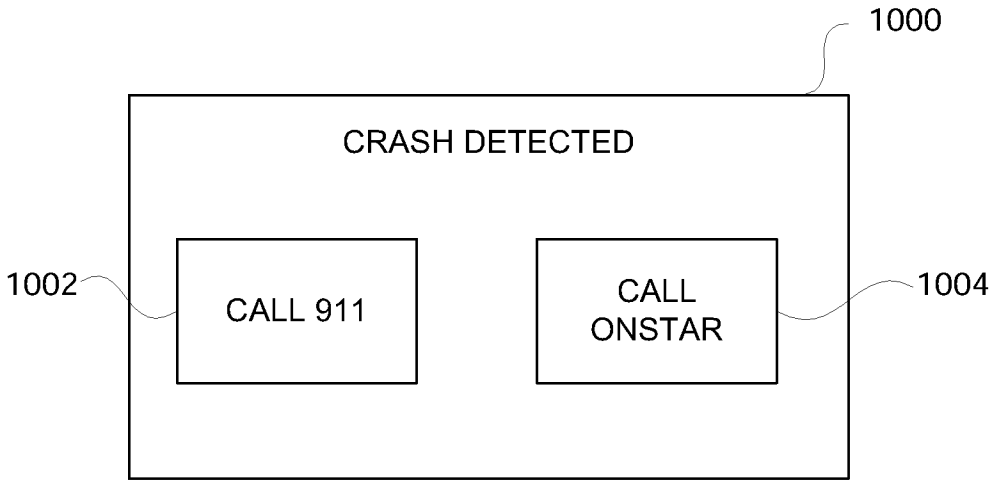

FIG. 10

METHOD, APPARATUS AND SYSTEM FOR PLACING EMERGENCY CALLS FROM A VEHICLE

TECHNICAL FIELD

[0001] The present disclosure relates to a method, apparatus and system for establishing emergency communication from a vehicle and, more specifically, to a system for and a method of initiating a wireless emergency telephone call through a vehicle data bus.

BACKGROUND OF THE INVENTION

[0002] Being able to easily alert emergency responders in case of an automobile accident is highly desirable. Mobile application service providers (such as OnStar®) address this need for their subscribers by offering an emergency call button located within reach of the driver of an automobile. Upon pressing the emergency call button an emergency telephone call is placed from a cellular telephone which is embedded in the vehicle through a wireless telecommunication network and a public switched telephone network to a service center operated by the mobile application service provider. An emergency call to the service provider may also be initiated automatically, e.g. upon airbag deployment.

[0003] In case of an incoming emergency call the mobile application service center silently obtains vehicle position information, e.g. information from a GPS receiver that is also embedded in the vehicle. The mobile application service center as part of an emergency assistance service informs public safety authorities of the emergency and conveys the vehicle's position. The emergency assistance service is typically available only to those who register (for a fee) with the mobile application service provider. Registration with the mobile application service providers includes an underlying registration with the wireless telecommunication network. Several elements of one such system are

described in US Patent 6,812,832 (Lobaza), which is hereby incorporated by reference.

[0004] The embedded cellular telephone may also be used to place hands free telephone calls. Dialing the embedded cellular telephone may utilize a speech recognition engine that is capable of recognizing spoken telephone numbers or voice tags associated with telephone numbers. To facilitate dialing the embedded cellular telephone may also be connected to an external keypad, e.g. a telephone-style keypad located in the vehicle's dashboard or a virtual keypad displayed on a touch screen display. The external keypad may communicate with the embedded cellular telephone by sending a telephone dial command message through the vehicle communication network. The embedded cellular telephone is accordingly configured to receive telephone dial command messages on the vehicle communication network and establish a telephone call to the requested telephone number.

[0005] US law obligates commercial mobile radio service providers to transmit all wireless 911 emergency calls without respect to their call validation process to a Public Safety Answering Point (PSAP), or, where no Public Safety Answering Point has been designated, to a designated statewide default answering point or appropriate local emergency authority. The law extends to voice capable cellular telephones embedded in vehicles. An embedded cellular telephone can hence be used in an emergency to directly alert public safety authorities by dialing 911 regardless of registration status with the mobile application service provider or the underlying wireless telecommunication network. However, the user interface provided to dial 911 is inferior to single button activation and may e.g. require use of the voice recognition interface. Changes in an operator's voice during an emergency frequently cause the voice recognition engine to fail detecting a spoken "dial 9-1-1" command and thereby preclude the operator from receiving the help he is seeking.

[0006] What is therefore needed is a method for combining the benefits of legally mandated free wireless 911 access to a Public Safety Answering Point with the advantageous single button user interface for placing emergency calls to a mobile application service center.

SUMMARY OF THE INVENTION

[0007] In one aspect of the present invention an integrated vehicle communication system includes a telecommunication apparatus in communication with a vehicle data bus. An emergency call apparatus is also in communication with the vehicle data bus, the emergency call apparatus further providing an emergency call push button switch to initiate an emergency telephone call to a Public Safety Answering Point. When the emergency call push button switch is pressed the emergency call apparatus transmits a telephone dial command message including a telephone number to be dialed on the vehicle data bus. The telecommunication apparatus is configured to receive the telephone dial command and establish communication with the requested telephone number. To initiate an emergency call to a Public Safety Answering Point in the United States the emergency call apparatus may e.g. transmit a telephone dial command message requesting the telecommunication apparatus to dial "911".

[0008] In a further aspect the emergency call apparatus may include an input for an external switch. In this aspect the emergency call push button switch may be remote from the emergency call apparatus and may e.g. be located within reach of the driver of the vehicle whereas the emergency call apparatus may be located somewhere else hidden in the vehicle.

[0009] In another aspect the emergency call apparatus may be added to the vehicle during a retrofit. In this aspect the vehicle may be originally equipped with an embedded telecommunication apparatus and an

emergency call push button switch connected thereto. Before the retrofit pressing the emergency call button is detected by the telecommunication apparatus which responsive to the button press initiates an emergency call to a mobile application service center.

[0010] During the retrofit an emergency call apparatus is added to the vehicle. The electrical connection between the emergency call push button switch and the telecommunication apparatus is separated and the emergency call push button switch is rewired and connected to the emergency call apparatus.

[0011] After the retrofit pressing the emergency call push button is detected by the emergency call apparatus which responsive to the button press transmits a telephone dial command message on the vehicle data bus. The telephone dial command message may request the telecommunication apparatus to dial the telephone number 911. The telecommunication apparatus responsive to receiving the telephone dial command message establishes a voice call to a Public Safety Answering Point.

[0012] In yet another aspect the emergency call apparatus may be configured to detect a trigger condition and responsive thereto request the telecommunication apparatus to establish communication with a Public Safety Answering Point. The trigger condition may be a manual emergency call push button press. As part of an automatic emergency calling system the trigger condition may also be the receipt of one or more messages on the vehicle data bus which are reflective of a vehicle accident, e.g. a message signaling airbag deployment. Upon detecting a trigger condition the emergency call apparatus may transmit a telephone dial command message on the vehicle data bus requesting the telecommunication apparatus to dial 911. The telecommunication apparatus responsive to receiving the telephone dial command message establishes a voice call to a Public Safety Answering Point.

[0013] In still another aspect the emergency call apparatus may provide an electrically controlled switch to separate the vehicle communication network into two subnets. One subnet may be used to communicate between the emergency call apparatus and the telecommunication device and the other subnet may be used to communicate between the emergency call apparatus and the rest of the vehicle. This aspect can compensate for possible loss of communication on the vehicle data bus after a vehicle crash, e.g. because a wire within the communication network is shorted to ground or battery as a result of the crash. The emergency call apparatus may be configured to detect loss of communication and responsive thereto open the electrically controlled switch, thereby dividing the communication network into the two electrically insulated subnets. In result the emergency call apparatus separates the damaged portion of the vehicle communication network from its connection to the telecommunication apparatus and thereby regains its ability to communicate with the telecommunication apparatus and initiate an emergency call even though communication with the rest of the vehicle is no longer possible.

[0014] In yet another aspect the emergency call apparatus may provide two vehicle data bus interfaces wherein the first interface is used to communicate with the telecommunication apparatus and the second interface is used to communicate with the rest of the vehicle. In this aspect the emergency call apparatus acts as a bi-directional gateway between the two vehicle data bus interfaces. Messages which the emergency call apparatus receives through the first vehicle data bus interface are retransmitted through the second vehicle data bus interface. Vice versa messages received through the second vehicle data bus interface are retransmitted through the first vehicle data bus interface. The two vehicle data bus interfaces are electrically insulated from each other such that the emergency call apparatus maintains its ability to communicate with the telecommunication apparatus even if

communication with the rest of the vehicle can not be established, e.g. because a communication bus wire is shorted to ground or battery as may happen during an accident.

[0015] The following detailed description of the invention is merely exemplary in nature and is not intended to limit the invention or the application and uses of the invention. Furthermore, there is no intention to be bound by any theory presented in the preceding background of the invention or the following detailed description of the invention.

DESCRIPTION OF THE DRAWINGS

[0016] FIG. 1 is a schematic diagram of an exemplary wireless and a public switched telecommunication network through which emergency calls can be placed from a vehicle to a service center or Public Safety Answering Point.

[0017] FIG. 2A is a block diagram illustrating the vehicle portion of a wireless communication system for placing emergency calls used in the vehicle of FIG. 1.

[0018] FIG. 2B is a block diagram showing aspects of a prior art vehicle communication system for communicating with a mobile application service center before retrofit with an emergency call apparatus.

[0019] FIG. 2C is a block diagram showing aspects of a vehicle communication system for communicating with a Public Safety Answering Point after retrofit with an emergency call apparatus.

[0020] FIG. 3 is a block diagram illustrating a vehicle communication system showing an airbag control apparatus, a telecommunication apparatus, an emergency call apparatus and a navigation system communicating through a common vehicle data bus.

[0021] FIG. 4 is a block diagram illustrating an alternative embodiment of a vehicle communication system in which the telecommunication apparatus is connected to the vehicle data bus through the emergency call apparatus.

[0022] FIG. 5 is a block diagram illustrating an exemplary embodiment of an emergency call apparatus for a vehicle communication system configuration as shown in FIG. 3.

[0023] FIG. 6 is a block diagram illustrating an exemplary embodiment of an emergency call apparatus for a vehicle communication system configuration as shown in FIG. 4.

[0024] FIG. 7 is a block diagram of an alternative embodiment of the emergency call apparatus show in FIG 6.

[0025] FIG. 8 is a flow diagram illustrating an exemplary method for initiating an emergency call.

[0026] FIG. 9 is a flow diagram illustrating an alternative embodiment of the method shown in FIG. 8.

[0027] FIG. 10 is a schematic diagram of an exemplary touch screen display.

DETAILED DESCRIPTION

[0028] Referring to FIG. 1, there is shown a vehicle **100** featuring a mobile telecommunication apparatus, suitable for use with an embodiment of the invention, and which may be installed in the vehicle or carried into the vehicle by the subscriber. The mobile telecommunication apparatus communicates through a wireless network **102**, symbolized by a local telecommunication antenna tower, with a public switched telephone network (PSTN) **104**, to which are also connected telephones **110** and **112**. Wireless network **102** may also communicate with other wireless telecommunication devices, here symbolized by a wireless telephone **114**. The mobile telecommunication apparatus in vehicle **100**, which will be described in more detail with reference to FIG. 2A, may include a cellular telephone or any other wireless device that may be registered with a cellular service provider providing general dialing capability in connection with, and operation through, PSTN **104**. It may also include a cellular telephone or other wireless device that is not or that

is no longer registered with a cellular service provider so long as it provides connection with and operation through PSTN **104** with a Public Safety Answering Point (PSAP) **106**.

