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Ricci

(54) **CONTROL OF DEVICE FEATURES BASED ON VEHICLE STATE**

(71) Applicant: **AutoConnect Holdings LLC**, Wellesley, MA (US)

(72) Inventor: **Christopher P. Ricci**, Saratoga, CA (US)

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(52) **U.S. Cl.**

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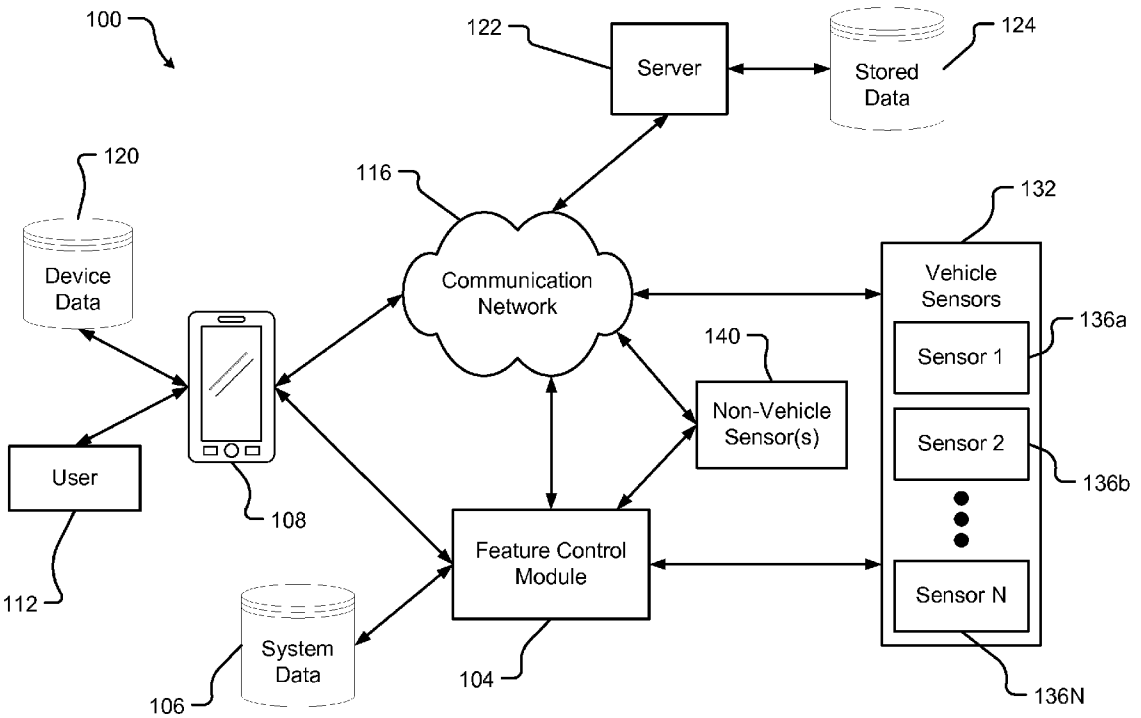
(57) **ABSTRACT**

Methods and systems for a controlling device features based on vehicle state and device location are provided. Specifically, the device may be any type of electrical device capable of transmitting and/or receiving a signal (such as a phone, tablet, computer, music player, and/or other entertainment device). In some instances, the device may be associated with one or more vehicles. Although the device may be configured to run one or more applications, the functionality of the one or more applications may be controlled by a system associated with the vehicle. In some cases, this control may depend on the device application type, device location (either inside or outside of a vehicle), law, operator state, and/or vehicle state.



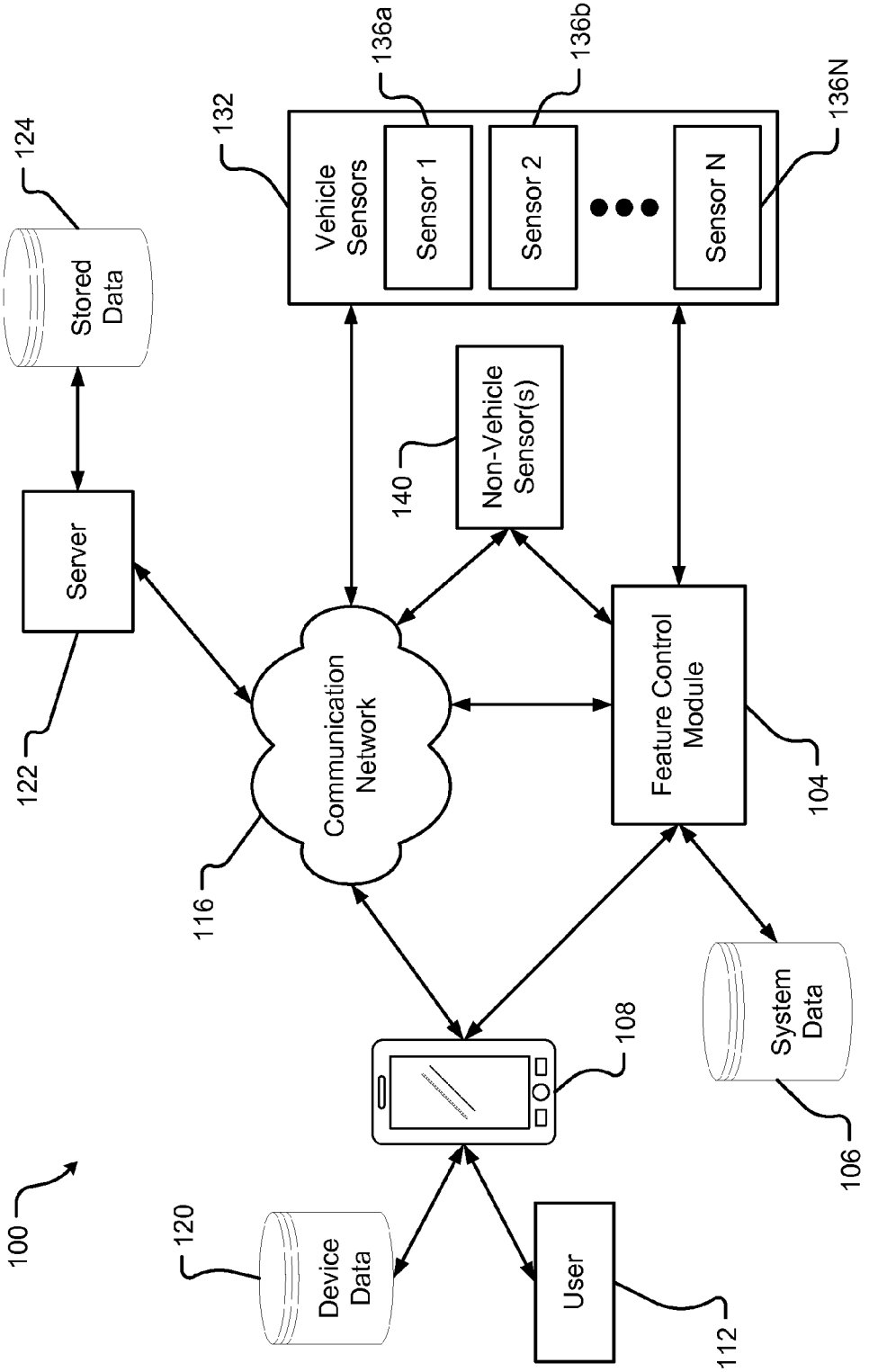
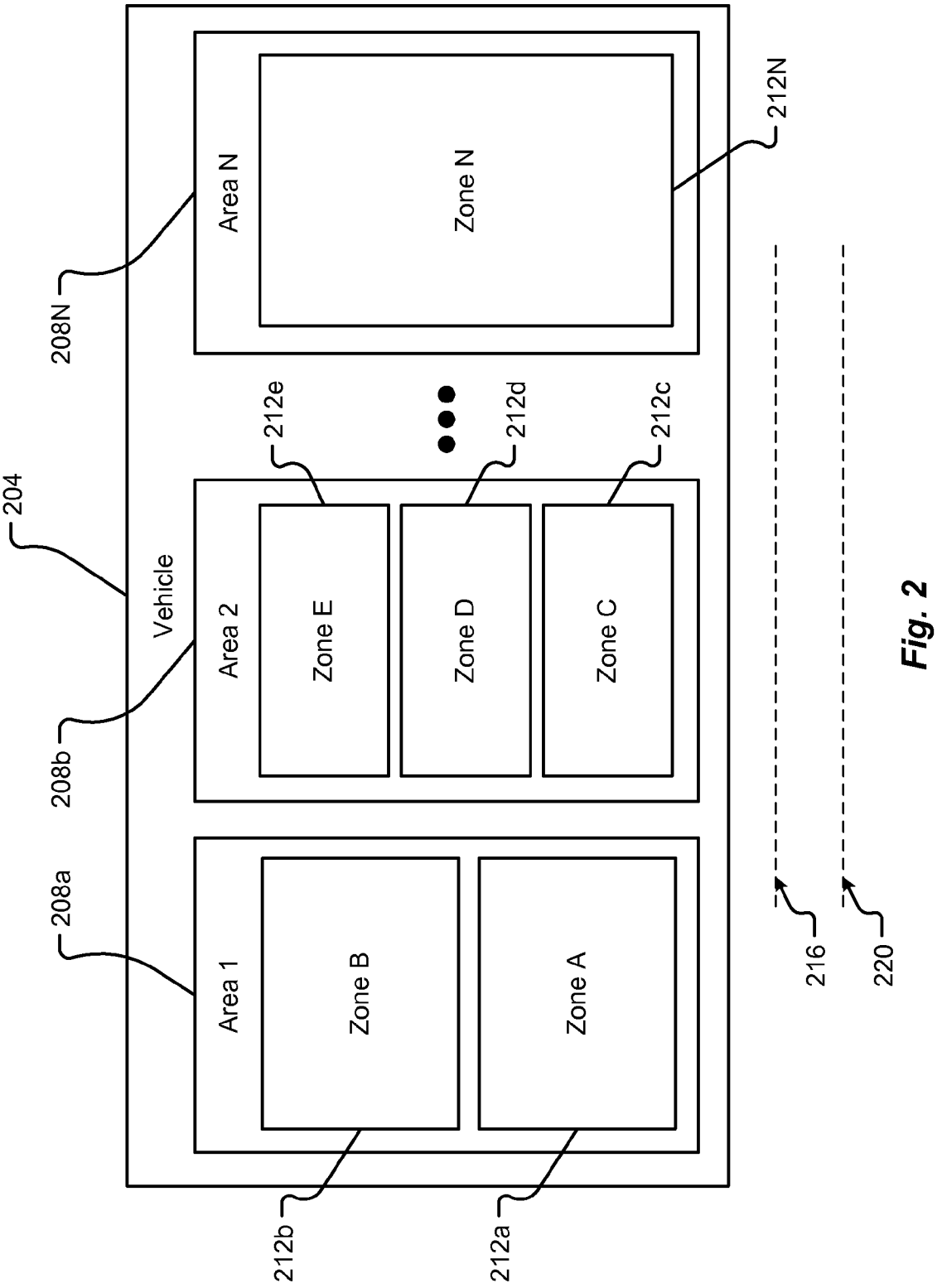

100
120
Device Data
User
112
108
106
System Data
116
Communication Network
Feature Control Module
104
122
Server
124
Stored Data
140
Non-Vehicle Sensor(s)
132
Vehicle Sensors
Sensor 1
Sensor 2
Sensor N
136a
136b
136N

Fig. 1


204
Vehicle
208a
208b
208N
Area 1
Area 2
Area N
Zone B
Zone A
Zone E
Zone D
Zone C
Zone N
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212b
212c
212d
212e
212N
216
220