[0029] The telecommunication apparatus carried in vehicle **100** may have been designed to provide access to mobile application services of a service provider such as, for example, OnStar®. Mobile application services are typically provided within a subscription business model, which requires payment of a subscription fee per period, e.g. $19.95 per month or $199 per year. The telecommunication apparatus may have been permanently installed in the vehicle at the time of vehicle assembly and the cost of the telecommunication apparatus may have been subsidized by the service provider in anticipation of future subscription revenue if the owner or lessor of vehicle **100** registers for mobile application services. The service provider generally maintains at least one service center **108**, which is connected to PSTN **104** and which the subscriber and other subscribers in other vehicles call for the mobile application services. The mobile application services may include, for example, requests for vehicle location, selection of specific points of interest and directions thereto, and emergency assistance (both requested and automatic), as well as others not named.

[0030] If the owner or lessor of vehicle **100** does not register with the service provider, e.g. to avoid the financial burden associated with a subscription, the service provider may refuse to provide mobile application services including emergency assistance. The mobile application service provider may also deactivate the telecommunication apparatus located within vehicle **100**. Deactivating the telecommunication apparatus may include deregistering the cellular telephone therein from wireless network **102** so that the telecommunication apparatus can no longer gain access to wireless network **102** for general dialing and can thus no longer connect to service center **108**.

[0031] Even if the telecommunication apparatus within vehicle **100** has been deactivated and the cellular telephone therein been deregistered from wireless network **102** both can still be used to establish a connection to a Public Safety Answering Point (PSAP). Connecting to a PSAP is independent of a subscription with the service provider or the underlying wireless network **102**. This is, especially in the United States, to comply with federal law mandating free access to a PSAP for all devices used to access a commercial mobile radio service (CMRS).

[0032] Referring now to Fig. 2A there is shown wireless telecommunication apparatus **200** in vehicle **100**. The telecommunication apparatus **200** communicates voice and data through an antenna **206** with wireless network **102** and through wireless network **102** with public switched telephone network **104**. The telecommunication apparatus **200** may provide "hands-free" voice communication through a microphone **202** and speaker **204**. The telecommunication apparatus may include a GPS or similar navigation apparatus (not shown) which receives signals through a GPS antenna (not shown) from global positioning satellites and derives therefrom position data (e.g., the longitude and latitude and/or the speed and heading) of the apparatus. The telecommunication apparatus **200** may convert the GPS position information into a transmissible form for subsequent transmission from vehicle **100** to service center **108** or Public Safety Answering Point **106**. Communication between the telecommunication apparatus **200** and service center **108** or PSAP **106** may be voice communication utilizing microphone **202** and speaker **204** and/or data communication the data comprising e.g. GPS location information.

[0033] Connected to the telecommunication apparatus **200** are one or more buttons **208** and status indicator **210.** Buttons **208** provide a simple user interface for an operator, e.g. the driver or passenger in vehicle **100**, to interact with the telecommunication apparatus **200**. The buttons **208** may e.g. include a dedicated emergency call button. If the emergency

call button is pressed telecommunication apparatus **200** establishes voice and/or data communication with service center **108**. Status indicator **210**, which may e.g. be one or more light emitting diodes or any other form of display, provides feedback to the vehicle operator as to the status of the telecommunication apparatus **200**. Telecommunication apparatus **200** is also connected to vehicle data bus **212** to exchange messages with other electronic modules within vehicle **100** as required.

[0034] Telecommunication apparatus **200** may provide general dialing capability, e.g. to a telephone **110**, **112** within the public switched telephone network **104** or to a wireless telephone **114** through wireless network **102** or any other wireless network. To facilitate dialing telecommunication apparatus **200** may include a voice recognition and activation apparatus, which responds to predetermined spoken data via microphone **202** to perform predetermined functions. It accesses a plurality of voice models stored within telecommunication apparatus **200**. Each voice model includes data permitting recognition of a spoken word or phrase. The voice recognition apparatus compares received spoken data with the voice models in order to recognize those words and phrases which are defined and for performing predetermined actions in response thereto. Some voice models represent commands, such as "menu," "store," "dial," "call," etc. Other voice models represent the digits required for telephone dialing: "one," "two," etc. For example, the apparatus may be programmed to recognize the phrase "Dial 9-1-1 Dial" and respond by placing a call to a Public Safety Answering Point. General dialing capability may be initiated by the word "Dial" followed by the number, digit by digit.

[0035] Telecommunication apparatus **200** may also be configured to allow dialing utilizing a keypad which may be connected directly to communication apparatus **200** or indirectly connected to another module which communicates with telecommunication apparatus **200** through the vehicle data bus **212**. In an exemplary embodiment navigation system

218 comprises a touch screen display **220** which displays a virtual telephone keypad **222**. An operator may enter a telephone number he wishes to dial on the virtual keypad **222**. After the telephone number has been entered navigation system **218** transmits a telephone dial command message on the vehicle data bus **212** including the telephone number to be dialed. Telecommunication apparatus **200** responsive to receiving the telephone dial command message establishes voice and/or data communication with the desired telephone number.

[0036] Quicker and easier access to dialing 911 and establishing voice and/or data communication with a Public Safety Answering Point is provided by emergency call apparatus **214**, which is connected to vehicle data bus **212** and to one or more buttons **216**. Buttons **216** may include an emergency call push button switch which when pressed causes emergency call apparatus **214** to transmit a telephone dial command message including a telephone number to be dialed on vehicle data bus **212.** Telecommunication apparatus **200** responsive to receiving the telephone dial command message establishes voice communication with the requested telephone number, e.g. 911. Emergency call apparatus **214** and its operation are described in more detail with reference to figures 5 through 9 below.

[0037] As is shown in Fig. 2B vehicles equipped with an embedded telecommunication apparatus **200** are typically also equipped with buttons **208**, one of which may be an emergency call button to initiate an emergency call to service center **108**. Buttons **208** and telecommunication apparatus **200** do not serve any useful purpose if the owner or lessor of vehicle **100** does not register with the mobile application service provider. The existing buttons **208** and the telecommunication apparatus **200** may however be used when retrofitting vehicle **100** with an emergency call apparatus **214** at some time after vehicle built.

[0038] An exemplary method of retrofitting vehicle **100** is show in Fig. 2C. Vehicle **100** is retrofitted by adding emergency call apparatus **214.** The electrical connection between buttons **208** and telecommunication apparatus **200** is removed and instead buttons **208** are rewired and connected to emergency call apparatus **214**. Optionally the vehicle data bus connection between telecommunication apparatus **200** and vehicle data bus **212** may be disconnected and instead re-routed into the emergency call apparatus **214**. A new connection is made between the emergency call apparatus **214** and vehicle data bus **212.** Further, emergency call apparatus **214** is connected to vehicle battery and vehicle ground to power emergency call apparatus **214**.

[0039] To enable the rewiring of buttons **208** the electrical interface between buttons **216** and emergency call apparatus **214** may be identical to the electrical interface between buttons **208** and telecommunication apparatus **200**. Using an identical interface, e.g. the same resistor values in case of resistor coded switches, provides that an emergency call button **208** which is connected to and used in combination with telecommunication apparatus **200** before the retrofit can be rewired and used in combination with emergency call apparatus **214** after the retrofit. This simplifies the process of retrofitting vehicle **100** which may have originally been equipped with telecommunication apparatus **200** and buttons **208** but not emergency call apparatus **214** and buttons **216**.

[0040] Referring now to Fig. 3, there is shown a block diagram illustrating an exemplary vehicle communication system **300** including the telecommunication apparatus **200**, an airbag control apparatus **302**, the emergency call apparatus **214** and the navigation system **218**. As is shown, each system is in communication with the vehicle's data bus **212**, which may be a Class 2 or CAN vehicle data bus or any other suitable bus known in the art for electronic data communication.

[0041] Fig. 4 illustrates an alternative embodiment of the vehicle communication system **400**. In this embodiment telecommunication

apparatus **200** is in communication with vehicle data bus **212** using an indirect connection made trough emergency call apparatus **214**, as will be explained in more detail with respect to Fig. 6 and Fig. 7.

[0042] Fig. 5 is a block diagram illustrating an exemplary emergency call apparatus **214**. Control processor **500**, which may take the form of a programmed digital computer or a custom digital processor, is operatively connected to push button switch **216**. Push button switch **216** may be an emergency call button located within easy reach of the driver and labeled prominently, e.g. with a Red Cross icon or the letters "SOS". Push button switch **216** is designed to be easily found and operated by the driver or passenger of vehicle **100** even under stress. Push button switch **216** may be any suitable device that translates a human operator's intention into a signal that can be detected by control processor **500**, including e.g. a momentary push button switch, a toggle switch, a rocker switch, a rotary switch or a virtual button on a touch screen display. Control processor **500** is connected to the vehicle data bus **212** through a vehicle data bus interface **504** using an electrical terminal **508**. Control processor **500** and vehicle data bus interface **504** are powered by power supply **506**. Power supply **506** is connected to the vehicle's power distribution system through vehicle battery terminal **512** and vehicle ground terminal **510**. While emergency call apparatus **214** is shown as a stand alone unit it should be appreciated that it may also be integrated within another electronic control module in which case control processor **500**, power supply **506** and vehicle data bus interface **504** may be shared with other functions.

[0043] Fig. 6 is an alternative embodiment showing an emergency call apparatus **610** which may be used in the vehicle communication system **400** shown in Fig. 4. In this example the telecommunication apparatus **200** is connected to the vehicle data bus **212** indirectly through emergency call apparatus **610**. Electrical terminal **600** connects the emergency call apparatus **610** to the telecommunication communication

apparatus **200**. Electrical terminal **602** connects the emergency call apparatus **610** to vehicle data bus **212** and through that to all other electronic modules communicating through vehicle data bus **212**. Control processor **500** electronically controls switch **606**, which may e.g. be an electromechanical relay with coil **604,** or any other suitable switching device. Switch **606** is normally closed, creating a short circuit between electrical terminals **600** and **602**. In case of a crash the vehicle communication system **400** may be damaged, e.g. may deformation to the vehicle's sheet metal have caused a wire of vehicle data bus **212** to be shortened to vehicle ground or battery, making communication on vehicle data bus **212** impossible. Control processor **500** is configured to detect such damage to the communication system by monitoring its vehicle data bus interface **504**. If damage to the communication system is detected control processor **500** restores communication with the telecommunication device **200** by opening switch **606** and thereby disconnecting the damaged part of the vehicle communication system **400** from vehicle data bus interface **504**. In its open position switch **606** may cause vehicle data bus interface **504** to be connected to a network termination element **608**, simulating a network termination usually present in the now disconnected vehicle communication system. Network termination may consist of a pull-up or pull-down resistor or any other electronic circuit known in the art of electronic communication for terminating communication networks.

[0044] Fig. 7 shows another alternative embodiment of emergency call apparatus **710**. In this example control processor **500** communicates with telecommunication apparatus **200** through vehicle data bus interface **504** and electrical terminal **600**. It is also communicates with other electronic modules connected to the vehicle data bus **212** through a second vehicle data bus interface **700** and electrical terminal **602**. Vehicle data bus interface **504** and vehicle data bus **700** are electrically insulated from each other so that damage to the vehicle data bus **212** does not affect the

ability of control processor **500** to communicate with the telecommunication device **200** through vehicle data bus interface **504.** During normal operation control processor **500** is configured to act as bidirectional gateway between vehicle data bus interface **504** and vehicle data bus **700**. Control processor **500** re-transmits any messages it receives from vehicle data bus interface **504** through vehicle data bus interface **700** and any messages it receives from vehicle data bus interface **700** through vehicle data bus interface **504**, thereby functionally connecting telecommunication apparatus **200** with vehicle data bus **212**.

[0045] FIG. 8 is a flow diagram illustrating an exemplary method **800** that may be implemented in process controller **500**. Process controller **500** is configured to detect a trigger condition in block **802**. The trigger condition may be a manual operator request to initiate an emergency call, e.g. by pressing emergency call push button switch **216**. The trigger condition may also be the receipt of a predetermined message or a combination of predetermined messages on vehicle data bus **212**. The predetermined message or messages may e.g. reflect that the airbag control apparatus **302** has inflated an airbag in vehicle **100.** Other suitable messages that may act as a trigger for automatic emergency calling include a message from an object detection apparatus indicating that vehicle **100** was involved in a collision, a message indicating vehicle deceleration above a predetermined threshold or any other message or combination of messages which indicate that vehicle **100** was involved in a severe accident which may have caused the occupants within vehicle **100** to be injured and no longer be able to manually initiate an emergency call.

[0046] If the trigger condition in block **802** is detected then in step **804** process controller **500** sends a telephone dial command message to the telecommunication apparatus **200**. The telephone dial command consists of or is part of a predetermined message on the vehicle data bus containing a telephone number to be dialed. Telecommunication

apparatus **200** is configured to receive the telephone dial command and responsive thereto establish voice and/or data communication through wireless network **102** and PSTN **104** with the desired telephone number. For emergency use in the United States the telephone number requested in step **804** will typically be "911" to establish communication with a PSAP.

[0047] As described earlier with respect to Fig. 2B and Fig. 2C emergency call apparatus **214** may be retrofitted into a vehicle **100** at some time after the vehicle has been built. In case of a retrofit telecommunication apparatus **200** may not haven been designed for use with the emergency call apparatus **214**. In particular, telecommunication apparatus **200** may not have been configured to receive a telephone dial command message on vehicle data bus **212** that is originating from emergency call apparatus **214**. Telecommunication apparatus **200** may however have been configured to receive telephone dial command messages on vehicle data bus **212** that are originating from other devices, for example navigation system **218**. To operate under these circumstances emergency call apparatus **214** may be configured to mimic the telephone dial command message originating e.g. from navigation system **218**. To mimic the dial command message emergency call apparatus **214** uses the same message identifier segment that has been assigned to navigation system **218** when transmitting its telephone dial command message. By sharing the same message identifier segment a telephone dial command message originating from emergency call apparatus **214** and a telephone dial command message originating from navigation system **218** become indistinguishable for the telecommunication apparatus **200.** Telecommunication apparatus **200** hence responds properly to a telephone dial command message originating from emergency call apparatus **214** even though it may not have been designed for this purpose. While emergency call apparatus **214** shares the same message identifier segment with navigation system

218 it should be understood that vehicle **100** need not necessarily be equipped with navigation system **218**. It is sufficient if telecommunication apparatus **200** is configured to respond to telephone dial command messages on the vehicle data **212** bus irrespective of whether the potential transmitter of such a message is actually present in the vehicle.

[0048] Table 1 illustrates the structure of an exemplary vehicle data bus message. As illustrated the message consist of an identifier segment, which in case of CAN messages may e.g. be 11 or 29 bits long, and a data segment carrying the message payload, which may be up to 8 bytes long. To avoid message collision vehicle communication networks usually use unique identifier segments for each transmitting module, if the same message is originating from more than one module. Modules connected to the communication network are configured to respond to predetermined messages which are distinguished from other messages by their identifier segments.

Table 1

	Identifier Segment	Data Segment							
	11 bit or 29 bit	0 to 8 bytes							
Example	0x0CF00400	39	31	31	23	FF	FF	FF	FF

[0049] To avoid the unlikely but possible collision of two telephone dial command messages issued simultaneously by both the navigation system **218** and the emergency call apparatus **214** the emergency call apparatus **214** may in a vehicle communication system configuration **400** actively prevent such collision. Accordingly control processor **500** in an embodiment as shown in Fig. 6 may in a first step open switch **606** so that the navigation system **218** is no longer connected to the telecommunication apparatus **200** before control processor **500** in a second step transmits its telephone dial command message to the telecommunication apparatus **200**. Control processor **500** in an embodiment as shown in Fig. 7 may selectively suppress forwarding a

telephone dial command received from the navigation system **218** through vehicle data bus interface **700** while transmitting its own telephone dial command through vehicle data bus interface **504**.

[0050] Fig. 9 is a flow diagram showing an alternative exemplary embodiment of the method illustrated in Fig. 8. This embodiment is suitable for example for vehicles in which the emergency call apparatus **214** is integrated with the navigation system **218** and where the navigation system **218** is connected to a display. If in step **802** a trigger condition, e.g. an airbag deployment, is detected the emergency call apparatus displays or causes to be displayed an emergency screen **1000** comprising a prominent user interface to activate an emergency call. If in step **904** an emergency call is requested the emergency call apparatus in step **804** sends a telephone dial command to telecommunication apparatus **200**.

[0051] Finally, an exemplary emergency screen **1000** as may e.g. be used within a touch screen navigation display is shown in Fig. 10. Emergency screen **1000** comprises virtual button **1002** to call PSAP **106** and virtual button **1004** to call service center **108**.

[0052] While the invention has been described with reference to a preferred embodiment(s), it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims.

What is claimed is:

1. A method, comprising:

providing a vehicle having a factory-installed first apparatus (200) including a processor, programmed to communicate with a factory-installed second apparatus (218) through a vehicle data bus (212) with a first message having an identifier;

electrically disconnecting the vehicle data bus (212) between the factory-installed first apparatus (200) and the factory-installed second apparatus (218);

electrically connecting a retrofit apparatus (214) to the vehicle data bus (212); and

transmitting a second message from the retrofit apparatus (214) to the factory-installed first apparatus (200), the second message being indistinguishable from the first message.

2. The method as in claim 1, wherein the second message uses the identifier of the first message.

3. The method as in claim 1, further comprising receiving the first message in the retrofit apparatus (214).

4. The method as in claim 3, wherein the retrofit apparatus (214) re-transmits messages received on the vehicle data bus (212) to the factory-installed first apparatus (200).

5. The vehicle that has been retrofitted according to the method as in claim 1.

6. A vehicle, comprising:

a factory-installed first apparatus (200) including a first processor which is programmed to receive a first message on a vehicle data bus (212) from a factory-installed second apparatus (218); and

a retrofit apparatus (214) connected to the vehicle data bus (212) including a second processor programmed to transmit a second message which mimics the first message.

7. The vehicle as in claim 6, wherein the first message comprises a message identifier that has been assigned to the factory-installed second apparatus and wherein the second processor is programmed to transmit the second message with the same message identifier.

8. The vehicle as in claim 7, wherein the message identifier is an 11 bit or 29 bit CAN ID.

9. The vehicle as in claim 6, wherein the vehicle data bus (212) is a CAN network.

10. A vehicle, comprising:

a factory-installed first apparatus (200) including a first processor, programmed to receive a first message via a vehicle data bus (212) from a factory-installed second apparatus (218), the first message having a message identifier; and

a retrofit apparatus (214), operatively connected to the vehicle data bus (212), including a second processor programmed to send a second message having the same message identifier.

11. The vehicle as in claim 10, wherein the second message originating from the retrofit apparatus (214) is indistinguishable to the first apparatus (200) from the first message received from the second apparatus (218).

12. The vehicle as in claim 10, wherein the factory-installed first apparatus (200) responds to the second message originating from the retrofit apparatus (214) as if it were the first message received from the factory-installed second apparatus (218).

13. The vehicle as in claim 10, wherein the factory-installed first apparatus (200) is electrically disconnected from the vehicle data bus (212).

14. The vehicle as in claim 13, wherein the factory-installed first apparatus (200) communicates with the retrofit apparatus (214) through a second data bus.

15. The vehicle as in claim 14, wherein the retrofit apparatus (214) is a gateway through which the factory-installed first apparatus (200) transmits and/or receives messages from the vehicle data bus (212).

16. The vehicle as in claim 14, wherein the retrofit apparatus (214) selectively suppresses forwarding messages received from the factory-installed first apparatus (200) to the vehicle data bus.

17. The vehicle as in claim 10, wherein the factory-installed second apparatus is an object sensor capable of detecting objects in a frontal area of the vehicle.

18. The vehicle as in claim 10, wherein the factory-installed second apparatus is part of an automatic braking system.

19. The vehicle as in claim 10, wherein the factory-installed second apparatus is part of a parking aid system.

ABSTRACT

A system, apparatus, and method are provided for placing emergency calls from a vehicle to a Public Safety Answering Point. An emergency call apparatus is configured to detect a trigger condition and, if the trigger condition is detected, send a telephone dial command through a vehicle communication network to a telecommunication apparatus to establish voice communication with the Public Safety Answering Point. A method is provided of retrofitting a vehicle with embedded telecommunication apparatus to enable single button access to emergency services without the need for a fee based subscription.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Axel Nix
Application Number	:	
Filing Date	:	
Docket Number	:	SUC01-01C3
Examiner	:	
Title	:	Method, apparatus and system for retrofitting a vehicle

RETRACTION OF ARGUMENTS MADE IN PARENT APPLICATIONS

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

Madam:

This application is a continuation of U.S. patent application Serial No. 14/846,811, filed 09-06-2015, which is a continuation of U.S. patent application Serial No. 11/742,574, filed 04-30-2007. Applicant notes that disclaimer of subject matter made during an earlier prosecution can be rescinded, permitting recapture of the disclaimed scope, so long as sufficiently clear notice is given to the U.S. Patent and Trademark Office, so that the U.S. Patent and Trademark Office can consider any prior disclaimer and any previously cited relevant prior art *Hakim v. Cannon Avent Group, PLC et al.*, 47 F.3d 1313, 1398 (Fed. Cir. 2007) (affirming the district court grant of summary judgment of non-infringement based on a limiting claim construction per file wrapper estoppel in a parent application where the patentee had in the child application not expressly rescinded any disclaimer effect of prosecution in the parent application).

Therefore, this is to provide such clear notice to the U.S. Patent and Trademark Office that for purposes of the present application only, Applicants hereby rescind any disclaimer and argument, express or implied, made during the prosecution of the above-referenced prior applications.

Accordingly, Applicant respectfully notes for the record that any arguments, disclaimers, and/or other actions taken with regard to the claims prosecuted in the above-referenced U.S. Patent Applications are not to be imputed or otherwise applied to the claims in the present application unless expressly repeated by the Applicant during prosecution of the present application.

Respectfully submitted,

Date: April 9, 2017

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METHOD, APPARATUS AND SYSTEM FOR RETROFITTING A VEHICLE

TECHNICAL FIELD

[0001] The present disclosure relates to a method, apparatus and system for retrofitting a vehicle and, more specifically, to a system for and a method of retrofitting a vehicle having a data bus.

BACKGROUND OF THE INVENTION

[0002] Being able to easily alert emergency responders in case of an automobile accident is highly desirable. Mobile application service providers (such as OnStar®) address this need for their subscribers by offering an emergency call button located within reach of the driver of an automobile. Upon pressing the emergency call button an emergency telephone call is placed from a cellular telephone which is embedded in the vehicle through a wireless telecommunication network and a public switched telephone network to a service center operated by the mobile application service provider. An emergency call to the service provider may also be initiated automatically, e.g. upon airbag deployment.