Fig. 2

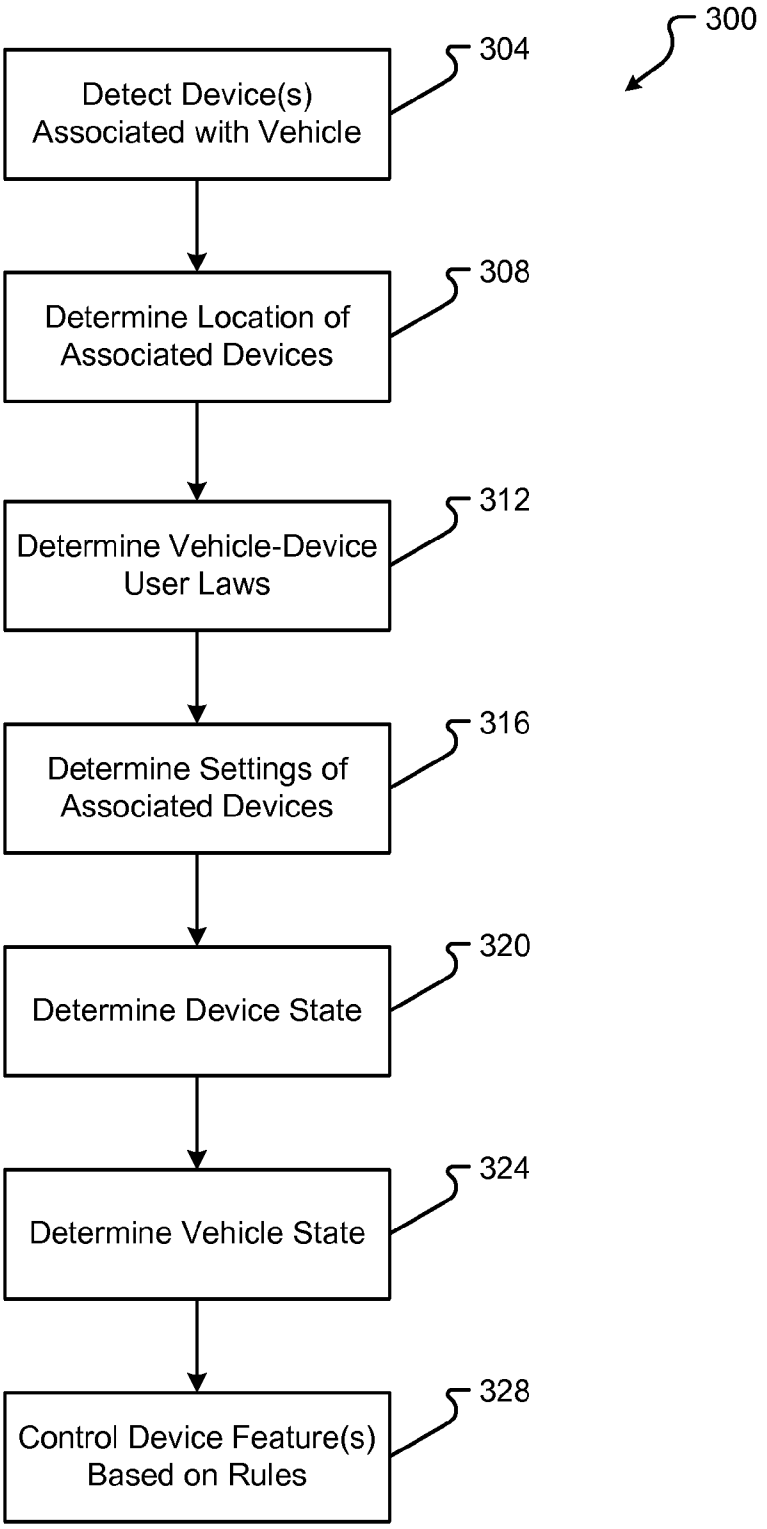
300
304
Detect Device(s) Associated with Vehicle
308
Determine Location of Associated Devices
312
Determine Vehicle-Device User Laws
316
Determine Settings of Associated Devices
320
Determine Device State
324
Determine Vehicle State
328
Control Device Feature(s) Based on Rules

Fig. 3

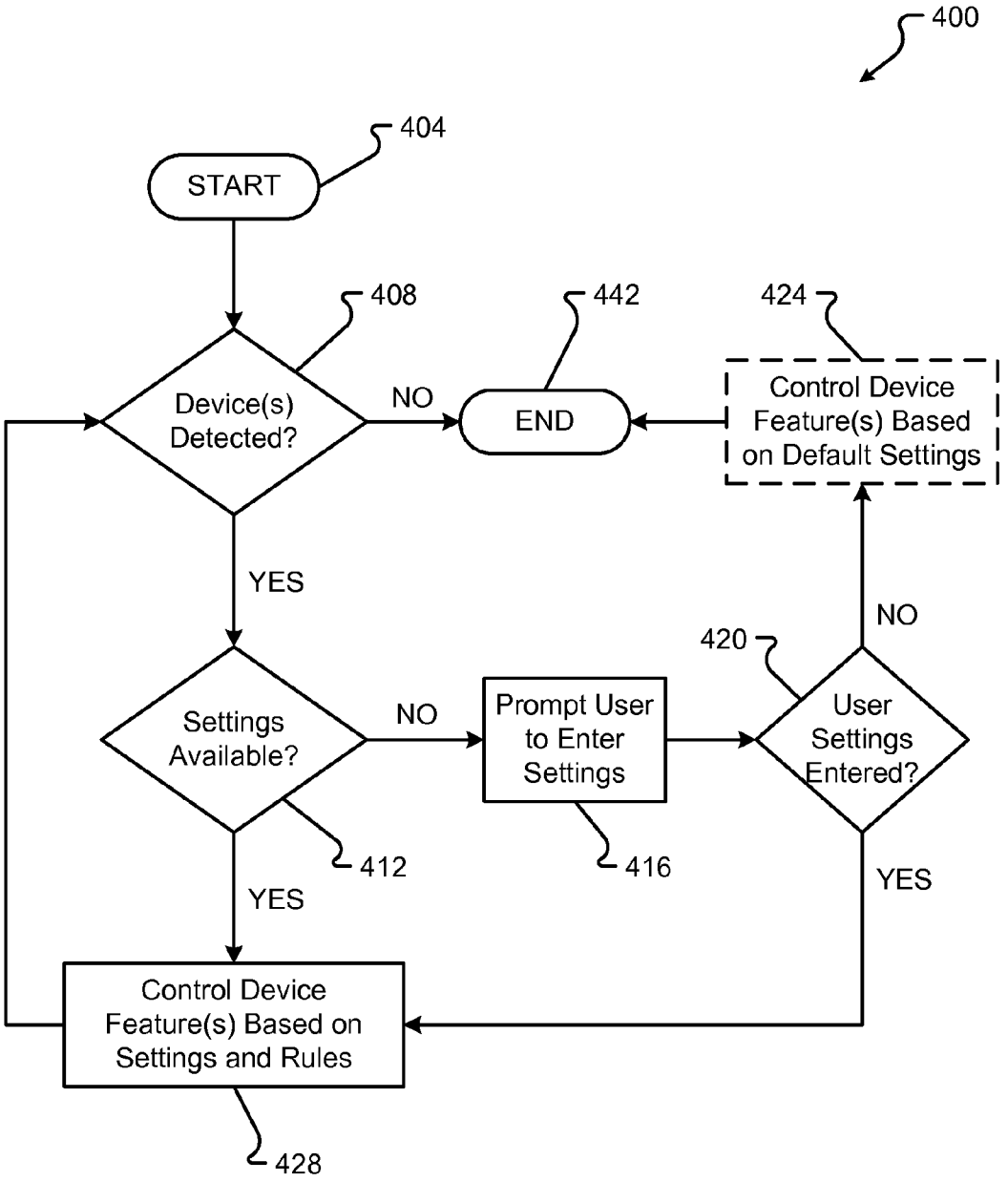
400
404
START
408
Device(s) Detected?
NO
442
END
424
Control Device Feature(s) Based on Default Settings
YES
420
NO
Settings Available?
NO
Prompt User to Enter Settings
User Settings Entered?
412
416
YES
YES
Control Device Feature(s) Based on Settings and Rules
428

Fig. 4

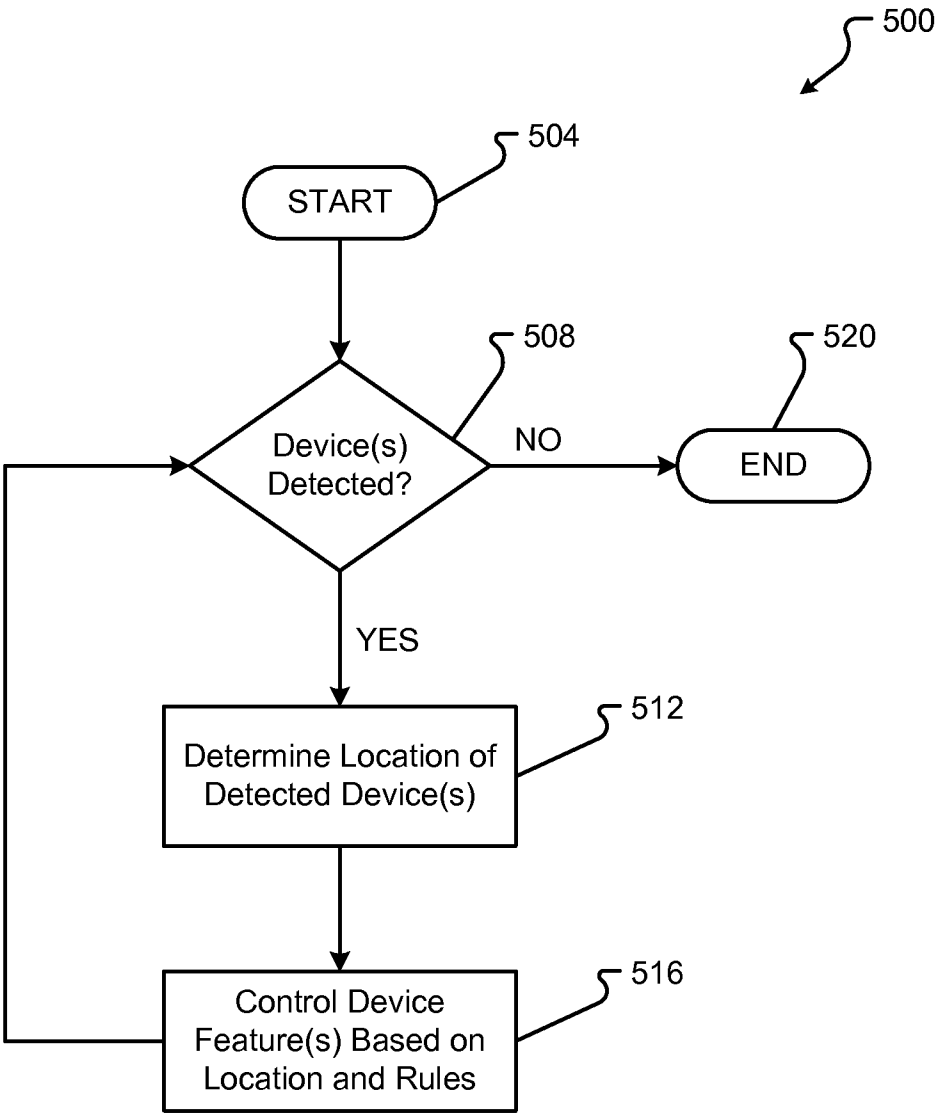
500
504
START
508
Device(s) Detected?
NO
520
END
YES
512
Determine Location of Detected Device(s)
516
Control Device Feature(s) Based on Location and Rules