[0003] In case of an incoming emergency call the mobile application service center silently obtains vehicle position information, e.g. information from a GPS receiver that is also embedded in the vehicle. The mobile application service center as part of an emergency assistance service informs public safety authorities of the emergency and conveys the vehicle's position. The emergency assistance service is typically available only to those who register (for a fee) with the mobile application service provider. Registration with the mobile application service providers includes an underlying registration with the wireless telecommunication network. Several elements of one such system are

described in US Patent 6,812,832 (Lobaza), which is hereby incorporated by reference.

[0004] The embedded cellular telephone may also be used to place hands free telephone calls. Dialing the embedded cellular telephone may utilize a speech recognition engine that is capable of recognizing spoken telephone numbers or voice tags associated with telephone numbers. To facilitate dialing the embedded cellular telephone may also be connected to an external keypad, e.g. a telephone-style keypad located in the vehicle's dashboard or a virtual keypad displayed on a touch screen display. The external keypad may communicate with the embedded cellular telephone by sending a telephone dial command message through the vehicle communication network. The embedded cellular telephone is accordingly configured to receive telephone dial command messages on the vehicle communication network and establish a telephone call to the requested telephone number.

[0005] US law obligates commercial mobile radio service providers to transmit all wireless 911 emergency calls without respect to their call validation process to a Public Safety Answering Point (PSAP), or, where no Public Safety Answering Point has been designated, to a designated statewide default answering point or appropriate local emergency authority. The law extends to voice capable cellular telephones embedded in vehicles. An embedded cellular telephone can hence be used in an emergency to directly alert public safety authorities by dialing 911 regardless of registration status with the mobile application service provider or the underlying wireless telecommunication network. However, the user interface provided to dial 911 is inferior to single button activation and may e.g. require use of the voice recognition interface. Changes in an operator's voice during an emergency frequently cause the voice recognition engine to fail detecting a spoken "dial 9-1-1" command and thereby preclude the operator from receiving the help he is seeking.

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[0006] What is therefore needed is a method for combining the benefits of legally mandated free wireless 911 access to a Public Safety Answering Point with the advantageous single button user interface for placing emergency calls to a mobile application service center.

SUMMARY OF THE INVENTION

[0007] In one aspect of the present invention an integrated vehicle communication system includes a telecommunication apparatus in communication with a vehicle data bus. An emergency call apparatus is also in communication with the vehicle data bus, the emergency call apparatus further providing an emergency call push button switch to initiate an emergency telephone call to a Public Safety Answering Point. When the emergency call push button switch is pressed the emergency call apparatus transmits a telephone dial command message including a telephone number to be dialed on the vehicle data bus. The telecommunication apparatus is configured to receive the telephone dial command and establish communication with the requested telephone number. To initiate an emergency call to a Public Safety Answering Point in the United States the emergency call apparatus may e.g. transmit a telephone dial command message requesting the telecommunication apparatus to dial “911”.

[0008] In a further aspect the emergency call apparatus may include an input for an external switch. In this aspect the emergency call push button switch may be remote from the emergency call apparatus and may e.g. be located within reach of the driver of the vehicle whereas the emergency call apparatus may be located somewhere else hidden in the vehicle.

[0009] In another aspect the emergency call apparatus may be added to the vehicle during a retrofit. In this aspect the vehicle may be originally equipped with an embedded telecommunication apparatus and an

emergency call push button switch connected thereto. Before the retrofit pressing the emergency call button is detected by the telecommunication apparatus which responsive to the button press initiates an emergency call to a mobile application service center.

[0010] During the retrofit an emergency call apparatus is added to the vehicle. The electrical connection between the emergency call push button switch and the telecommunication apparatus is separated and the emergency call push button switch is rewired and connected to the emergency call apparatus.

[0011] After the retrofit pressing the emergency call push button is detected by the emergency call apparatus which responsive to the button press transmits a telephone dial command message on the vehicle data bus. The telephone dial command message may request the telecommunication apparatus to dial the telephone number 911. The telecommunication apparatus responsive to receiving the telephone dial command message establishes a voice call to a Public Safety Answering Point.

[0012] In yet another aspect the emergency call apparatus may be configured to detect a trigger condition and responsive thereto request the telecommunication apparatus to establish communication with a Public Safety Answering Point. The trigger condition may be a manual emergency call push button press. As part of an automatic emergency calling system the trigger condition may also be the receipt of one or more messages on the vehicle data bus which are reflective of a vehicle accident, e.g. a message signaling airbag deployment. Upon detecting a trigger condition the emergency call apparatus may transmit a telephone dial command message on the vehicle data bus requesting the telecommunication apparatus to dial 911. The telecommunication apparatus responsive to receiving the telephone dial command message establishes a voice call to a Public Safety Answering Point.

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[0013] In still another aspect the emergency call apparatus may provide an electrically controlled switch to separate the vehicle communication network into two subnets. One subnet may be used to communicate between the emergency call apparatus and the telecommunication device and the other subnet may be used to communicate between the emergency call apparatus and the rest of the vehicle. This aspect can compensate for possible loss of communication on the vehicle data bus after a vehicle crash, e.g. because a wire within the communication network is shorted to ground or battery as a result of the crash. The emergency call apparatus may be configured to detect loss of communication and responsive thereto open the electrically controlled switch, thereby dividing the communication network into the two electrically insulated subnets. In result the emergency call apparatus separates the damaged portion of the vehicle communication network from its connection to the telecommunication apparatus and thereby regains its ability to communicate with the telecommunication apparatus and initiate an emergency call even though communication with the rest of the vehicle is no longer possible.

[0014] In yet another aspect the emergency call apparatus may provide two vehicle data bus interfaces wherein the first interface is used to communicate with the telecommunication apparatus and the second interface is used to communicate with the rest of the vehicle. In this aspect the emergency call apparatus acts as a bi-directional gateway between the two vehicle data bus interfaces. Messages which the emergency call apparatus receives through the first vehicle data bus interface are retransmitted through the second vehicle data bus interface. Vice versa messages received through the second vehicle data bus interface are retransmitted through the first vehicle data bus interface. The two vehicle data bus interfaces are electrically insulated from each other such that the emergency call apparatus maintains its ability to communicate with the telecommunication apparatus even if

communication with the rest of the vehicle can not be established, e.g. because a communication bus wire is shorted to ground or battery as may happen during an accident.

[0015] The following detailed description of the invention is merely exemplary in nature and is not intended to limit the invention or the application and uses of the invention. Furthermore, there is no intention to be bound by any theory presented in the preceding background of the invention or the following detailed description of the invention.

DESCRIPTION OF THE DRAWINGS

[0016] FIG. 1 is a schematic diagram of an exemplary wireless and a public switched telecommunication network through which emergency calls can be placed from a vehicle to a service center or Public Safety Answering Point.

[0017] FIG. 2A is a block diagram illustrating the vehicle portion of a wireless communication system for placing emergency calls used in the vehicle of FIG. 1.

[0018] FIG. 2B is a block diagram showing aspects of a prior art vehicle communication system for communicating with a mobile application service center before retrofit with an emergency call apparatus.

[0019] FIG. 2C is a block diagram showing aspects of a vehicle communication system for communicating with a Public Safety Answering Point after retrofit with an emergency call apparatus.

[0020] FIG. 3 is a block diagram illustrating a vehicle communication system showing an airbag control apparatus, a telecommunication apparatus, an emergency call apparatus and a navigation system communicating through a common vehicle data bus.

[0021] FIG. 4 is a block diagram illustrating an alternative embodiment of a vehicle communication system in which the telecommunication apparatus is connected to the vehicle data bus through the emergency call apparatus.

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[0022] FIG. 5 is a block diagram illustrating an exemplary embodiment of an emergency call apparatus for a vehicle communication system configuration as shown in FIG. 3.

[0023] FIG. 6 is a block diagram illustrating an exemplary embodiment of an emergency call apparatus for a vehicle communication system configuration as shown in FIG. 4.

[0024] FIG. 7 is a block diagram of an alternative embodiment of the emergency call apparatus show in FIG 6.

[0025] FIG. 8 is a flow diagram illustrating an exemplary method for initiating an emergency call.

[0026] FIG. 9 is a flow diagram illustrating an alternative embodiment of the method shown in FIG. 8.

[0027] FIG. 10 is a schematic diagram of an exemplary touch screen display.

DETAILED DESCRIPTION

[0028] Referring to FIG. 1, there is shown a vehicle **100** featuring a mobile telecommunication apparatus, suitable for use with an embodiment of the invention, and which may be installed in the vehicle or carried into the vehicle by the subscriber. The mobile telecommunication apparatus communicates through a wireless network **102**, symbolized by a local telecommunication antenna tower, with a public switched telephone network (PSTN) **104**, to which are also connected telephones **110** and **112**. Wireless network **102** may also communicate with other wireless telecommunication devices, here symbolized by a wireless telephone **114**. The mobile telecommunication apparatus in vehicle **100**, which will be described in more detail with reference to FIG. 2A, may include a cellular telephone or any other wireless device that may be registered with a cellular service provider providing general dialing capability in connection with, and operation through, PSTN **104**. It may also include a cellular telephone or other wireless device that is not or that

is no longer registered with a cellular service provider so long as it provides connection with and operation through PSTN **104** with a Public Safety Answering Point (PSAP) **106**.

[0029] The telecommunication apparatus carried in vehicle **100** may have been designed to provide access to mobile application services of a service provider such as, for example, OnStar®. Mobile application services are typically provided within a subscription business model, which requires payment of a subscription fee per period, e.g. $19.95 per month or $199 per year. The telecommunication apparatus may have been permanently installed in the vehicle at the time of vehicle assembly and the cost of the telecommunication apparatus may have been subsidized by the service provider in anticipation of future subscription revenue if the owner or lessor of vehicle **100** registers for mobile application services. The service provider generally maintains at least one service center **108**, which is connected to PSTN **104** and which the subscriber and other subscribers in other vehicles call for the mobile application services. The mobile application services may include, for example, requests for vehicle location, selection of specific points of interest and directions thereto, and emergency assistance (both requested and automatic), as well as others not named.

[0030] If the owner or lessor of vehicle **100** does not register with the service provider, e.g. to avoid the financial burden associated with a subscription, the service provider may refuse to provide mobile application services including emergency assistance. The mobile application service provider may also deactivate the telecommunication apparatus located within vehicle **100**. Deactivating the telecommunication apparatus may include deregistering the cellular telephone therein from wireless network **102** so that the telecommunication apparatus can no longer gain access to wireless network **102** for general dialing and can thus no longer connect to service center **108**.

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[0031] Even if the telecommunication apparatus within vehicle **100** has been deactivated and the cellular telephone therein been deregistered from wireless network **102** both can still be used to establish a connection to a Public Safety Answering Point (PSAP). Connecting to a PSAP is independent of a subscription with the service provider or the underlying wireless network **102**. This is, especially in the United States, to comply with federal law mandating free access to a PSAP for all devices used to access a commercial mobile radio service (CMRS).

[0032] Referring now to Fig. 2A there is shown wireless telecommunication apparatus **200** in vehicle **100**. The telecommunication apparatus **200** communicates voice and data through an antenna **206** with wireless network **102** and through wireless network **102** with public switched telephone network **104**. The telecommunication apparatus **200** may provide "hands-free" voice communication through a microphone **202** and speaker **204**. The telecommunication apparatus may include a GPS or similar navigation apparatus (not shown) which receives signals through a GPS antenna (not shown) from global positioning satellites and derives therefrom position data (e.g., the longitude and latitude and/or the speed and heading) of the apparatus. The telecommunication apparatus **200** may convert the GPS position information into a transmissible form for subsequent transmission from vehicle **100** to service center **108** or Public Safety Answering Point **106**. Communication between the telecommunication apparatus **200** and service center **108** or PSAP **106** may be voice communication utilizing microphone **202** and speaker **204** and/or data communication the data comprising e.g. GPS location information.