Fig. 5

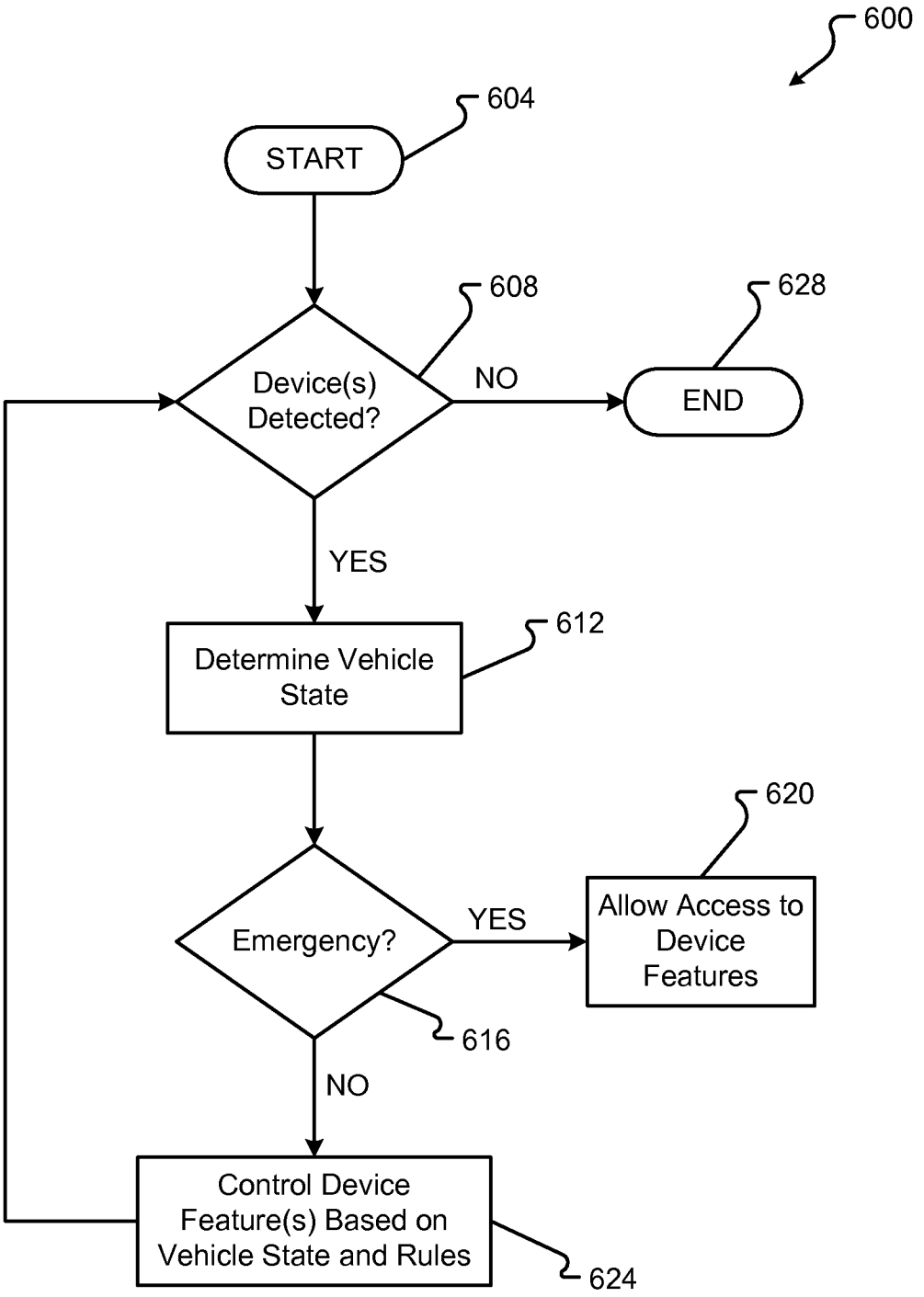
600
604
START
608
Device(s) Detected?
NO
628
END
YES
612
Determine Vehicle State
620
Emergency?
YES
Allow Access to Device Features
616
NO
Control Device Feature(s) Based on Vehicle State and Rules
624

Fig. 6

CONTROL OF DEVICE FEATURES BASED ON VEHICLE STATE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation of and claims priority to U.S. patent application Ser. No. 13/679,676, filed on Nov. 16, 2012, of the same title, which claims the benefits of and priority, under 35 U.S.C. §119(e), to U.S. Provisional Application Ser. No. 61/560,509, filed on Nov. 16, 2011, entitled "Complete Vehicle Ecosystem"; 61/637,164, filed on Apr. 23, 2012, entitled "Complete Vehicle Ecosystem"; 61/646,747, filed on May 14, 2012, entitled "Branding of Electrically Propelled Vehicles Via the Generation of Specific Operating Sounds"; 61/653,275, filed on May 30, 2012, entitled "Vehicle Application Store for Console"; 61/653,264, filed on May 30, 2012, entitled "Control of Device Features Based on Vehicle State"; 61/653,563, filed on May 31, 2012, entitled "Complete Vehicle Ecosystem"; 61/663,335, filed on Jun. 22, 2012, entitled "Complete Vehicle Ecosystem"; 61/672,483, filed on Jul. 17, 2012, entitled "Vehicle Climate Control"; 61/714,016, filed on Oct. 15, 2012, entitled "Vehicle Middleware"; and 61/715,699, filed Oct. 18, 2012, entitled "Vehicle Middleware." The entire disclosures of the applications listed above are hereby incorporated by reference, in their entirety, for all that they teach and for all purposes.

[0002] This application is also related to U.S. patent application Ser. No. 13/420,236, filed on Mar. 14, 2012, entitled, "Configurable Vehicle Console"; Ser. No. 13/420,240, filed on Mar. 14, 2012, entitled "Removable, Configurable Vehicle Console"; Ser. No. 13/462,593, filed on May 2, 2012, entitled "Configurable Dash Display"; Ser. No. 13/462,596, filed on May 2, 2012, entitled "Configurable Heads-Up Dash Display"; Ser. No. 13/679,459, filed on Nov. 16, 2012, entitled "Vehicle Comprising Multi-Operating System" (Attorney Docket No. 6583-228); Ser. No. 13/679,234, filed on Nov. 16, 2012, entitled "Gesture Recognition for On-Board Display" (Attorney Docket No. 6583-229); Ser. No. 13/679,412, filed on Nov. 16, 2012, entitled "Vehicle Application Store for Console" (Attorney Docket No. 6583-230); Ser. No. 13/679,857, filed on Nov. 16, 2012, entitled "Sharing Applications/Media Between Car and Phone (Hydroid)" (Attorney Docket No. 6583-231); Ser. No. 13/679,878, filed on Nov. 16, 2012, entitled "In-Cloud Connection for Car Multimedia" (Attorney Docket No. 6583-232); Ser. No. 13/679,875, filed on Nov. 16, 2012, entitled "Music Streaming" (Attorney Docket No. 6583-233); Ser. No. 13/678,673, filed on Nov. 16, 2012, entitled "Insurance Tracking" (Attorney Docket No. 6583-235); Ser. No. 13/678,691, filed on Nov. 16, 2012, entitled "Law Breaking/Behavior Sensor" (Attorney Docket No. 6583-236); Ser. No. 13/678,699, filed on Nov. 16, 2012, entitled "Etiquette Suggestion" (Attorney Docket No. 6583-237); Ser. No. 13/678,710, filed on Nov. 16, 2012, entitled "Parking Space Finder Based on Parking Meter Data" (Attorney Docket No. 6583-238); Ser. No. 13/678,722, filed on Nov. 16, 2012, entitled "Parking Meter Expired Alert" (Attorney Docket No. 6583-239); Ser. No. 13/678,726, filed on Nov. 16, 2012, entitled "Object Sensing (Pedestrian Avoidance/Accident Avoidance)" (Attorney Docket No. 6583-240); Ser. No. 13/678,735, filed on Nov. 16, 2012, entitled "Proximity Warning Relative to Other Cars" (Attorney Docket No. 6583-241); Ser. No. 13/678,745, filed on Nov. 16, 2012, entitled "Street Side Sensors" (Attorney Docket No. 6583-242); Ser. No. 13/678,753, filed on Nov. 16, 2012, entitled "Car Location" (Attorney Docket No. 6583-243); Ser. No. 13/679,441, filed on Nov. 16, 2012, entitled "Universal Bus in the Car" (Attorney Docket No. 6583-244); Ser. No. 13/679,864, filed on Nov. 16, 2012, entitled "Mobile Hot Spot/Router/Application Share Site or Network" (Attorney Docket No. 6583-245); Ser. No. 13/679,815, filed on Nov. 16, 2012, entitled "Universal Console Chassis for the Car" (Attorney Docket No. 6583-246); Ser. No. 13/679,476, filed on Nov. 16, 2012, entitled "Vehicle Middleware" (Attorney Docket No. 6583-247); Ser. No. 13/679,306, filed on Nov. 16, 2012, entitled "Method and System for Vehicle Data Collection Regarding Traffic" (Attorney Docket No. 6583-248); Ser. No. 13/679,369, filed on Nov. 16, 2012, entitled "Method and System for Vehicle Data Collection" (Attorney Docket No. 6583-249); Ser. No. 13/679,680, filed on Nov. 16, 2012, entitled "Communications Based on Vehicle Diagnostics and Indications" (Attorney Docket No. 6583-250); Ser. No. 13/679,443, filed on Nov. 16, 2012, entitled "Method and System for Maintaining and Reporting Vehicle Occupant Information" (Attorney Docket No. 6583-251); Ser. No. 13/678,762, filed on Nov. 16, 2012, entitled "Behavioral Tracking and Vehicle Applications" (Attorney Docket No. 6583-252); Ser. No. 13/679,292, filed Nov. 16, 2012, entitled "Branding of Electrically Propelled Vehicles Via the Generation of Specific Operating Output" (Attorney Docket No. 6583-258); Ser. No. 13/679,400, filed Nov. 16, 2012, entitled "Vehicle Climate Control" (Attorney Docket No. 6583-313); Ser. No. _____, filed on Nov. 16, 2012, entitled "Improvements to Controller Area Network Bus" (Attorney Docket No. 6583-314); Ser. No. 13/678,773, filed on Nov. 16, 2012, entitled "Location Information Exchange Between Vehicle and Device" (Attorney Docket No. 6583-315); Ser. No. 13/679,887, filed on Nov. 16, 2012, entitled "In Car Communication Between Devices" (Attorney Docket No. 6583-316); Ser. No. 13/679,842, filed on Nov. 16, 2012, entitled "Configurable Hardware Unit for Car Systems" (Attorney Docket No. 6583-317); Ser. No. 13/679,204, filed on Nov. 16, 2012, entitled "Feature Recognition for Configuring a Vehicle Console and Associated Devices" (Attorney Docket No. 6583-318); Ser. No. 13/679,350, filed on Nov. 16, 2012, entitled "Configurable Vehicle Console" (Attorney Docket No. 6583-412); Ser. No. 13/679,358, filed on Nov. 16, 2012, entitled "Configurable Dash Display" (Attorney Docket No. 6583-413); Ser. No. 13/679,363, filed on Nov. 16, 2012, entitled "Configurable Heads-Up Dash Display" (Attorney Docket No. 6583-414); and Ser. No. 13/679,368, filed on Nov. 16, 2012, entitled "Removable, Configurable Vehicle Console" (Attorney Docket No. 6583-415). The entire disclosures of the applications listed above are hereby incorporated by reference, in their entirety, for all that they teach and for all purposes.

BACKGROUND

[0003] Whether using private, commercial, or public transport, the movement of people and/or cargo has become a major industry. In today's interconnected world, daily travel is essential to engaging in commerce. Commuting to and from work can account for a large portion of a traveler's day. As a result, vehicle manufacturers have begun to focus on making this commute, and other journeys, more enjoyable.

[0004] Currently, vehicle manufacturers attempt to entice travelers to use a specific conveyance based on any number of features. Most of these features focus on vehicle safety, or

efficiency. From the addition of safety-restraints, air-bags, and warning systems to more efficient engines, motors, and designs, the vehicle industry has worked to appease the supposed needs of the traveler. Recently, however, vehicle manufactures have shifted their focus to user and passenger comfort as a primary concern. Making an individual more comfortable while traveling instills confidence and pleasure in using a given vehicle, increasing an individual's preference for a given manufacturer and/or vehicle type.

[0005] One way to instill comfort in a vehicle is to create an environment within the vehicle similar to that of an individual's home or place of comfort. Integrating features in a vehicle that are associated with comfort found in an individual's home can ease a traveler's transition from home to vehicle. Several manufacturers have added comfort features in vehicles such as the following: leather seats, adaptive and/or personal climate control systems, music and media players, ergonomic controls, and in some cases Internet connectivity. However, because these manufacturers have added features to a conveyance, they have built comfort around a vehicle and failed to build a vehicle around comfort.

SUMMARY

[0006] There is a need for a vehicle ecosystem that can integrate both physical and mental comforts while seamlessly operating with current electronic devices to result in an intuitive and immersive user experience. These and other needs are addressed by the various aspects, embodiments, and/or configurations of the present disclosure. Also, while the disclosure is presented in terms of exemplary embodiments, it should be appreciated that individual aspects of the disclosure can be separately claimed.

[0007] A method of controlling access to one or more features of a communication device associated with a vehicle is described. In some embodiments, the method comprises: establishing a connection between the communication device and a feature control module, wherein the feature control module is configured to receive input from at least one of a vehicle sensor and a non-vehicle sensor; determining a location of the communication device; and controlling, via the feature control module and based at least partially on the location of the communication device, user access to one or more features of the communication device.

[0008] The present disclosure can provide a number of advantages depending on the particular aspect, embodiment, and/or configuration. Currently, drivers and other vehicle operators can operate their vehicles while texting, talking, surfing the Internet, streaming video, and generally using their mobile phones and/or other connected devices. Using these devices while operating a vehicle may not only be considered unsafe, but may also contradict local, state, federal, and other laws. Moreover, the use of devices, especially communication devices, while driving causes greater distraction and is a leading cause of accidents among teenage drivers.

[0009] Among other things, the present disclosure is directed to an intelligent system that is capable of recognizing a user and device and determining to allow or deny the user access to device features. In particular, the system may recognize one or more characteristics associated with a user and/or device and limit access to device features at least partially based on the one or more characteristics. These characteristics may include but are not limited to location of the user and/or device, user profile settings, user preferences, registration status of the device, device settings, programmed conditions, and the like. For example, a user may be operating a device in the passenger seat of an automobile. Moreover, the user may have established a connection between the device and the vehicle (e.g., via Bluetooth, direct electrical connection, wireless, radio frequency (RF), infrared (IR), etc.). In this example, the vehicle feature control system may utilize one or more of the vehicle/device sensors to determine the location of the device user. These sensors may include cameras, weight sensors, IR detectors, temperature sensors, GPS, triangulation and/or position sensors, and combinations thereof. Many vehicles, especially cars, utilize sensors of this type to activate and/or deactivate airbag and/or safety restraint system components. Upon detecting that the user and/or device in this case is located in a passenger seat, a feature control module may determine that feature access should not be controlled. On the other hand, if the user was seated in a vehicle operation seat (e.g., driver's seat) the feature control module may determine to limit access to one or more features of the device.

[0010] It is anticipated that the feature control module may refer to other factors when determining to allow or deny a user access to a device's features. Among these other factors are jurisdictional and/or federal laws, contractual rules/obligations, programmed conditions, vehicle state, emergency contingencies, and combinations thereof. Contractual rules/obligations may include but are not limited to contract limitations associated with employment contracts, insurance contracts, general agreements, governmental contracts, and the like. These rules and/or laws may be used in determining feature control of a device. For instance, a vehicle may be detected to be "in motion" by the feature control module and various vehicle/device sensors. Moreover, the feature control module may be configured to communicate to a database to determine laws governing the use of communication devices in the current geographical location of the vehicle. For the sake of example, a local law may prohibit the use of communication devices by a driver of a vehicle while that vehicle is in motion. Based on the vehicle state (i.e., in motion), the location of the user (i.e., driver's seat), and the local law (i.e., prohibiting use of devices by drivers of a moving vehicle) the feature control module may determine to deny access to device features. In some embodiments, the feature control module may communicate with the device to deactivate the features of the device. This deactivation may be coupled with a presented warning in the form of a visual and/or audible alert on the device and/or vehicle dash display. Additionally, it is anticipated that the feature control module may reactivate these deactivated features once the vehicle is in a state of rest and/or parked.

[0011] In some embodiments, the feature control module may itself receive from a satellite positioning system receiver in the vehicle or from a satellite positioning system receiver in the communication device satellite location information alone or in conjunction with vehicle-related state, configuration, and/or operation information (speed, parking sensors, etc.) to determine the current vehicle state, configuration, and/or operation. Exemplary on-board vehicle sensors that may be accessed by the feature control module include a wheel state sensor to sense one or more of vehicle speed, acceleration, deceleration, wheel rotation, wheel speed (e.g., wheel revolutions-per-minute), wheel slip, and the like, a power source energy output sensor to sense a power output of an on-board power source (e.g., an engine or energy storage device) by measuring one or more of current engine speed

(e.g., revolutions-per-minute), energy input and/or output (e.g., voltage, current, fuel consumption, and torque), and the like, a switch state sensor to determine a current activation or deactivation state of a power source activation/deactivation switch, a transmission setting sensor to determine a current setting of the vehicle transmission (e.g., gear selection or setting), a gear controller sensor to determine a current setting of a gear controller, a power controller sensor to determine a current setting of a power controller (e.g., throttle), a brake sensor to determine a current state (braking or non-braking) of a vehicle braking system, a seating system sensor to determine a seat setting and current weight of seated occupant, if any, in a selected seat of the vehicle seating system, a safety system state sensors to determine a current state of a vehicular safety system (e.g., air bag setting (deployed or undeployed) and/or seat belt setting (engaged or not engaged)), a light setting sensor (e.g., current headlight, emergency light, brake light, parking light, fog light, interior or passenger compartment light, and/or tail light state (on or off)), a brake control (e.g., pedal) setting sensor, an accelerator pedal setting sensor, a clutch pedal setting sensor, an emergency brake pedal setting sensor, a door setting (e.g., open, closed, locked or unlocked) sensor, a window setting (open or closed) sensor, and other sensors known to those of skill in the vehicle art. When, for example, a vehicle is in motion, the feature control module can disallow/deactivate use of texting, video streaming, and other applications. Once the vehicle is determined to be in a "parked" condition (e.g., in "Park"), or otherwise motionless, the applications may be allowed and activated. As previously stated, these features may be controlled in accordance with local/state/federal laws as well as administrative agency laws, insurance contract, governmental contracts, general agreements, and/or employment contracts.

[0012] In another embodiment, communication modes, such as texting, tweeting, email, and the like may be enabled or disabled based on vehicle location. Vehicle location may be mapped against applicable laws of a governmental entity, such as a city, municipality, county, province, state, country, and the like. Alternatively, capabilities of the device may be enabled or disabled based on contract requirements, employer rules or policies, etc.

[0013] In yet another embodiment, a feature control module may be programmed to control a specific device, or group of devices, based on settings associated with a user. During a registration process between a device and a vehicle, via the feature control module, the registering party may be prompted to input specific information via a control panel, the device, and/or a dash display interface. The registration of devices may be password-protected and even associated with a master key or pass. In some embodiments, the registration process will grant the feature control module permission to control one or more features of the device. In other embodiments, the feature control module may be configured to control one or more communication features of the device regardless of registration permission. This unauthorized control of device communication features may be achieved by affecting the transmission of signals sent to and/or from the device.

[0014] To better illustrate the concept of controlling device features based on settings, the example of a teenage driver is provided. In this example, a teenage driver may own a particular communication device. This device may have a unique media access control (MAC) address or other unique hardware/software identifier. In one embodiment, the device may be registered with the feature control module by an authorized user (e.g., a parent, guardian, or governmental entity). During the registration process, the authorized user may configure the settings associated with the device and teenage driver to be especially strict. In other words, the authorized user may determine to disable all communication functions of the device while the vehicle is in motion. On the other hand, the authorized user may determine to allow telephonic connections while in motion but disable other features such as texting, emailing, and surfing the Internet (e.g., disable the browser capability). Additionally or alternatively, an authorized user may determine that communication devices inside a vehicle (associated with any person, and even in any area), shall be controlled by the feature control module. In this instance, the feature control module may prevent the exchange of communication signals to and from one or more device inside a vehicle.

[0015] In some embodiments, the feature control module may determine to control one or more features based on vehicle state and/or condition. In one embodiment, access to features of a device may be overridden. This overriding control may be beneficial in the case of an emergency. For instance, the feature control module may determine that a vehicle and/or one or more users are in a state of emergency. If a vehicle has been involved in a collision or accident, one or more sensors associated with the vehicle are configured to report the incident. In accordance with the present disclosure, the feature control module may receive input from the multiple sensors to determine appropriate device feature control. For example, a car may be involved in a roll-over accident. Although the wheels of the car may still be moving, and the vehicle is not in "park," the presence of the accident may be reported by the sensors and therefore functionality of device features may be returned to the one or more devices associated with the vehicle. Alternatively, a user in a vehicle may have suffered a seizure, or illness, that causes the user to shake uncontrollably. This movement and/or condition may be detected by the device associated with that user and as such signal an emergency event associated with the user. The feature control module may receive this input and return device feature functionality for a period of time.

[0016] The phrases "at least one", "one or more", and "and/or" are open-ended expressions that are both conjunctive and disjunctive in operation. For example, each of the expressions "at least one of A, B and C", "at least one of A, B, or C", "one or more of A, B, and C", "one or more of A, B, or C" and "A, B, and/or C" means A alone, B alone, C alone, A and B together, A and C together, B and C together, or A, B and C together.

[0017] The term "a" or "an" entity refers to one or more of that entity. As such, the terms "a" (or "an"), "one or more" and "at least one" can be used interchangeably herein. It is also to be noted that the terms "comprising", "including", and "having" can be used interchangeably.

[0018] The term "automatic" and variations thereof, as used herein, refers to any process or operation done without material human input when the process or operation is performed. However, a process or operation can be automatic, even though performance of the process or operation uses material or immaterial human input, if the input is received before performance of the process or operation. Human input is deemed to be material if such input influences how the process or operation will be performed. Human input that consents to the performance of the process or operation is not deemed to be "material."

[0019] The term "computer-readable medium" as used herein refers to any tangible storage and/or transmission medium that participate in providing instructions to a processor for execution. Such a medium may take many forms, including but not limited to, non-volatile media, volatile media, and transmission media. Non-volatile media includes, for example, NVRAM, or magnetic or optical disks. Volatile media includes dynamic memory, such as main memory. Common forms of computer-readable media include, for example, a floppy disk, a flexible disk, hard disk, magnetic tape, or any other magnetic medium, magneto-optical medium, a CD-ROM, any other optical medium, punch cards, paper tape, any other physical medium with patterns of holes, a RAM, a PROM, and EPROM, a FLASH-EPROM, a solid state medium like a memory card, any other memory chip or cartridge, a carrier wave as described hereinafter, or any other medium from which a computer can read. A digital file attachment to e-mail or other self-contained information archive or set of archives is considered a distribution medium equivalent to a tangible storage medium. When the computer-readable media is configured as a database, it is to be understood that the database may be any type of database, such as relational, hierarchical, object-oriented, and/or the like. Accordingly, the disclosure is considered to include a tangible storage medium or distribution medium and prior art-recognized equivalents and successor media, in which the software implementations of the present disclosure are stored.