[0033] Connected to the telecommunication apparatus **200** are one or more buttons **208** and status indicator **210.** Buttons **208** provide a simple user interface for an operator, e.g. the driver or passenger in vehicle **100**, to interact with the telecommunication apparatus **200**. The buttons **208** may e.g. include a dedicated emergency call button. If the emergency

call button is pressed telecommunication apparatus **200** establishes voice and/or data communication with service center **108**. Status indicator **210**, which may e.g. be one or more light emitting diodes or any other form of display, provides feedback to the vehicle operator as to the status of the telecommunication apparatus **200**. Telecommunication apparatus **200** is also connected to vehicle data bus **212** to exchange messages with other electronic modules within vehicle **100** as required.

[0034] Telecommunication apparatus **200** may provide general dialing capability, e.g. to a telephone **110**, **112** within the public switched telephone network **104** or to a wireless telephone **114** through wireless network **102** or any other wireless network. To facilitate dialing telecommunication apparatus **200** may include a voice recognition and activation apparatus, which responds to predetermined spoken data via microphone **202** to perform predetermined functions. It accesses a plurality of voice models stored within telecommunication apparatus **200**. Each voice model includes data permitting recognition of a spoken word or phrase. The voice recognition apparatus compares received spoken data with the voice models in order to recognize those words and phrases which are defined and for performing predetermined actions in response thereto. Some voice models represent commands, such as "menu," "store," "dial," "call," etc. Other voice models represent the digits required for telephone dialing: "one," "two," etc. For example, the apparatus may be programmed to recognize the phrase "Dial 9-1-1 Dial" and respond by placing a call to a Public Safety Answering Point. General dialing capability may be initiated by the word "Dial" followed by the number, digit by digit.

[0035] Telecommunication apparatus **200** may also be configured to allow dialing utilizing a keypad which may be connected directly to communication apparatus **200** or indirectly connected to another module which communicates with telecommunication apparatus **200** through the vehicle data bus **212**. In an exemplary embodiment navigation system

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218 comprises a touch screen display **220** which displays a virtual telephone keypad **222**. An operator may enter a telephone number he wishes to dial on the virtual keypad **222**. After the telephone number has been entered navigation system **218** transmits a telephone dial command message on the vehicle data bus **212** including the telephone number to be dialed. Telecommunication apparatus **200** responsive to receiving the telephone dial command message establishes voice and/or data communication with the desired telephone number.

[0036] Quicker and easier access to dialing 911 and establishing voice and/or data communication with a Public Safety Answering Point is provided by emergency call apparatus **214**, which is connected to vehicle data bus **212** and to one or more buttons **216**. Buttons **216** may include an emergency call push button switch which when pressed causes emergency call apparatus **214** to transmit a telephone dial command message including a telephone number to be dialed on vehicle data bus **212.** Telecommunication apparatus **200** responsive to receiving the telephone dial command message establishes voice communication with the requested telephone number, e.g. 911. Emergency call apparatus **214** and its operation are described in more detail with reference to figures 5 through 9 below.

[0037] As is shown in Fig. 2B vehicles equipped with an embedded telecommunication apparatus **200** are typically also equipped with buttons **208**, one of which may be an emergency call button to initiate an emergency call to service center **108**. Buttons **208** and telecommunication apparatus **200** do not serve any useful purpose if the owner or lessor of vehicle **100** does not register with the mobile application service provider. The existing buttons **208** and the telecommunication apparatus **200** may however be used when retrofitting vehicle **100** with an emergency call apparatus **214** at some time after vehicle built.

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[0038] An exemplary method of retrofitting vehicle **100** is show in Fig. 2C. Vehicle **100** is retrofitted by adding emergency call apparatus **214.** The electrical connection between buttons **208** and telecommunication apparatus **200** is removed and instead buttons **208** are rewired and connected to emergency call apparatus **214**. Optionally the vehicle data bus connection between telecommunication apparatus **200** and vehicle data bus **212** may be disconnected and instead re-routed into the emergency call apparatus **214**. A new connection is made between the emergency call apparatus **214** and vehicle data bus **212.** Further, emergency call apparatus **214** is connected to vehicle battery and vehicle ground to power emergency call apparatus **214**.

[0039] To enable the rewiring of buttons **208** the electrical interface between buttons **216** and emergency call apparatus **214** may be identical to the electrical interface between buttons **208** and telecommunication apparatus **200**. Using an identical interface, e.g. the same resistor values in case of resistor coded switches, provides that an emergency call button **208** which is connected to and used in combination with telecommunication apparatus **200** before the retrofit can be rewired and used in combination with emergency call apparatus **214** after the retrofit. This simplifies the process of retrofitting vehicle **100** which may have originally been equipped with telecommunication apparatus **200** and buttons **208** but not emergency call apparatus **214** and buttons **216**.

[0040] Referring now to Fig. 3, there is shown a block diagram illustrating an exemplary vehicle communication system **300** including the telecommunication apparatus **200**, an airbag control apparatus **302**, the emergency call apparatus **214** and the navigation system **218**. As is shown, each system is in communication with the vehicle's data bus **212**, which may be a Class 2 or CAN vehicle data bus or any other suitable bus known in the art for electronic data communication.

[0041] Fig. 4 illustrates an alternative embodiment of the vehicle communication system **400**. In this embodiment telecommunication

apparatus **200** is in communication with vehicle data bus **212** using an indirect connection made trough emergency call apparatus **214**, as will be explained in more detail with respect to Fig. 6 and Fig. 7.

[0042] Fig. 5 is a block diagram illustrating an exemplary emergency call apparatus **214**. Control processor **500**, which may take the form of a programmed digital computer or a custom digital processor, is operatively connected to push button switch **216**. Push button switch **216** may be an emergency call button located within easy reach of the driver and labeled prominently, e.g. with a Red Cross icon or the letters "SOS". Push button switch **216** is designed to be easily found and operated by the driver or passenger of vehicle **100** even under stress. Push button switch **216** may be any suitable device that translates a human operator's intention into a signal that can be detected by control processor **500**, including e.g. a momentary push button switch, a toggle switch, a rocker switch, a rotary switch or a virtual button on a touch screen display. Control processor **500** is connected to the vehicle data bus **212** through a vehicle data bus interface **504** using an electrical terminal **508**. Control processor **500** and vehicle data bus interface **504** are powered by power supply **506**. Power supply **506** is connected to the vehicle's power distribution system through vehicle battery terminal **512** and vehicle ground terminal **510**. While emergency call apparatus **214** is shown as a stand alone unit it should be appreciated that it may also be integrated within another electronic control module in which case control processor **500**, power supply **506** and vehicle data bus interface **504** may be shared with other functions.

[0043] Fig. 6 is an alternative embodiment showing an emergency call apparatus **610** which may be used in the vehicle communication system **400** shown in Fig. 4. In this example the telecommunication apparatus **200** is connected to the vehicle data bus **212** indirectly through emergency call apparatus **610**. Electrical terminal **600** connects the emergency call apparatus **610** to the telecommunication communication

apparatus **200**. Electrical terminal **602** connects the emergency call apparatus **610** to vehicle data bus **212** and through that to all other electronic modules communicating through vehicle data bus **212**. Control processor **500** electronically controls switch **606**, which may e.g. be an electromechanical relay with coil **604,** or any other suitable switching device. Switch **606** is normally closed, creating a short circuit between electrical terminals **600** and **602**. In case of a crash the vehicle communication system **400** may be damaged, e.g. may deformation to the vehicle's sheet metal have caused a wire of vehicle data bus **212** to be shortened to vehicle ground or battery, making communication on vehicle data bus **212** impossible. Control processor **500** is configured to detect such damage to the communication system by monitoring its vehicle data bus interface **504**. If damage to the communication system is detected control processor **500** restores communication with the telecommunication device **200** by opening switch **606** and thereby disconnecting the damaged part of the vehicle communication system **400** from vehicle data bus interface **504**. In its open position switch **606** may cause vehicle data bus interface **504** to be connected to a network termination element **608**, simulating a network termination usually present in the now disconnected vehicle communication system. Network termination may consist of a pull-up or pull-down resistor or any other electronic circuit known in the art of electronic communication for terminating communication networks.

[0044] Fig. 7 shows another alternative embodiment of emergency call apparatus **710**. In this example control processor **500** communicates with telecommunication apparatus **200** through vehicle data bus interface **504** and electrical terminal **600**. It is also communicates with other electronic modules connected to the vehicle data bus **212** through a second vehicle data bus interface **700** and electrical terminal **602**. Vehicle data bus interface **504** and vehicle data bus **700** are electrically insulated from each other so that damage to the vehicle data bus **212** does not affect the

ability of control processor **500** to communicate with the telecommunication device **200** through vehicle data bus interface **504.** During normal operation control processor **500** is configured to act as bidirectional gateway between vehicle data bus interface **504** and vehicle data bus **700**. Control processor **500** re-transmits any messages it receives from vehicle data bus interface **504** through vehicle data bus interface **700** and any messages it receives from vehicle data bus interface **700** through vehicle data bus interface **504**, thereby functionally connecting telecommunication apparatus **200** with vehicle data bus **212**.

[0045] FIG. 8 is a flow diagram illustrating an exemplary method **800** that may be implemented in process controller **500**. Process controller **500** is configured to detect a trigger condition in block **802**. The trigger condition may be a manual operator request to initiate an emergency call, e.g. by pressing emergency call push button switch **216**. The trigger condition may also be the receipt of a predetermined message or a combination of predetermined messages on vehicle data bus **212**. The predetermined message or messages may e.g. reflect that the airbag control apparatus **302** has inflated an airbag in vehicle **100.** Other suitable messages that may act as a trigger for automatic emergency calling include a message from an object detection apparatus indicating that vehicle **100** was involved in a collision, a message indicating vehicle deceleration above a predetermined threshold or any other message or combination of messages which indicate that vehicle **100** was involved in a severe accident which may have caused the occupants within vehicle **100** to be injured and no longer be able to manually initiate an emergency call.

[0046] If the trigger condition in block **802** is detected then in step **804** process controller **500** sends a telephone dial command message to the telecommunication apparatus **200**. The telephone dial command consists of or is part of a predetermined message on the vehicle data bus containing a telephone number to be dialed. Telecommunication

apparatus **200** is configured to receive the telephone dial command and responsive thereto establish voice and/or data communication through wireless network **102** and PSTN **104** with the desired telephone number. For emergency use in the United States the telephone number requested in step **804** will typically be "911" to establish communication with a PSAP.

[0047] As described earlier with respect to Fig. 2B and Fig. 2C emergency call apparatus **214** may be retrofitted into a vehicle **100** at some time after the vehicle has been built. In case of a retrofit telecommunication apparatus **200** may not haven been designed for use with the emergency call apparatus **214**. In particular, telecommunication apparatus **200** may not have been configured to receive a telephone dial command message on vehicle data bus **212** that is originating from emergency call apparatus **214**. Telecommunication apparatus **200** may however have been configured to receive telephone dial command messages on vehicle data bus **212** that are originating from other devices, for example navigation system **218**. To operate under these circumstances emergency call apparatus **214** may be configured to mimic the telephone dial command message originating e.g. from navigation system **218**. To mimic the dial command message emergency call apparatus **214** uses the same message identifier segment that has been assigned to navigation system **218** when transmitting its telephone dial command message. By sharing the same message identifier segment a telephone dial command message originating from emergency call apparatus **214** and a telephone dial command message originating from navigation system **218** become indistinguishable for the telecommunication apparatus **200.** Telecommunication apparatus **200** hence responds properly to a telephone dial command message originating from emergency call apparatus **214** even though it may not have been designed for this purpose. While emergency call apparatus **214** shares the same message identifier segment with navigation system

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218 it should be understood that vehicle **100** need not necessarily be equipped with navigation system **218**. It is sufficient if telecommunication apparatus **200** is configured to respond to telephone dial command messages on the vehicle data **212** bus irrespective of whether the potential transmitter of such a message is actually present in the vehicle.