[0020] The term "module" as used herein refers to any known or later developed hardware, software, firmware, artificial intelligence, fuzzy logic, or combination of hardware and software that is capable of performing the functionality associated with that element.

[0021] The term "satellite positioning system receiver" refers to a wireless receiver or transceiver to receive and/or send location signals from and/or to a satellite positioning system, such as the Global Positioning System ("GPS") (US), GLONASS (Russia), Galileo positioning system (EU), Compass navigation system (China), and Regional Navigational Satellite System (India).

[0022] The terms "determine," "calculate," and "compute," and variations thereof, as used herein, are used interchangeably and include any type of methodology, process, mathematical operation or technique.

[0023] It shall be understood that the term "means" as used herein shall be given its broadest possible interpretation in accordance with 35 U.S.C., Section 112, Paragraph 6. Accordingly, a claim incorporating the term "means" shall cover all structures, materials, or acts set forth herein, and all of the equivalents thereof. Further, the structures, materials or acts and the equivalents thereof shall include all those described in the summary of the invention, brief description of the drawings, detailed description, abstract, and claims themselves.

[0024] The term "vehicle" as used herein includes any conveyance, or model of a conveyance, where the conveyance was originally designed for the purpose of moving one or more tangible objects, such as people, animals, cargo, and the like. The term "vehicle" does not require that a conveyance moves or is capable of movement. Typical vehicles may include but are in no way limited to cars, trucks, motorcycles, busses, automobiles, trains, railed conveyances, boats, ships, marine conveyances, submarine conveyances, airplanes, space craft, flying machines, human-powered conveyances, and the like.

[0025] The terms "dash" and "dashboard" and variations thereof, as used herein, are used interchangeably and include any panel and/or area of a vehicle disposed adjacent to an operator, user, and/or passenger. Typical dashboards may include but are not limited to one or more control panel, instrument housing, head unit, indicator, gauge, meter, light, audio equipment, computer, screen, display, HUD unit, and graphical user interface.

[0026] The terms "communication device," "smartphone," and "mobile device," and variations thereof, as used herein, are used interchangeably and include any type of device capable of communicating with one or more of another device and/or across a communications network, via a communications protocol, and the like. Exemplary communication devices may include but are not limited to smartphones, handheld computers, laptops, netbooks, notebook computers, subnotebooks, tablet computers, scanners, portable gaming devices, phones, pagers, GPS modules, portable music players, and other Internet-enabled and/or network-connected devices.

[0027] The preceding is a simplified summary of the disclosure to provide an understanding of some aspects of the disclosure. This summary is neither an extensive nor exhaustive overview of the disclosure and its various aspects, embodiments, and/or configurations. It is intended neither to identify key or critical elements of the disclosure nor to delineate the scope of the disclosure but to present selected concepts of the disclosure in a simplified form as an introduction to the more detailed description presented below. As will be appreciated, other aspects, embodiments, and/or configurations of the disclosure are possible utilizing, alone or in combination, one or more of the features set forth above or described in detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] FIG. **1** is a block diagram depicting a feature control system in accordance with one embodiment of the present disclosure;

[0029] FIG. **2** is a block diagram depicting areas and zones associated with a vehicle in accordance with one embodiment of the present disclosure;

[0030] FIG. **3** is a flow diagram depicting a first feature control system method in accordance with embodiments of the present disclosure;

[0031] FIG. **4** is a flow diagram depicting a second feature control system method in accordance with embodiments of the present disclosure;

[0032] FIG. **5** is a flow diagram depicting a third feature control system method in accordance with embodiments of the present disclosure; and

[0033] FIG. **6** is a flow diagram depicting a fourth feature control system method in accordance with embodiments of the present disclosure.

[0034] In the appended figures, similar components and/or features may have the same reference label. Further, various components of the same type may be distinguished by following the reference label by a letter that distinguishes among the similar components. If only the first reference label is used in the specification, the description is applicable to any one of the similar components having the same first reference label irrespective of the second reference label.

DETAILED DESCRIPTION

[0035] Presented herein are embodiments of a feature control system. The feature control system can comprise one device or a compilation of devices. Furthermore, the feature control system may include one or more communications devices, such as cellular telephones, or other smart devices. This device, or devices, may be capable of communicating with other devices and/or to an individual or group of individuals. Further, this device, or these devices, can receive user input in unique ways. As described herein, the device(s) may be electrical, mechanical, electro-mechanical, software-based, and/or combinations thereof.

[0036] For purposes of explanation, numerous details are set forth in order to provide a thorough understanding of the present invention. It should be appreciated, however, that the present invention may be practiced in a variety of ways beyond the specific details set forth herein.

[0037] Referring to FIG. **1**, a block diagram is shown depicting a feature control system **100** in accordance with one embodiment of the present disclosure. In general the feature control system **100** comprises a feature control module **104** in communication with one or more of a communication device **108**, sensor **136**, **140**, user **112**, memory **106**, **120**, **124**, server **122**, and communication network **116**. In some embodiments, the feature control module **104** is configured to control one or more device **108** features based on rules and/or input received. It is anticipated that the input received may be from one or more device **108**, sensor **136**, **140**, and or user **112**. Moreover, rules may be stored in one or more memory **106**, **120**, **124** of the feature control system **100**. For example, the feature control module **104** may detect the presence of a device **108** by a physical or wireless connection. Upon detecting the device **108**, the feature control module **104** may determine to control features of the device **108** based on the stored rules. These stored rules may direct a course of action based on input detected at the sensors **136**, **140** and/or device **108**. If the sensors **136**, **140** report that the device **108** and user **112** are in the driver's seat of the vehicle, the rules may determine to limit access to device **100** features.

[0038] In an exemplary embodiment, a vehicle comprises the feature control module **104** in its software and/or hardware implementation. However, the feature control module **104** may be located remotely from a vehicle and substantially perform all of the functions and operations as described herein. For example, the feature control module **104** may be integrated into the device **108**. Additionally or alternatively, the feature control module **104** and/or its functionality could be split between the device **108** and an in-vehicle representation. For instance, the split embodiment may further control the device **108** by limiting the device's **108** ability to perform specific functions while coupled and/or decoupled from the feature control module **104** of the vehicle. Although it can be appreciated that the location of the feature control module **104** may vary, for the purposes of this disclosure, the feature control module **104** will be described as residing locally within a vehicle.

[0039] In some embodiments, the feature control module **104** may be configured to receive one or more inputs. These one or more inputs may be used to determine whether to control features associated with a device such as device **108**. In general, a device in wireless and/or physical communication with the feature control module **104** may be controlled. The feature control module **104** may affect the control of a device's features via control of one or more of the device display, communications, state, applications, and/or combinations thereof. In one embodiment, a feature control module **104** may receive permission to control a device **108**. This permission may be granted upon a registration of the device **108** with the feature control module **104**. Furthermore, this type of registration may be achieved via the installation and/or operation of an application on the device **108**. In an exemplary embodiment, the application may at least facilitate communications between the device **108** and the feature control module **104**, control the state of the device **108** at the direction of the feature control module **104**, and/or control a user's **112** access to one or more features of the device **108**. However, it is an aspect of the present disclosure that the feature control module **104** may affect the communications ability of any device **108** within a specific area of the vehicle based on signal attenuation and/or interference techniques.

[0040] The device **108** may include a global positioning system (GPS) receiver. In accordance with embodiments of the present disclosure, the GPS receiver may further comprise a GPS module that is capable of providing absolute location information to other components of the device **108** and/or the feature control module **104**. An accelerometer(s)/gyroscope(s) may also be included. In some embodiments, the accelerometer/gyroscope may comprise at least one accelerometer and at least one gyroscope. For example, a signal from the accelerometer/gyroscope can be used to determine an orientation of the device **108**. This orientation may be used by the feature control module to determine a state of the device **108**.

[0041] It is anticipated that the device **108** may include a dual-screen phone, smartpad, and/or vehicle console as described in respective U.S. patent application Ser. No. 13/222,921, filed Aug. 31, 2011, entitled "DESKTOP REVEAL EXPANSION," and Ser. No. 13/247,581, filed Sep. 28, 2011, entitled "SMARTPAD ORIENTATION," and Ser. No. 13/420,240, filed Mar. 14, 2012, entitled "REMOVABLE, CONFIGURABLE VEHICLE CONSOLE." Each of the aforementioned documents is incorporated herein by this reference in their entirety for all that they teach and for all purposes.

[0042] The device **108** may be associated with one or more user **112**. In some embodiments, a user **112** may be identified by one or more of characteristics, preferences, identification, and usage. In addition, historical data relating to the one or more user **112** may be stored by the device **108** in a memory **106**, **120**, **124**. As can be appreciated the memory may be local **120**, remote **106**, **124**, and/or combinations thereof.

[0043] The communication network **116** may be any type of known communication medium or collection of communication mediums and may use any type of protocols to transport messages between endpoints. The communication network **116** may include wired and/or wireless communication technologies. The Internet is an example of the communication network **116** that constitutes an IP network consisting of many computers and other communication devices located all over the world, which are connected through many telephone systems and other means. Other examples of the communication network **116** include, without limitation, a standard Plain Old Telephone System (POTS), an Integrated Services Digital Network (ISDN), the Public Switched Telephone Network (PSTN), a Local Area Network (LAN), a Wide Area Network (WAN), a cellular communication network, a cable communication network, a satellite communication network, any type of enterprise network, and any other type of packet-switched or circuit-switched network known in the art. It can

be appreciated that the communication network **116** need not be limited to any one network type, and instead may be comprised of a number of different networks and/or network types. In some embodiments, the communication network **116** may comprise a controller area network, or CANbus, associated with vehicle, automotive, and/or automation communications. Moreover, it is anticipated that communications between various components of the feature control system **100** can be carried by one or more busses.

[0044] The server **122** may comprise a general purpose programmable processor or controller for executing application programming or instructions. In accordance with at least some embodiments, the server **122** may include multiple processor cores, and/or implement multiple virtual processors. In accordance with still other embodiments, the server **122** may include multiple physical processors. As a particular example, the server may comprise a specially configured application specific integrated circuit (ASIC) or other integrated circuit, a digital signal processor, a controller, a hardwired electronic or logic circuit, a programmable logic device or gate array, a special purpose computer, or the like. The server **122** generally functions to run programming code or instructions implementing various functions of the feature control system **100** and/or feature control module **104**.

[0045] The vehicle sensors **132** may include but are not limited to one or more of a throttle position sensor, accelerator pedal angle sensor, speed sensor, speedometer, vehicle speed sensor, wind speed, radar, brake position sensor, brake wear sensor, steering/torque sensor, transmission sensor, oxygen sensor, headlight sensor, ambient lighting sensor, vision system sensor, ranging sensor, parking sensor, heating venting and air conditioning (HVAC) sensor, turbine speed sensor, input speed sensor, water sensor, air-fuel ratio meter, blind spot monitor, crankshaft position sensor, engine temperature sensor, cabin temperature sensor, hall effect sensor, manifold absolute pressure sensor, mass flow sensor, microphone, camera sensor, crash detection sensor, safety restraint sensors, weight sensor, radio frequency (RF) sensor, infrared sensor (IR), vehicle control system sensors, location and/or position sensors, Wi-Fi sensor, cellular data sensor, Bluetooth sensor, and the like. In some embodiments, the one or more vehicle sensors **132** may be located in different areas or zones of a vehicle. For instance a first sensor **136***a* may be located in a proximal portion of a vehicle, while a second sensor **136***b* may be located in a distal portion of the vehicle. As can be appreciated the number of vehicle sensors **132** may vary according to vehicle type and/or vehicle control system complexity. In an exemplary embodiment, the vehicle sensors **132** may be configured to communicate across a communication network **116** and/or directly with the feature control module **104**. One example of a communication network in a typical automotive application may include utilizing the CANbus and associated protocol.