[0048] Table 1 illustrates the structure of an exemplary vehicle data bus message. As illustrated the message consist of an identifier segment, which in case of CAN messages may e.g. be 11 or 29 bits long, and a data segment carrying the message payload, which may be up to 8 bytes long. To avoid message collision vehicle communication networks usually use unique identifier segments for each transmitting module, if the same message is originating from more than one module. Modules connected to the communication network are configured to respond to predetermined messages which are distinguished from other messages by their identifier segments.

Table 1

	Identifier Segment	Data Segment							
	11 bit or 29 bit	0 to 8 bytes							
Example	0x0CF00400	39	31	31	23	FF	FF	FF	FF

[0049] To avoid the unlikely but possible collision of two telephone dial command messages issued simultaneously by both the navigation system **218** and the emergency call apparatus **214** the emergency call apparatus **214** may in a vehicle communication system configuration **400** actively prevent such collision. Accordingly control processor **500** in an embodiment as shown in Fig. 6 may in a first step open switch **606** so that the navigation system **218** is no longer connected to the telecommunication apparatus **200** before control processor **500** in a second step transmits its telephone dial command message to the telecommunication apparatus **200**. Control processor **500** in an embodiment as shown in Fig. 7 may selectively suppress forwarding a

telephone dial command received from the navigation system **218** through vehicle data bus interface **700** while transmitting its own telephone dial command through vehicle data bus interface **504**.

[0050] Fig. 9 is a flow diagram showing an alternative exemplary embodiment of the method illustrated in Fig. 8. This embodiment is suitable for example for vehicles in which the emergency call apparatus **214** is integrated with the navigation system **218** and where the navigation system **218** is connected to a display. If in step **802** a trigger condition, e.g. an airbag deployment, is detected the emergency call apparatus displays or causes to be displayed an emergency screen **1000** comprising a prominent user interface to activate an emergency call. If in step **904** an emergency call is requested the emergency call apparatus in step **804** sends a telephone dial command to telecommunication apparatus **200**.

[0051] Finally, an exemplary emergency screen **1000** as may e.g. be used within a touch screen navigation display is shown in Fig. 10. Emergency screen **1000** comprises virtual button **1002** to call PSAP **106** and virtual button **1004** to call service center **108**.

[0052] While the invention has been described with reference to a preferred embodiment(s), it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims.

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ABSTRACT

A system, apparatus, and method for retrofitting a vehicle are presented. The method relates to a vehicle with a factory-installed first apparatus which communicates with a factory-installed second apparatus through a vehicle data bus using a first message. The method includes electrically disconnecting the vehicle data bus between the first apparatus and the second apparatus and electrically connecting a retrofit apparatus to the vehicle data bus. The method further includes transmitting a second message from the retrofit apparatus to the first apparatus which is indistinguishable from the first message.

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METHOD, APPARATUS AND SYSTEM FOR ~~PLACING EMERGENCY CALLS FROM~~ RETROFITTING A VEHICLE

TECHNICAL FIELD

[0001] The present disclosure relates to a method, apparatus and system for ~~establishing emergency communication from~~ retrofitting a vehicle and, more specifically, to a system for and a method of ~~initiating a wireless emergency telephone call through~~retrofitting a vehicle having a data bus.

BACKGROUND OF THE INVENTION

[0002] Being able to easily alert emergency responders in case of an automobile accident is highly desirable. Mobile application service providers (such as OnStar®) address this need for their subscribers by offering an emergency call button located within reach of the driver of an automobile. Upon pressing the emergency call button an emergency telephone call is placed from a cellular telephone which is embedded in the vehicle through a wireless telecommunication network and a public switched telephone network to a service center operated by the mobile application service provider. An emergency call to the service provider may also be initiated automatically, e.g. upon airbag deployment.

[0003] In case of an incoming emergency call the mobile application service center silently obtains vehicle position information, e.g. information from a GPS receiver that is also embedded in the vehicle. The mobile application service center as part of an emergency assistance service informs public safety authorities of the emergency and conveys the vehicle's position. The emergency assistance service is typically available only to those who register (for a fee) with the mobile application service provider. Registration with the mobile application service

providers includes an underlying registration with the wireless telecommunication network. Several elements of one such system are described in US Patent 6,812,832 (Lobaza), which is hereby incorporated by reference.

[0004] The embedded cellular telephone may also be used to place hands free telephone calls. Dialing the embedded cellular telephone may utilize a speech recognition engine that is capable of recognizing spoken telephone numbers or voice tags associated with telephone numbers. To facilitate dialing the embedded cellular telephone may also be connected to an external keypad, e.g. a telephone-style keypad located in the vehicle's dashboard or a virtual keypad displayed on a touch screen display. The external keypad may communicate with the embedded cellular telephone by sending a telephone dial command message through the vehicle communication network. The embedded cellular telephone is accordingly configured to receive telephone dial command messages on the vehicle communication network and establish a telephone call to the requested telephone number.

[0005] US law obligates commercial mobile radio service providers to transmit all wireless 911 emergency calls without respect to their call validation process to a Public Safety Answering Point (PSAP), or, where no Public Safety Answering Point has been designated, to a designated statewide default answering point or appropriate local emergency authority. The law extends to voice capable cellular telephones embedded in vehicles. An embedded cellular telephone can hence be used in an emergency to directly alert public safety authorities by dialing 911 regardless of registration status with the mobile application service provider or the underlying wireless telecommunication network. However, the user interface provided to dial 911 is inferior to single button activation and may e.g. require use of the voice recognition interface. Changes in an operator's voice during an emergency frequently cause the voice

recognition engine to fail detecting a spoken "dial 9-1-1" command and thereby preclude the operator from receiving the help he is seeking.

[0006] What is therefore needed is a method for combining the benefits of legally mandated free wireless 911 access to a Public Safety Answering Point with the advantageous single button user interface for placing emergency calls to a mobile application service center.

SUMMARY OF THE INVENTION

[0007] In one aspect of the present invention an integrated vehicle communication system includes a telecommunication apparatus in communication with a vehicle data bus. An emergency call apparatus is also in communication with the vehicle data bus, the emergency call apparatus further providing an emergency call push button switch to initiate an emergency telephone call to a Public Safety Answering Point. When the emergency call push button switch is pressed the emergency call apparatus transmits a telephone dial command message including a telephone number to be dialed on the vehicle data bus. The telecommunication apparatus is configured to receive the telephone dial command and establish communication with the requested telephone number. To initiate an emergency call to a Public Safety Answering Point in the United States the emergency call apparatus may e.g. transmit a telephone dial command message requesting the telecommunication apparatus to dial "911".

[0008] In a further aspect the emergency call apparatus may include an input for an external switch. In this aspect the emergency call push button switch may be remote from the emergency call apparatus and may e.g. be located within reach of the driver of the vehicle whereas the emergency call apparatus may be located somewhere else hidden in the vehicle.

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[0009] In another aspect the emergency call apparatus may be added to the vehicle during a retrofit. In this aspect the vehicle may be originally equipped with an embedded telecommunication apparatus and an emergency call push button switch connected thereto. Before the retrofit pressing the emergency call button is detected by the telecommunication apparatus which responsive to the button press initiates an emergency call to a mobile application service center.

[0010] During the retrofit an emergency call apparatus is added to the vehicle. The electrical connection between the emergency call push button switch and the telecommunication apparatus is separated and the emergency call push button switch is rewired and connected to the emergency call apparatus.

[0011] After the retrofit pressing the emergency call push button is detected by the emergency call apparatus which responsive to the button press transmits a telephone dial command message on the vehicle data bus. The telephone dial command message may request the telecommunication apparatus to dial the telephone number 911. The telecommunication apparatus responsive to receiving the telephone dial command message establishes a voice call to a Public Safety Answering Point.

[0012] In yet another aspect the emergency call apparatus may be configured to detect a trigger condition and responsive thereto request the telecommunication apparatus to establish communication with a Public Safety Answering Point. The trigger condition may be a manual emergency call push button press. As part of an automatic emergency calling system the trigger condition may also be the receipt of one or more messages on the vehicle data bus which are reflective of a vehicle accident, e.g. a message signaling airbag deployment. Upon detecting a trigger condition the emergency call apparatus may transmit a telephone dial command message on the vehicle data bus requesting the telecommunication apparatus to dial 911. The telecommunication

apparatus responsive to receiving the telephone dial command message establishes a voice call to a Public Safety Answering Point.

[0013] In still another aspect the emergency call apparatus may provide an electrically controlled switch to separate the vehicle communication network into two subnets. One subnet may be used to communicate between the emergency call apparatus and the telecommunication device and the other subnet may be used to communicate between the emergency call apparatus and the rest of the vehicle. This aspect can compensate for possible loss of communication on the vehicle data bus after a vehicle crash, e.g. because a wire within the communication network is shorted to ground or battery as a result of the crash. The emergency call apparatus may be configured to detect loss of communication and responsive thereto open the electrically controlled switch, thereby dividing the communication network into the two electrically insulated subnets. In result the emergency call apparatus separates the damaged portion of the vehicle communication network from its connection to the telecommunication apparatus and thereby regains its ability to communicate with the telecommunication apparatus and initiate an emergency call even though communication with the rest of the vehicle is no longer possible.

[0014] In yet another aspect the emergency call apparatus may provide two vehicle data bus interfaces wherein the first interface is used to communicate with the telecommunication apparatus and the second interface is used to communicate with the rest of the vehicle. In this aspect the emergency call apparatus acts as a bi-directional gateway between the two vehicle data bus interfaces. Messages which the emergency call apparatus receives through the first vehicle data bus interface are retransmitted through the second vehicle data bus interface. Vice versa messages received through the second vehicle data bus interface are retransmitted through the first vehicle data bus interface. The two vehicle data bus interfaces are electrically insulated from each

other such that the emergency call apparatus maintains its ability to communicate with the telecommunication apparatus even if communication with the rest of the vehicle can not be established, e.g. because a communication bus wire is shorted to ground or battery as may happen during an accident.

[0015] The following detailed description of the invention is merely exemplary in nature and is not intended to limit the invention or the application and uses of the invention. Furthermore, there is no intention to be bound by any theory presented in the preceding background of the invention or the following detailed description of the invention.

DESCRIPTION OF THE DRAWINGS

[0016] FIG. 1 is a schematic diagram of an exemplary wireless and a public switched telecommunication network through which emergency calls can be placed from a vehicle to a service center or Public Safety Answering Point.

[0017] FIG. 2A is a block diagram illustrating the vehicle portion of a wireless communication system for placing emergency calls used in the vehicle of FIG. 1.

[0018] FIG. 2B is a block diagram showing aspects of a prior art vehicle communication system for communicating with a mobile application service center before retrofit with an emergency call apparatus.

[0019] FIG. 2C is a block diagram showing aspects of a vehicle communication system for communicating with a Public Safety Answering Point after retrofit with an emergency call apparatus.

[0020] FIG. 3 is a block diagram illustrating a vehicle communication system showing an airbag control apparatus, a telecommunication apparatus, an emergency call apparatus and a navigation system communicating through a common vehicle data bus.

[0021] FIG. 4 is a block diagram illustrating an alternative embodiment of a vehicle communication system in which the telecommunication

apparatus is connected to the vehicle data bus through the emergency call apparatus.

[0022] FIG. 5 is a block diagram illustrating an exemplary embodiment of an emergency call apparatus for a vehicle communication system configuration as shown in FIG. 3.

[0023] FIG. 6 is a block diagram illustrating an exemplary embodiment of an emergency call apparatus for a vehicle communication system configuration as shown in FIG. 4.

[0024] FIG. 7 is a block diagram of an alternative embodiment of the emergency call apparatus show in FIG 6.

[0025] FIG. 8 is a flow diagram illustrating an exemplary method for initiating an emergency call.

[0026] FIG. 9 is a flow diagram illustrating an alternative embodiment of the method shown in FIG. 8.

[0027] FIG. 10 is a schematic diagram of an exemplary touch screen display.

DETAILED DESCRIPTION

[0028] Referring to FIG. 1, there is shown a vehicle **100** featuring a mobile telecommunication apparatus, suitable for use with an embodiment of the invention, and which may be installed in the vehicle or carried into the vehicle by the subscriber. The mobile telecommunication apparatus communicates through a wireless network **102**, symbolized by a local telecommunication antenna tower, with a public switched telephone network (PSTN) **104**, to which are also connected telephones **110** and **112**. Wireless network **102** may also communicate with other wireless telecommunication devices, here symbolized by a wireless telephone **114**. The mobile telecommunication apparatus in vehicle **100**, which will be described in more detail with reference to FIG. 2A, may include a cellular telephone or any other wireless device that may be registered with a cellular service provider providing general dialing

capability in connection with, and operation through, PSTN **104**. It may also include a cellular telephone or other wireless device that is not or that is no longer registered with a cellular service provider so long as it provides connection with and operation through PSTN **104** with a Public Safety Answering Point (PSAP) **106**.

[0029] The telecommunication apparatus carried in vehicle **100** may have been designed to provide access to mobile application services of a service provider such as, for example, OnStar®. Mobile application services are typically provided within a subscription business model, which requires payment of a subscription fee per period, e.g. $19.95 per month or $199 per year. The telecommunication apparatus may have been permanently installed in the vehicle at the time of vehicle assembly and the cost of the telecommunication apparatus may have been subsidized by the service provider in anticipation of future subscription revenue if the owner or lessor of vehicle **100** registers for mobile application services. The service provider generally maintains at least one service center **108**, which is connected to PSTN **104** and which the subscriber and other subscribers in other vehicles call for the mobile application services. The mobile application services may include, for example, requests for vehicle location, selection of specific points of interest and directions thereto, and emergency assistance (both requested and automatic), as well as others not named.

[0030] If the owner or lessor of vehicle **100** does not register with the service provider, e.g. to avoid the financial burden associated with a subscription, the service provider may refuse to provide mobile application services including emergency assistance. The mobile application service provider may also deactivate the telecommunication apparatus located within vehicle **100**. Deactivating the telecommunication apparatus may include deregistering the cellular telephone therein from wireless network **102** so that the telecommunication apparatus can no longer gain access

to wireless network **102** for general dialing and can thus no longer connect to service center **108**.

[0031] Even if the telecommunication apparatus within vehicle **100** has been deactivated and the cellular telephone therein been deregistered from wireless network **102** both can still be used to establish a connection to a Public Safety Answering Point (PSAP). Connecting to a PSAP is independent of a subscription with the service provider or the underlying wireless network **102**. This is, especially in the United States, to comply with federal law mandating free access to a PSAP for all devices used to access a commercial mobile radio service (CMRS).

[0032] Referring now to Fig. 2A there is shown wireless telecommunication apparatus **200** in vehicle **100**. The telecommunication apparatus **200** communicates voice and data through an antenna **206** with wireless network **102** and through wireless network **102** with public switched telephone network **104**. The telecommunication apparatus **200** may provide "hands-free" voice communication through a microphone **202** and speaker **204**. The telecommunication apparatus may include a GPS or similar navigation apparatus (not shown) which receives signals through a GPS antenna (not shown) from global positioning satellites and derives therefrom position data (e.g., the longitude and latitude and/or the speed and heading) of the apparatus. The telecommunication apparatus **200** may convert the GPS position information into a transmissible form for subsequent transmission from vehicle **100** to service center **108** or Public Safety Answering Point **106**. Communication between the telecommunication apparatus **200** and service center **108** or PSAP **106** may be voice communication utilizing microphone **202** and speaker **204** and/or data communication the data comprising e.g. GPS location information.

[0033] Connected to the telecommunication apparatus **200** are one or more buttons **208** and status indicator **210.** Buttons **208** provide a simple user interface for an operator, e.g. the driver or passenger in vehicle **100**,

to interact with the telecommunication apparatus **200**. The buttons **208** may e.g. include a dedicated emergency call button. If the emergency call button is pressed telecommunication apparatus **200** establishes voice and/or data communication with service center **108**. Status indicator **210**, which may e.g. be one or more light emitting diodes or any other form of display, provides feedback to the vehicle operator as to the status of the telecommunication apparatus **200**. Telecommunication apparatus **200** is also connected to vehicle data bus **212** to exchange messages with other electronic modules within vehicle **100** as required.

[0034] Telecommunication apparatus **200** may provide general dialing capability, e.g. to a telephone **110**, **112** within the public switched telephone network **104** or to a wireless telephone **114** through wireless network **102** or any other wireless network. To facilitate dialing telecommunication apparatus **200** may include a voice recognition and activation apparatus, which responds to predetermined spoken data via microphone **202** to perform predetermined functions. It accesses a plurality of voice models stored within telecommunication apparatus **200**. Each voice model includes data permitting recognition of a spoken word or phrase. The voice recognition apparatus compares received spoken data with the voice models in order to recognize those words and phrases which are defined and for performing predetermined actions in response thereto. Some voice models represent commands, such as "menu," "store," "dial," "call," etc. Other voice models represent the digits required for telephone dialing: "one," "two," etc. For example, the apparatus may be programmed to recognize the phrase "Dial 9-1-1 Dial" and respond by placing a call to a Public Safety Answering Point. General dialing capability may be initiated by the word "Dial" followed by the number, digit by digit.

[0035] Telecommunication apparatus **200** may also be configured to allow dialing utilizing a keypad which may be connected directly to communication apparatus **200** or indirectly connected to another module

which communicates with telecommunication apparatus **200** through the vehicle data bus **212**. In an exemplary embodiment navigation system **218** comprises a touch screen display **220** which displays a virtual telephone keypad **222**. An operator may enter a telephone number he wishes to dial on the virtual keypad **222**. After the telephone number has been entered navigation system **218** transmits a telephone dial command message on the vehicle data bus **212** including the telephone number to be dialed. Telecommunication apparatus **200** responsive to receiving the telephone dial command message establishes voice and/or data communication with the desired telephone number.

[0036] Quicker and easier access to dialing 911 and establishing voice and/or data communication with a Public Safety Answering Point is provided by emergency call apparatus **214**, which is connected to vehicle data bus **212** and to one or more buttons **216**. Buttons **216** may include an emergency call push button switch which when pressed causes emergency call apparatus **214** to transmit a telephone dial command message including a telephone number to be dialed on vehicle data bus **212.** Telecommunication apparatus **200** responsive to receiving the telephone dial command message establishes voice communication with the requested telephone number, e.g. 911. Emergency call apparatus **214** and its operation are described in more detail with reference to figures 5 through 9 below.

[0037] As is shown in Fig. 2B vehicles equipped with an embedded telecommunication apparatus **200** are typically also equipped with buttons **208**, one of which may be an emergency call button to initiate an emergency call to service center **108**. Buttons **208** and telecommunication apparatus **200** do not serve any useful purpose if the owner or lessor of vehicle **100** does not register with the mobile application service provider. The existing buttons **208** and the telecommunication apparatus **200** may however be used when retrofitting

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vehicle **100** with an emergency call apparatus **214** at some time after vehicle built.

[0038] An exemplary method of retrofitting vehicle **100** is show in Fig. 2C. Vehicle **100** is retrofitted by adding emergency call apparatus **214.** The electrical connection between buttons **208** and telecommunication apparatus **200** is removed and instead buttons **208** are rewired and connected to emergency call apparatus **214**. Optionally the vehicle data bus connection between telecommunication apparatus **200** and vehicle data bus **212** may be disconnected and instead re-routed into the emergency call apparatus **214**. A new connection is made between the emergency call apparatus **214** and vehicle data bus **212.** Further, emergency call apparatus **214** is connected to vehicle battery and vehicle ground to power emergency call apparatus **214**.

[0039] To enable the rewiring of buttons **208** the electrical interface between buttons **216** and emergency call apparatus **214** may be identical to the electrical interface between buttons **208** and telecommunication apparatus **200**. Using an identical interface, e.g. the same resistor values in case of resistor coded switches, provides that an emergency call button **208** which is connected to and used in combination with telecommunication apparatus **200** before the retrofit can be rewired and used in combination with emergency call apparatus **214** after the retrofit. This simplifies the process of retrofitting vehicle **100** which may have originally been equipped with telecommunication apparatus **200** and buttons **208** but not emergency call apparatus **214** and buttons **216**.

[0040] Referring now to Fig. 3, there is shown a block diagram illustrating an exemplary vehicle communication system **300** including the telecommunication apparatus **200**, an airbag control apparatus **302**, the emergency call apparatus **214** and the navigation system **218**. As is shown, each system is in communication with the vehicle's data bus **212**, which may be a Class 2 or CAN vehicle data bus or any other suitable bus known in the art for electronic data communication.

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[0041] Fig. 4 illustrates an alternative embodiment of the vehicle communication system **400**. In this embodiment telecommunication apparatus **200** is in communication with vehicle data bus **212** using an indirect connection made trough emergency call apparatus **214**, as will be explained in more detail with respect to Fig. 6 and Fig. 7.

[0042] Fig. 5 is a block diagram illustrating an exemplary emergency call apparatus **214**. Control processor **500**, which may take the form of a programmed digital computer or a custom digital processor, is operatively connected to push button switch **216**. Push button switch **216** may be an emergency call button located within easy reach of the driver and labeled prominently, e.g. with a Red Cross icon or the letters "SOS". Push button switch **216** is designed to be easily found and operated by the driver or passenger of vehicle **100** even under stress. Push button switch **216** may be any suitable device that translates a human operator's intention into a signal that can be detected by control processor **500**, including e.g. a momentary push button switch, a toggle switch, a rocker switch, a rotary switch or a virtual button on a touch screen display. Control processor **500** is connected to the vehicle data bus **212** through a vehicle data bus interface **504** using an electrical terminal **508**. Control processor **500** and vehicle data bus interface **504** are powered by power supply **506**. Power supply **506** is connected to the vehicle's power distribution system through vehicle battery terminal **512** and vehicle ground terminal **510**. While emergency call apparatus **214** is shown as a stand alone unit it should be appreciated that it may also be integrated within another electronic control module in which case control processor **500**, power supply **506** and vehicle data bus interface **504** may be shared with other functions.

[0043] Fig. 6 is an alternative embodiment showing an emergency call apparatus **610** which may be used in the vehicle communication system **400** shown in Fig. 4. In this example the telecommunication apparatus **200** is connected to the vehicle data bus **212** indirectly through

emergency call apparatus **610**. Electrical terminal **600** connects the emergency call apparatus **610** to the telecommunication communication apparatus **200**. Electrical terminal **602** connects the emergency call apparatus **610** to vehicle data bus **212** and through that to all other electronic modules communicating through vehicle data bus **212**. Control processor **500** electronically controls switch **606**, which may e.g. be an electromechanical relay with coil **604,** or any other suitable switching device. Switch **606** is normally closed, creating a short circuit between electrical terminals **600** and **602**. In case of a crash the vehicle communication system **400** may be damaged, e.g. may deformation to the vehicle's sheet metal have caused a wire of vehicle data bus **212** to be shortened to vehicle ground or battery, making communication on vehicle data bus **212** impossible. Control processor **500** is configured to detect such damage to the communication system by monitoring its vehicle data bus interface **504**. If damage to the communication system is detected control processor **500** restores communication with the telecommunication device **200** by opening switch **606** and thereby disconnecting the damaged part of the vehicle communication system **400** from vehicle data bus interface **504**. In its open position switch **606** may cause vehicle data bus interface **504** to be connected to a network termination element **608**, simulating a network termination usually present in the now disconnected vehicle communication system. Network termination may consist of a pull-up or pull-down resistor or any other electronic circuit known in the art of electronic communication for terminating communication networks.