[0046] In some embodiments, the feature control module **104** may employ the use of one or more non-vehicle sensors **140**. The non-vehicle sensors **140** may include one or more type of vehicle sensor **132** described herein. However, the non-vehicle sensors **140** may be separated from the vehicle. Additionally or alternatively, the non-vehicle sensors **140** may comprise sensors associated with one or more other devices. For instance, the non-vehicle sensors **140** may be associated with at least one device **108**. These sensors may include but are not limited to one or more of an accelerometer/gyroscope, GPS, compass, camera, microphone, audio input/output, temperature sensor, health monitoring sensors, and the like.

[0047] FIG. **2** is a block diagram depicting areas and zones associated with a vehicle **204** in accordance with one embodiment of the present disclosure. In general, a vehicle **204** may comprise one or more areas **208**, **216**, **220**. The areas **208**, **216**, **220** may in fact be a volume of space and/or a point location (e.g., a docking location, holder, power port, signal port, and so on). These one or more areas **208**, **216**, **220** may be located inside (**208**) or outside (**216**, **220**) of a vehicle **204**. It is an aspect of the present disclosure that the one or more areas **208**, **216**, **220** of a vehicle **204** may occupy different, overlapping, or substantially similar physical positions in and/or about the vehicle **204**. For instance, the inside of a vehicle **204** may comprise a first area **208***a* and a second area **208***b*. As depicted, the first area **208***a* may occupy a different physical location of the vehicle **204** than the second area **208***b*. In some embodiments, the areas **208** may be subdivided into one or more zones **212**. The one or more zones **212** may completely occupy an area **208** of the vehicle **204**. Additionally or alternatively, the one or more zones **212** may occupy a portion of an area **208** of the vehicle **204**. It is anticipated that the one or more areas **208** of a vehicle **204** may comprise different zone **212** to area **208** ratios. For example, a vehicle **204** may comprise a first area **208***a* including a first zone **212***a* and a second zone **212***b*. This first area **208***a* may correspond to the proximal portion of a vehicle **204**. The first zone **212***a* may represent a driver/operator seat of a vehicle **204**, while the second zone **212***b* may represent a proximal passenger seat of a vehicle **204**. Continuing the example above, a second area **208***b* may include a third zone **212***c*, a fourth zone **212***d*, and a fifth zone **212***e*. This second area **208***b* may represent a passenger area of a vehicle **204**. The third zone **212***c*, fourth zone **212***d*, and fifth zone **212***e* may represent individual passenger seats, and/or areas, in the passenger area of the vehicle **204**.

[0048] In some embodiments, each area **208**, **216**, **220** and/or zone **212** associated with a vehicle **204** may comprise one or more sensors to determine a presence in and/or adjacent to each area **208**, **216**, **220** and/or zone **212**. The sensors may include vehicle sensors **132** and/or non-vehicle sensors **140** as described herein. It is anticipated that the sensors may be configured to communicate with a vehicle controls system and/or the feature control module **104**. Additionally or alternatively, the sensors may communicate with a device **108**. The communication of sensors with the vehicle **204** may initiate and/or terminate the control of device **108** features. For example, a vehicle operator may be located in a second outside area **220** associated with a vehicle **204**. As the operator approaches the first outside area **216** associated with the vehicle **204**, the feature control module **104** may determine to control features associated with one or more device **108**. In an exemplary embodiment, the feature control module **104** may determine to control features associated with the device **108** of the vehicle operator. In this scenario, the feature control module **104** may determine to control a vehicle status application on the device **108**. Once the vehicle operator enters the vehicle **204**, the sensors **132**, **140** may determine that the vehicle operator is in an area **208** and/or zone **212**. As is further described herein, the feature control module **104** may utilize the device **108**, and/or user **112**, location information to control features of the device **108** based on rules.

[0049] FIGS. **3-6** depict multiple methods of the feature control system **100** operation. In some embodiments, the feature control system **100** methods may be controlled manually via user input and/or automatically via a processor.

[0050] FIG. **3** is a flow diagram depicting a first feature control system method **300** in accordance with embodiments of the present disclosure. The method **300** begins at step **304** by detecting one or more devices **108** associated with the vehicle **204**. Detection may include a voluntary registration and/or communication between a vehicle **204** and a device **108**. Among other things, this type of registration and/or communication may be facilitated via the installation of an application on the device **108**. In some embodiments, the application may provide one or more of a communication protocol, use permissions, and access to the feature control module **104**. For example, a user may turn on a newly presented device **108** inside a vehicle **204**, and as a result may be prompted to register the device **108** with the vehicle **204**. This registration prompt process may be effected automatically and/or manually. In some embodiments, the feature control module **104**, utilizing one or more sensors **132**, **140**, may detect the presence of a device **108** and send a signal to the device **108** in the form of an installation prompt.

[0051] In other embodiments, the feature control module **104** may communicate with a device **108** via a physical electrical connection. For instance, the feature control module **104** may include an electrical interconnection configured to facilitate communications between the feature control module **104** and at least one device **108**. In one embodiment of the present disclosure the electrical interconnection may provide power to the device **108** via this electrical interconnection.

[0052] In yet another embodiment, the feature control module **104** may communicate with a device **108** via one or more wireless protocol. It is anticipated that the wireless protocol may include, but is not limited to, one or more existing communications protocols and/or equivalents thereof. Common device **108** communications protocols may include Bluetooth®, Wi-Fi (IEEE 802.11 standards), RF, IR, and variations thereof. In some instances, a device **108** may be paired with one or more sensors used by the feature control module **104** to allow persistent and/or reestablishing communications between the device **108** and the feature control module **104**.

[0053] The method **300** continues at step **312** by determining the location of the one or more detected devices **108**. In accordance with some embodiments of the present disclosure, the location of a device **108** may be found using vehicle sensors **132** and/or non-vehicle sensors **140**. For example, a device **108** may be detected using sensors **132**, **140** found inside a vehicle **204**. The location of the device **108** inside the vehicle **204** may be obtained via the use of triangulation, sensing, and/or ranging techniques (e.g., measuring signal strength from different points, ping and response, and/or similar position detecting procedures). The procedure of determining a location associated with a device **108** becomes more streamlined upon the physical connection to a known port/electrical connection of the vehicle **204**. Moreover, if the device **108** is registered to a particular user **112**, the location of the device **108** may be interpreted using stored preferences and/or settings. It is an aspect of the present disclosure that the device **108** itself may report a position/location. This location may be provided via typical device **108** location services such as GPS, Wi-Fi data, and/or cellular data.

[0054] In some embodiments, different locations of a device **108** may provide different responses from the feature control module **104**. For example, a device **108** may be determined to be in a location where use of a device **108** is considered to be highly-restricted. The driver's seat and/or pilot area may be an example of such a highly-restricted use location. As such, the feature control module **104** may limit access to the device **108** and/or features of the device **108** based on rules assigned to this zone **212** and/or area **208**. In accordance with the present disclosure, another location of the vehicle **204** may be classified as a restricted location. In such locations, the feature control module **104** may determine to control access to the device **108** and/or features of the device **108** based on less restrictive rules than those used for the highly-restricted location. In some embodiments, a device **108** may be used in an unrestricted location. This unrestricted location may allow a user **112** complete access to a device **108** based on rules defined for the unrestricted location. As can be appreciated, different areas **208** and/or zones **212** of a vehicle **204** may be classified as various levels of restricted use. Although the highly-restricted, restricted, and unrestricted locations have be presented herein, it is an aspect of the present disclosure that may levels of restricted and/or unrestricted use may be utilized by the feature control module **104**.

[0055] In some embodiments, the method **300** continues by determining one or more vehicle-device use laws (step **312**). These vehicle-device use laws may be provided by an organization, governmental entity, group, individual, and/or combinations thereof. Additionally or alternatively, the laws may be created in response to detected input and/or conditions monitored by the feature control module **104**, device **108**, and/or sensors **132**, **140**. The laws may be stored in local memory **106** by the feature control module **104**, or the laws may be retrieved from another stored data memory **120**, **124**. In some cases, the feature control module may refer to a remote memory **120**, **124** to determine laws and/or rules associated with a specific locality, region, user **112**, and/or device **108**.

[0056] In an exemplary embodiment, the laws may be statutes and/or regulations that are enforced by a government entity. These laws may define vehicle, traffic, transportation, and/or safety rules associated with a given geographical region. Moreover, these laws may be stored locally and/or remotely as described herein. Furthermore, the laws may be updated from time to time to, among other things, account for changes in the laws. For example, the State of Idaho may ban the use of texting (i.e., sending a text message via some device **108**) while driving, but may allow the use of a handheld mobile phone (e.g., device). In contrast, the State of Oregon may completely ban the use of handheld devices. While the user **112** is traveling in Idaho, the feature control module **104** may refer to the laws of Idaho and determine to control the device **108** in accordance with Idaho law. However, once the user **112** is detected as being in Oregon, the feature control module **104** may control the device **108** based, at least in part, on the laws of Oregon. This procedure will be described further herein, however, it should be noted that the vehicle sensors **132** and/or other sensors **140** may determine at least one location of the device **108**, and refer to laws associated with that at least one location to control the device **108** accordingly.

[0057] The method continues at step **316** by determining settings of the one or more associated devices **108**. These settings may include data relating to the feature control module **104**, communications, permissions, device **108** control, methods, user preferences, historical data, and the like. As can

be appreciated, a device **108** may have multiple power states associated with its operation. Most devices, including smartphones, tablets, handheld computers, and the like, do not have simple "On/Off" states. To differentiate between these power states, the following terminology will be used to better define the multiple power states of a device **108**. "Device Off" is used to indicate that the device **108** is completely turned off; in other words, virtually no power is being used by the communication device **108** in this state. When "Device Off" the device **108** cannot receive or transmit typical communications, signals, alerts, and the like. "Device On" is used to indicate that the device **108** is turned on, capable of receiving and transmitting communications, signals, and alerts, and power is directed to the device **108** display and all recruited components. In some embodiments, "Device On" may indicate that the device **108** display is fully powered. In another embodiment, a fully powered display may indicate that the device **108** is in a condition to detect input received at all areas of the display (e.g., touch-screen). "Device Lock" is used to indicate that power to the communication device **108** display is limited, but the device **108** is capable of receiving and transmitting communications, signals, alerts, and the like. Device Lock saves battery power by reducing power supplied to the display while allowing applications to present an alert to the display or other indicator upon direction of the feature control module **104** and/or an application. In an embodiment where the display may comprise a touch-screen, a Device Lock state may cause reduced power to be directed to the display (e.g., in a limited area or section of the display). In accordance with some embodiments of the present disclosure, the feature control module **104** and/or application may transition the device **108** from a Device On state to a Device Lock state and vice versa.

[0058] The settings of a device **108** may be configured to lock the device **108**, or operate the device **108** in a Device Lock state, when controlled by the feature control module **104**. For instance, a parent/guardian may configure a child's device **108** to be controlled in accordance with strict settings and/or preferences. In this instance, the parent/guardian may determine that a device **108** may be a distraction to a child, while driving, in any state other than the Device Lock state. As such, the parent/guardian can set the device **108** to respond to feature control module **104** controls by operating the device in a Device Lock state. In contrast, a parent/guardian may wish to configure the settings of a device **108** to be less strict and allow access to other features of the device **108**. In this case, a parent/guardian may configure a device **108** to only lock specific features associated with the device **108**. In any event, the device **108** may be controlled at higher levels of strictness than provided by the vehicle-device laws determined in step **312**. These higher levels of strictness may be provided by user preferences and/or device **108** settings. In some cases, the device **108** state may override settings, laws, and/or preferences.

[0059] The method continues by determining the state of the device **108** (step **320**). States of the device **108** may include one or more power state (on, off, and/or locked), orientation (vertical, horizontal, angle, etc.), operation (e.g., input type, running and/or background applications), sensor states, and the like. Among other things, specific device **108** states may indicate one or more conditions related to the user **112**, vehicle **204**, and/or the device **108** itself. For example, a device **108** may be in an unpowered, or Device Off, state and as such the condition may preclude control by the feature control module **104**. On the other hand, the state information of the device **108** may indicate that the device **108** is operating in a Device On state and may be subject to control via the feature control module **104**. It is an aspect that sensor information received from a device **108** may determine control via the feature control module **104**. For instance, one or more sensors on a device **108** may detect an impact, shock, and/or other tactile input and may correlate the data (in some instances in combination with other data) to determine a response by the feature control module **104**.

[0060] The vehicle state is determined at step **324**. This vehicle state may include but is not limited to vehicle motion (driving, stopped, etc.), position (geographically), speed, acceleration, deceleration, transmission state (in-park, engaged drive, engaged reverse, in-gear, neutral), component status (parking brake, airbag, safety restraint system, engine control unit (ECU) output, CANbus activity), occupants (number, position, weight, and the like), sensor information (temperatures, pressures, etc.), and combinations thereof. In an exemplary embodiment, a user **112** may be driving a vehicle **204** while attempting to simultaneously operate an associated device **108**. Upon detecting that the vehicle **204** is moving, the feature control module **104** may control the device **108** and/or features of the device **108** accordingly. Additionally or alternatively, when the vehicle **204** is determined to be in a stationary state (i.e., not moving), and even in-park, the feature control module **104** may determine to cease controlling the device **108**.

[0061] In some embodiments, the vehicle **204** state may indicate an emergency condition. For example, the vehicle **204**, via one or more sensors **132**, **140** may indicate that the vehicle **204** has been subjected to substantial amounts of impact force, the airbag deployed, the anti-lock braking system engaged, the vehicle **204** instantaneously moved in a direction contrary to historical data collected over time, the speed of the vehicle reduced dramatically, and more. These exemplary sensor responses may be indicative of an accident. In any event, the feature control module **104** may be configured to address emergency scenarios, especially with respect to the control of one or more devices **108**. In one embodiment, an emergency state may cause the feature control module **104** to provide unfettered access to the device **108** and/or its features. In another embodiment, an emergency state may cause the feature control module **104** to present an emergency message to the one or more devices **108**. This emergency message may be sent to emergency services personnel and/or a third party. Furthermore, the emergency message may include details regarding the emergency, the state of the vehicle **204**, the state of a user **112**, and/or the state of the device **108**.

[0062] The feature control module **104** is configured to control one or more devices **108** based at least in part on rules (step **328**). In general, the feature control module may utilize any one or more of the steps presented herein in determining control of the one or more devices **108**. In some embodiments, the rules may direct that all of the steps disclosed herein be considered before the specific control of a device **108** is initiated. These rules may include at least one algorithm to provide a controlling action response from the feature control module **104**. The rules may use sensor information collected, settings, laws, and more in determining a control action.

[0063] Control of a device **108** may take a number of forms. In some embodiments, control of a device **108** may include

restricting access to specific applications, programs, and/or features of the device **108**. For example, a user **112** whose device is being controlled by a feature control module **104** may be allowed to access the home screen of a device **108** to check the time and/or date. However, this user **112** may be restricted, by the feature control module **104**, from accessing a communications interface (e.g., telephone, texting, SMS, MMS, email, web browsers, and the like). Additionally or alternatively, the user may be restricted from accessing programs that require physical input at the device **108**. For instance, a user **112** may be allowed to use the device **108** to send some form of communication and/or interface with the device **108** using voice commands and/or visual input.

[0064] In some embodiments, the control of a device **108** may include transitioning the device **108** from one state to another. Among other things, various device **108** states may include Device On, Device Off, and Device Lock. In accordance with the present disclosure, and as previously stated, the rules may refer to location of the device **108** to activate and/or deactivate a control action. Additionally or alternatively, a control message may be presented to an interface associated with the device **108** to indicate that the device **108** is controlled or released from control.

[0065] In other embodiments, the control of a device **108** may include blocking communications to and/or from the device **108**. This type of communications control may be activated in one or more of an area **208**, a zone **212**, and a device **108**. For instance, if one or more devices **108** are detected in a given area **208**, the feature control module **104** may determine to control all of the devices **108** together. This control may include interfering with the devices' **108** communication abilities.

[0066] FIG. **4** is a flow diagram depicting a second feature control system method **400** in accordance with embodiments of the present disclosure. In general, the method **400** is directed to detecting a device **108** and any associated settings for the control of the device **108**. The method begins at step **404** and proceeds by detecting one or more device **108** (step **408**). As disclosed above, detection may be achieved through physical and/or wireless techniques. Moreover, the disclosed detection techniques may be automatically performed and/or manually initiated. If no device **108** is detected, the method ends (step **442**).

[0067] Upon detecting a device, however, the method **400** continues by determining whether any settings are associated with the device **108** (step **412**). These settings may include data associated with a user, device, application, and/or feature control module **104**. Typical settings may be stored in device data **120**, at the feature control module **104** system data **106**, and/or remotely in stored data **124**. If no settings are detected, the user **112** may be prompted to enter settings, and/or configure the device **108** (step **416**).

[0068] At this point, the user **112** may enter settings as prompted (step **420**). In other words, the user **112** may enter settings information at one or more of the device **108**, interface to the feature control module **104**, and/or at a server **122**. The settings may be prompted via at least one application running on the device, a server, and/or running as part of the feature control module **104**. If the user fails to enter settings as prompted, the method **400** may continue by optionally controlling the device **108** based on default settings (step **424**) and/or end the method (step **442**).

[0069] If settings are available, or if the user **112** enters settings as prompted, the method **400** may continue by controlling the device **108** based at least in part on the settings and on rules stored in memory (step **428**). In an exemplary embodiment, the feature control module **104** may control one or more behavior of the device **108**. For example, rules may dictate that while a vehicle **204** is in motion, the device **108** should be controlled for all communications applications. Additionally or alternatively, a user **112** may enter settings directing that, when controlled by a feature control module **104**, the device **104** should be transitioned to a Device Lock state. Moreover, the user **112** may wish to have an alert/notification pushed to the device **108** interface to indicate that the device **108** is being controlled. This alert/notification may be provided in the form of a message. It is anticipated that vehicle **204** and/or device **108** conditions may be continually monitored by the feature control module **104** to modify the control method **400**. Once a device **108** is controlled, the method may return to detecting any available devices **108** (step **408**). If no device **108** is found, the method ends (step **442**).

[0070] Referring to FIG. **5**, a flow diagram is shown depicting a third feature control system method **500** in accordance with embodiments of the present disclosure. Among other things, the method **500** discloses a feature control module **104** utilizing device **108** and/or vehicle **204** location to determine at least one control action. The method begins at step **504** and proceeds by detecting one or more device **108** (step **508**). If no device is found, the method ends (step **520**).

[0071] Upon detecting a device **108**, the method **500** continues by determining the location of the device **108** (and/or vehicle **204**)(step **512**). The location of the device **108** may refer to physical location of the device **108** inside or outside of a vehicle **204**. In the event that a device **108** is determined to be located inside a vehicle **204**, a specific location of the device **108** may be determined. Additionally or alternatively, the device **108** may be determined to be in a general location inside the vehicle **204**. Depending on the rules and/or state of the vehicle **204**, the specific location of the device **108** may be important to the feature control module **104** in determining to control the device **108** or its features. For example, a device **108** detected in the driver's seat of a vehicle **204** may be controlled differently than a device **108** detected in the rear passenger seat of a vehicle **204**. As one example, a device **108** in the driver's seat may be controlled to more strict conditions. On the other hand, a device **108** found in the rear passenger location may be unrestricted or minimally restricted.

[0072] In some embodiments, the location of the device **108** may include a location of the vehicle **204**. In other words, a location of the device **108** detected inside a vehicle **204**, may be provided by a GPS or other location service of the vehicle and/or the device **108** itself. This geographical location of the vehicle **204** may be used by the feature control module **104** in initiating a control action. In particular, the feature control module **104** may refer to laws associated with the geographical location of the vehicle **204** in controlling the device **108**. In some instances, these laws may be related to traffic and/or vehicle-device use statutes created by a government or third party.

[0073] When the device **108** is location is determined, the method **500** continues by controlling the device **108** based at least partially on the location of the device **108** and stored rules (step **516**). As provided in an example above, a device **108** may be controlled in accordance with laws based on the location of the device **108** in the vehicle **204**. The method **500**

may continue by returning to the step of detecting devices (step **508**). If no device is found, the method ends (step **520**).

[0074] FIG. **6** is a flow diagram depicting a fourth feature control system method **600** in accordance with embodiments of the present disclosure. In general, the method **600** is directed to determining a state of a vehicle **204** to provide control action guidance for the feature control module **104**. In some embodiments, the feature control module **104** may be configured to cease control of a device and/or its applications based on a number of states associated with a vehicle **204**. One of these overriding control states is an emergency detected by the feature control module **104**.

[0075] The method **600** begins at step **604** and proceeds by determining whether one or more devices **108** have been detected (step **608**). If no device is found, the method ends (step **628**). However, upon detecting a device **108**, the method **600** continues by determining a state of the vehicle **204** (step **612**). A vehicle state may be determined by one or more inputs provided via the vehicle sensors **132**, non-vehicle sensors **140**, device **108**, and a user **112**.

[0076] In some embodiments, the method **600** may interpret the nature of the vehicle state determined in step **612**. In particular, the feature control module **104** may determine whether the vehicle is in a state of emergency or not (step **616**). As described above, an emergency state may be determined from a number of vehicle **204** inputs. For example, various vehicle sensors **132** may indicate that an oil line associated with the vehicle **204** is losing pressure, the engine is reaching an unusually high predetermined temperature, and the safety restraint sensors detect impact at the front of the vehicle **204**. This combination of sensor inputs may be enough to qualify as an emergency. In some embodiments, the user **112** may input an override command to indicate an emergency state. This override command may be in the form of video, voice, tactile, or other input.

[0077] Upon detecting an emergency state of the vehicle **204**, the feature control module **104** may be directed to override specific controlled features of the device **108** (step **620**). In other words, the feature control module **104** may allow access to all, or less than all, of the features of the device **108**. For example, in the event of an emergency, a user's **112** access to the communications applications of a device **108** may be considered important if not critical. Therefore, a detected emergency state may prevent the restricted control of the device's communication hardware and/or software.

[0078] In the event that the vehicle state is not determined to be an emergency, the method **600** continues by controlling the device **108** based at least partially on the vehicle state and stored rules (step **624**). For example, one or more sensors **132**, **140** may indicate that a vehicle **204** has reduced speed in a short amount of time. However, the feature control module **104** may determine that this type of scenario is not an emergency. As such, the device **108** may be controlled in accordance with the current vehicle state and rules. For instance, the vehicle state may indicate that the vehicle **204** is stopped and in-park. In this case, the feature control module **104** may allow access to features of the device **108**. Upon detecting a state change of the vehicle **204**, the feature control module **104** may control the device **108** differently (e.g., restricting access to features of the device **108**). The method **600** may continue by returning to the step of detecting devices (step **608**). If no device is found the method ends (step **628**).