[0044] Fig. 7 shows another alternative embodiment of emergency call apparatus **710**. In this example control processor **500** communicates with telecommunication apparatus **200** through vehicle data bus interface **504** and electrical terminal **600**. It is also communicates with other electronic modules connected to the vehicle data bus **212** through a second vehicle data bus interface **700** and electrical terminal **602**. Vehicle data bus

interface **504** and vehicle data bus **700** are electrically insulated from each other so that damage to the vehicle data bus **212** does not affect the ability of control processor **500** to communicate with the telecommunication device **200** through vehicle data bus interface **504.** During normal operation control processor **500** is configured to act as bidirectional gateway between vehicle data bus interface **504** and vehicle data bus **700**. Control processor **500** re-transmits any messages it receives from vehicle data bus interface **504** through vehicle data bus interface **700** and any messages it receives from vehicle data bus interface **700** through vehicle data bus interface **504**, thereby functionally connecting telecommunication apparatus **200** with vehicle data bus **212**.

[0045] FIG. 8 is a flow diagram illustrating an exemplary method **800** that may be implemented in process controller **500**. Process controller **500** is configured to detect a trigger condition in block **802**. The trigger condition may be a manual operator request to initiate an emergency call, e.g. by pressing emergency call push button switch **216**. The trigger condition may also be the receipt of a predetermined message or a combination of predetermined messages on vehicle data bus **212**. The predetermined message or messages may e.g. reflect that the airbag control apparatus **302** has inflated an airbag in vehicle **100.** Other suitable messages that may act as a trigger for automatic emergency calling include a message from an object detection apparatus indicating that vehicle **100** was involved in a collision, a message indicating vehicle deceleration above a predetermined threshold or any other message or combination of messages which indicate that vehicle **100** was involved in a severe accident which may have caused the occupants within vehicle **100** to be injured and no longer be able to manually initiate an emergency call.

[0046] If the trigger condition in block **802** is detected then in step **804** process controller **500** sends a telephone dial command message to the telecommunication apparatus **200**. The telephone dial command consists

of or is part of a predetermined message on the vehicle data bus containing a telephone number to be dialed. Telecommunication apparatus **200** is configured to receive the telephone dial command and responsive thereto establish voice and/or data communication through wireless network **102** and PSTN **104** with the desired telephone number. For emergency use in the United States the telephone number requested in step **804** will typically be "911" to establish communication with a PSAP.

[0047] As described earlier with respect to Fig. 2B and Fig. 2C emergency call apparatus **214** may be retrofitted into a vehicle **100** at some time after the vehicle has been built. In case of a retrofit telecommunication apparatus **200** may not haven been designed for use with the emergency call apparatus **214**. In particular, telecommunication apparatus **200** may not have been configured to receive a telephone dial command message on vehicle data bus **212** that is originating from emergency call apparatus **214**. Telecommunication apparatus **200** may however have been configured to receive telephone dial command messages on vehicle data bus **212** that are originating from other devices, for example navigation system **218**. To operate under these circumstances emergency call apparatus **214** may be configured to mimic the telephone dial command message originating e.g. from navigation system **218**. To mimic the dial command message emergency call apparatus **214** uses the same message identifier segment that has been assigned to navigation system **218** when transmitting its telephone dial command message. By sharing the same message identifier segment a telephone dial command message originating from emergency call apparatus **214** and a telephone dial command message originating from navigation system **218** become indistinguishable for the telecommunication apparatus **200.** Telecommunication apparatus **200** hence responds properly to a telephone dial command message originating from emergency call apparatus **214** even though it may not

have been designed for this purpose. While emergency call apparatus **214** shares the same message identifier segment with navigation system **218** it should be understood that vehicle **100** need not necessarily be equipped with navigation system **218**. It is sufficient if telecommunication apparatus **200** is configured to respond to telephone dial command messages on the vehicle data **212** bus irrespective of whether the potential transmitter of such a message is actually present in the vehicle.

[0048] Table 1 illustrates the structure of an exemplary vehicle data bus message. As illustrated the message consist of an identifier segment, which in case of CAN messages may e.g. be 11 or 29 bits long, and a data segment carrying the message payload, which may be up to 8 bytes long. To avoid message collision vehicle communication networks usually use unique identifier segments for each transmitting module, if the same message is originating from more than one module. Modules connected to the communication network are configured to respond to predetermined messages which are distinguished from other messages by their identifier segments.

Table 1

	Identifier Segment	Data Segment							
	11 bit or 29 bit	0 to 8 bytes							
Example	0x0CF00400	39	31	31	23	FF	FF	FF	FF

[0049] To avoid the unlikely but possible collision of two telephone dial command messages issued simultaneously by both the navigation system **218** and the emergency call apparatus **214** the emergency call apparatus **214** may in a vehicle communication system configuration **400** actively prevent such collision. Accordingly control processor **500** in an embodiment as shown in Fig. 6 may in a first step open switch **606** so that the navigation system **218** is no longer connected to the telecommunication apparatus **200** before control processor **500** in a second step transmits its telephone dial command message to the

telecommunication apparatus **200**. Control processor **500** in an embodiment as shown in Fig. 7 may selectively suppress forwarding a telephone dial command received from the navigation system **218** through vehicle data bus interface **700** while transmitting its own telephone dial command through vehicle data bus interface **504**.

[0050] Fig. 9 is a flow diagram showing an alternative exemplary embodiment of the method illustrated in Fig. 8. This embodiment is suitable for example for vehicles in which the emergency call apparatus **214** is integrated with the navigation system **218** and where the navigation system **218** is connected to a display. If in step **802** a trigger condition, e.g. an airbag deployment, is detected the emergency call apparatus displays or causes to be displayed an emergency screen **1000** comprising a prominent user interface to activate an emergency call. If in step **904** an emergency call is requested the emergency call apparatus in step **804** sends a telephone dial command to telecommunication apparatus **200**.

[0051] Finally, an exemplary emergency screen **1000** as may e.g. be used within a touch screen navigation display is shown in Fig. 10. Emergency screen **1000** comprises virtual button **1002** to call PSAP **106** and virtual button **1004** to call service center **108**.

[0052] While the invention has been described with reference to a preferred embodiment(s), it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims.

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ABSTRACT

~~A system, apparatus, and method are provided for placing emergency calls from a vehicle to a Public Safety Answering Point. An emergency call apparatus is configured to detect a trigger condition and, if the trigger condition is detected, send a telephone dial command through a vehicle communication network to a telecommunication apparatus to establish voice communication with the Public Safety Answering Point. A method is provided of retrofitting a vehicle with embedded telecommunication apparatus to enable single button access to emergency services without the need for a fee based subscription.~~A system, apparatus, and method for retrofitting a vehicle are presented. The method relates to a vehicle with a factory-installed first apparatus which communicates with a factory-installed second apparatus through a vehicle data bus using a first message. The method includes electrically disconnecting the vehicle data bus between the first apparatus and the second apparatus and electrically connecting a retrofit apparatus to the vehicle data bus. The method further includes transmitting a second message from the retrofit apparatus to the first apparatus which is indistinguishable from the first message.

Doc Code: TRACK1.REQ
Document Description: TrackOne Request

PTO/SB/424 (12-11)

CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION UNDER 37 CFR 1.102(e) (Page 1 of 1)

First Named Inventor:	Axel Nix	Nonprovisional Application Number (if known):	
Title of Invention:	Method, apparatus and system for retrofitting a vehicle		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i), the prioritized examination fee set forth in 37 CFR 1.17(c), and if not already paid, the publication fee set forth in 37 CFR 1.18(d) have been filed with the request. The basic filing fee, search fee, examination fee, and any required excess claims and application size fees are filed with the request or have been already been paid.

2. The application contains or is amended to contain no more than four independent claims and no more than thirty total claims, and no multiple dependent claims.

3. The applicable box is checked below:

I. ☑ Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)

i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.

---OR---

(b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.

ii. An executed oath or declaration under 37 CFR 1.63 is filed with the application.

II. ☐ Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)

i. A request for continued examination has been filed with, or prior to, this form.
ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature /Axel Nix/	Date 09-April-2017
Name (Print/Typed) Bernd Axel Nix	Practitioner Registration Number 59184

Note: *Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required in accordance with 37 CFR 1.33 and 11.18. Please see 37 CFR 1.4(d) for the form of the signature. If necessary, submit multiple forms for more than one signature, see below*.*

☐ *Total of _____ forms are submitted.

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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.
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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.
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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 inspection or an issued patent.
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PTO/AIA/01 (06-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	Method, apparatus and system for retrofitting a vehicle

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [x] 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 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.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Axel Nix Date (Optional) :_____

Signature: /Axel Nix/

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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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)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/AIA/14 (11-15)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SUC01-01C3
	Application Number	
Title of Invention	Method, apparatus and system for retrofitting a vehicle	

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
	Axel		Nix	

Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

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Birmingham	MI	48009	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. — Add

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Customer Number	66478		
Email Address	axel.nix@smartpat.net	Add Email	Remove Email

Application Information:

Title of the Invention	Method, apparatus and system for retrofitting a vehicle		
Attorney Docket Number	SUC01-01C3	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)		Suggested Figure for Publication (if any)	

PTO/AIA/14 (11-15)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SUC01-01C3
	Application Number	
Title of Invention	Method, apparatus and system for retrofitting a vehicle	

Filing By Reference:

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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).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

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	66478		

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	14846811	2015-09-06

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SUC01-01C3
	Application Number	
Title of Invention	Method, apparatus and system for retrofitting a vehicle	

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14846811	Continuation of	11742574	2007-04-30	9161195	2015-10-13

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).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SUC01-01C3
	Application Number	
Title of Invention	Method, apparatus and system for retrofitting a vehicle	

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.

PTO/AIA/14 (11-15)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SUC01-01C3
	Application Number	
Title of Invention	Method, apparatus and system for retrofitting a vehicle	

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	Sucxess LLC		
Mailing Address Information For Applicant:			
Address 1	1180 Norfolk St.		
Address 2			
City	Birmingham	**State/Province**	MI
Country	US	Postal Code	48009
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	SUC01-01C3
	Application Number	
Title of Invention	Method, apparatus and system for retrofitting a vehicle	

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. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
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	/Axel Nix/			Date (YYYY-MM-DD)	2017-04-09
First Name	Bernd Axel	Last Name	Nix	Registration Number	59184

Additional Signature may be generated within this form by selecting the Add button. Add

PTO/AIA/14 (11-15)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SUC01-01C3
	Application Number	
Title of Invention	Method, apparatus and system for retrofitting a vehicle	

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.

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 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.

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/482,781	Filing Date 04/09/2017	☐ 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))	19 minus 20 =	* 0	x $40 =	0
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	* 0	x $210 =	0
☐ 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	0

APPLICATION AS AMENDED – PART II

AMENDMENT 04/09/2017

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 19	Minus	** 20	= 0	x $40 =	0
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	x $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

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

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

LIE
GERALDINE STANLEY