[0079] The exemplary systems and methods of this disclosure have been described in relation to a feature control module **104** and associated devices **108**. As suggested by this disclosure, features may be shared between a feature control module **104** and a device **108**. However, to avoid unnecessarily obscuring the present disclosure, the preceding description omits a number of known structures and devices. This omission is not to be construed as a limitation of the scopes of the claims. Specific details are set forth to provide an understanding of the present disclosure. It should however be appreciated that the present disclosure may be practiced in a variety of ways beyond the specific detail set forth herein.

[0080] Furthermore, while the exemplary aspects, embodiments, and/or configurations illustrated herein show the various components of the system collocated, certain components of the system can be located remotely, at distant portions of a distributed network, such as a LAN and/or the Internet, or within a dedicated system. Thus, it should be appreciated, that the components of the system can be combined in to one or more devices, such as a Personal Computer (PC), laptop, netbook, smart phone, Personal Digital Assistant (PDA), tablet, etc., or collocated on a particular node of a distributed network, such as an analog and/or digital telecommunications network, a packet-switch network, or a circuit-switched network. It will be appreciated from the preceding description, and for reasons of computational efficiency, that the components of the system can be arranged at any location within a distributed network of components without affecting the operation of the system. For example, the various components can be located in a switch such as a PBX and media server, gateway, in one or more communications devices, at one or more users' premises, or some combination thereof. Similarly, one or more functional portions of the system could be distributed between a telecommunications device(s) and an associated computing device.

[0081] Furthermore, it should be appreciated that the various links connecting the elements can be wired or wireless links, or any combination thereof, or any other known or later developed element(s) that is capable of supplying and/or communicating data to and from the connected elements. These wired or wireless links can also be secure links and may be capable of communicating encrypted information. Transmission media used as links, for example, can be any suitable carrier for electrical signals, including coaxial cables, copper wire and fiber optics, and may take the form of acoustic or light waves, such as those generated during radio-wave and infra-red data communications.

[0082] Also, while the flowcharts have been discussed and illustrated in relation to a particular sequence of events, it should be appreciated that changes, additions, and omissions to this sequence can occur without materially affecting the operation of the disclosed embodiments, configuration, and aspects.

[0083] A number of variations and modifications of the disclosure can be used. It would be possible to provide for some features of the disclosure without providing others.

[0084] In some embodiments, the systems and methods of this disclosure can be implemented in conjunction with a special purpose computer, a programmed microprocessor or microcontroller and peripheral integrated circuit element(s), an ASIC or other integrated circuit, a digital signal processor, a hard-wired electronic or logic circuit such as discrete element circuit, a programmable logic device or gate array such as PLD, PLA, FPGA, PAL, special purpose computer, any comparable means, or the like. In general, any device(s) or means capable of implementing the methodology illustrated

herein can be used to implement the various aspects of this disclosure. Exemplary hardware that can be used for the disclosed embodiments, configurations and aspects includes computers, handheld devices, telephones (e.g., cellular, Internet enabled, digital, analog, hybrids, and others), and other hardware known in the art. Some of these devices include processors (e.g., a single or multiple microprocessors), memory, nonvolatile storage, input devices, and output devices. Furthermore, alternative software implementations including, but not limited to, distributed processing or component/object distributed processing, parallel processing, or virtual machine processing can also be constructed to implement the methods described herein.

[0085] In yet another embodiment, the disclosed methods may be readily implemented in conjunction with software using object or object-oriented software development environments that provide portable source code that can be used on a variety of computer or workstation platforms. Alternatively, the disclosed system may be implemented partially or fully in hardware using standard logic circuits or VLSI design. Whether software or hardware is used to implement the systems in accordance with this disclosure is dependent on the speed and/or efficiency requirements of the system, the particular function, and the particular software or hardware systems or microprocessor or microcomputer systems being utilized.

[0086] In yet another embodiment, the disclosed methods may be partially implemented in software that can be stored on a storage medium, executed on programmed general-purpose computer with the cooperation of a controller and memory, a special purpose computer, a microprocessor, or the like. In these instances, the systems and methods of this disclosure can be implemented as program embedded on personal computer such as an applet, JAVA® or CGI script, as a resource residing on a server or computer workstation, as a routine embedded in a dedicated measurement system, system component, or the like. The system can also be implemented by physically incorporating the system and/or method into a software and/or hardware system.

[0087] Although the present disclosure describes components and functions implemented in the aspects, embodiments, and/or configurations with reference to particular standards and protocols, the aspects, embodiments, and/or configurations are not limited to such standards and protocols. Other similar standards and protocols not mentioned herein are in existence and are considered to be included in the present disclosure. Moreover, the standards and protocols mentioned herein and other similar standards and protocols not mentioned herein are periodically superseded by faster or more effective equivalents having essentially the same functions. Such replacement standards and protocols having the same functions are considered equivalents included in the present disclosure.

[0088] The present disclosure, in various aspects, embodiments, and/or configurations, includes components, methods, processes, systems and/or apparatus substantially as depicted and described herein, including various aspects, embodiments, configurations embodiments, subcombinations, and/or subsets thereof. Those of skill in the art will understand how to make and use the disclosed aspects, embodiments, and/or configurations after understanding the present disclosure. The present disclosure, in various aspects, embodiments, and/or configurations, includes providing devices and processes in the absence of items not depicted and/or described herein or in various aspects, embodiments, and/or configurations hereof, including in the absence of such items as may have been used in previous devices or processes, e.g., for improving performance, achieving ease and\or reducing cost of implementation.

[0089] The foregoing discussion has been presented for purposes of illustration and description. The foregoing is not intended to limit the disclosure to the form or forms disclosed herein. In the foregoing Detailed Description for example, various features of the disclosure are grouped together in one or more aspects, embodiments, and/or configurations for the purpose of streamlining the disclosure. The features of the aspects, embodiments, and/or configurations of the disclosure may be combined in alternate aspects, embodiments, and/or configurations other than those discussed above. This method of disclosure is not to be interpreted as reflecting an intention that the claims require more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive aspects lie in less than all features of a single foregoing disclosed aspect, embodiment, and/or configuration. Thus, the following claims are hereby incorporated into this Detailed Description, with each claim standing on its own as a separate preferred embodiment of the disclosure.

[0090] Moreover, though the description has included description of one or more aspects, embodiments, and/or configurations and certain variations and modifications, other variations, combinations, and modifications are within the scope of the disclosure, e.g., as may be within the skill and knowledge of those in the art, after understanding the present disclosure. It is intended to obtain rights which include alternative aspects, embodiments, and/or configurations to the extent permitted, including alternate, interchangeable and/or equivalent structures, functions, ranges or steps to those claimed, whether or not such alternate, interchangeable and/or equivalent structures, functions, ranges or steps are disclosed herein, and without intending to publicly dedicate any patentable subject matter.

1-20. (canceled)

21. A method of controlling access to one or more features of a communication device associated with a vehicle, comprising:

establishing, by a microprocessor executable feature control module, a connection with the communication device, wherein the feature control module is configured to receive input from at least one sensor of the communication device;

determining, by the feature control module, a location of the communication device relative to the vehicle;

controlling, via the feature control module and based at least partially on the location of the communication device, user access to one or more features of the communication device;

receiving, at the feature control module, emergency state information associated with a user of the communication device from the at least one sensor of the communication device, wherein the emergency state information corresponds to a health emergency suffered by the user; and

overriding, in response to receiving the emergency state information associated with the user of the communication device, the control of user access to the one or more features of the communication device, wherein the over-

riding at least allows for messaging between the communication device and another device.

22. The method of claim **21**, wherein the connection between the communication device and feature control module is established via manually registering the communication device with the feature control module.

23. The method of claim **21**, wherein the connection between the communication device and feature control module is established via automatically registering the communication device with the feature control module.

24. The method of claim **23**, wherein automatically registering the communication device further comprises storing in a memory an identifier associated with the communication device.

25. The method of claim **21**, wherein the location of the communication device is determined to be inside the vehicle.

26. The method of claim **25**, wherein the inside of the vehicle is arranged into one or more areas, and wherein the communication device is located in a specific area of the one or more areas.

27. The method of claim **26**, wherein the specific area is associated with an operating area of the vehicle, and wherein the feature control module restricts access to the one or more features of the communication device.

28. The method of claim **26**, wherein the specific area is associated with a passenger area of the vehicle, and wherein the feature control module allows unrestricted access to the one or more features of the communication device.

29. The method of claim **21**, further comprising:

referring to one or more rules relating to operating the communication device while operating the vehicle; and

wherein user access to the one or more features of the communication device is controlled based at least partially on the one or more rules.

30. The method of claim **29**, wherein the one or more rules correspond to laws associated with a geographical region, and wherein the laws are stored in a memory.

31. The method of claim **21**, further comprising:

referring to one or more settings associated with the communication device; and

wherein user access to the one or more features of the communication device is controlled based at least partially on the one or more settings.

32. The method of claim **21**, further comprising:

determining a state of the vehicle associated with the communication device, wherein determining the vehicle state further comprises:

receiving input from the at least one sensor; and

interpreting whether the input received indicates an emergency state associated with the vehicle;

wherein user access to the one or more features of the communication device is controlled based at least partially on the determined state of the vehicle.

33. The method of claim **32**, wherein the vehicle is determined to be in an emergency state, and wherein unrestricted user access to the one or more features of the communication device is allowed.

34. The method of claim **32**, wherein the vehicle is determined to be in a parked state, and wherein unrestricted user access to the one or more features of the communication device is allowed.

35. The method of claim **32**, wherein the vehicle is determined to be in a moving state, and wherein user access to the one or more features of the communication device is restricted.

36. A tangible, non-transitory computer readable medium having instructions stored thereon that, when executed by a processor, perform the method comprising:

establishing a connection with a communication device;

receiving input from at least one sensor of the communication device;

determining a location of the communication device relative to a vehicle;

controlling based at least partially on the location of the communication device, user access to one or more features of the communication device;

receiving emergency state information associated with a user of the communication device from the at least one sensor of the communication device, wherein the emergency state information corresponds to a health emergency suffered by the user; and

overriding, in response to receiving the emergency state information associated with the user of the communication device, the control of user access to the one or more features of the communication device, wherein the overriding at least allows for messaging between the communication device and another device.

37. The non-transitory computer readable medium of claim **36**, wherein the method further comprises:

referring to one or more rules relating to operating the communication device while operating the vehicle, wherein the one or more rules correspond to laws associated with a geographical region, and wherein the laws are stored in a memory; and

wherein user access to the one or more features of the communication device is controlled based at least partially on the one or more rules.

38. The non-transitory computer readable medium of claim **36**, wherein the method further comprises:

referring to one or more settings associated with the communication device; and

wherein user access to the one or more features of the communication device is controlled based at least partially on the one or more settings.

39. A system for controlling access to one or more features of a communication device associated with a vehicle, comprising:

at least one sensor of the communication device; and

a microprocessor executable feature control module configured to control the communication device via communication across a communication network, the microprocessor executable feature control module operable to:

establish a connection with the communication device, wherein the microprocessor executable feature control module is configured to receive input from the at least one sensor of the communication device;

determine a location of the communication device relative to the vehicle;

control, based at least partially on the location of the communication device, user access to one or more features of the communication device;

receive emergency state information associated with a user of the communication device from the at least one sensor of the communication device, wherein the

emergency state information corresponds to a health emergency suffered by the user; and

override, in response to receiving the emergency state information associated with the user of the communication device, the control of user access to the one or more features of the communication device, wherein the overriding at least allows for messaging between the communication device and another device.

40. The system of claim **39**, further comprising:

a rules management server, wherein the rules management server is configured to control access to one or more rules relating to operating the communication device while operating the vehicle; and

wherein the microprocessor executable feature control module is further operable to:

refer to one or more rules relating to operating the communication device while operating the vehicle; and

wherein user access to the one or more features of the communication device is controlled based at least partially on the one or more rules.

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