

HUGHES®

PASS-TCU

USER MANUAL

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2 About This Product

The Personal Assistance and Safety System (PASS) serves as the central platform of a telematics system, where all telematics-related technologies are deeply integrated. PASS communicates to a central service center through the communication network device and in turn the service center helps deliver telematics services to the customer.

PASS handles the communication from the vehicle to the outside infrastructure via various wireless systems. Besides, a localization manager will ensure proper positioning information for all telematics services.

PASS contains a GPS receiver, cellular transceiver, and modem/transceiver control board. PASS supports all the telematics services, which are listed below:

- Remote Door Unlock
- Road Side Assistance (R-Call)
- Emergency Assistance (E-Call)
- Automatic Crash Notification (CAN)
- Stolen Vehicle Tracking
- Automatic Maintenance

The access to PASS system functionality is granted via several application programming interfaces from within the platform or to other in-car applications over the vehicle network system. In that way the application software will become independent from the used hardware.

PASS can be characterized as a distributed, heterogeneous hardware/ software system, which provides functionality and services to the customer via the interaction of several devices. These hardware components are interconnected by standardized car networks (e.g. Discrete I/O line, CAN bus) and by wireless communication channels (e.g. GSM).

The features accomplished UConnect System Include:

- Bluetooth Hands Free Calling
- Universal Consumer Interface (Portable Music Player Integration)

Additional investigate features are:

- Remote Vehicle Diagnostics and Data Collection
- Off Board Navigation

A separate RFI will also be issued to Customer Service Center operators to provide the 'back-end' services. It is assumed that communication will take place via an integrated cellular modem although other innovative solutions are always considered.

3 PASS-TCU Features:

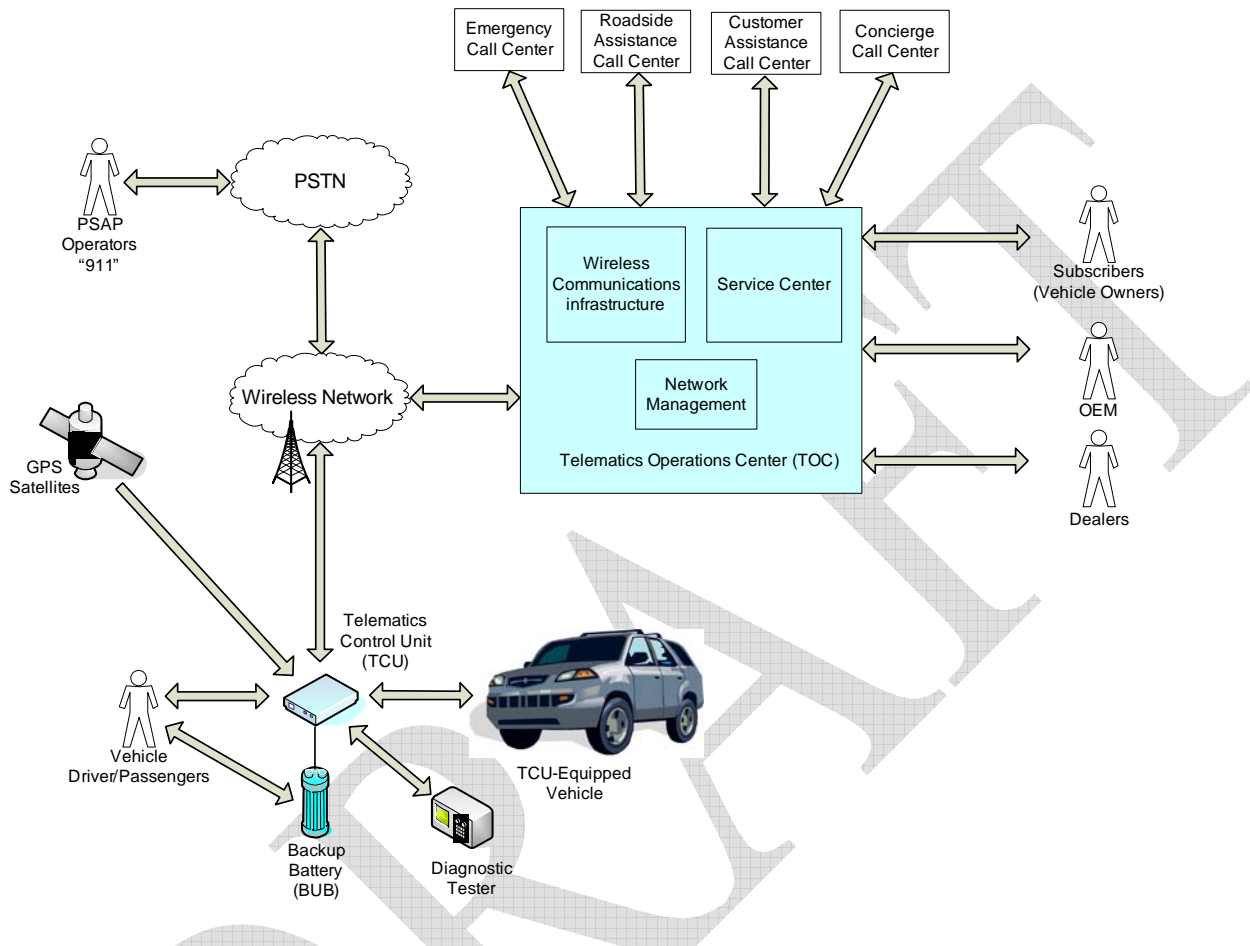


Figure 1: System Context.

3.1 Emergency Call Overview

Emergency Call service is activated by the low cost TeleAid unit (PASS) in two different ways: Manually by pushing an emergency call push-button (Emergency Call button or SOS button) or Automatically by receiving a crash signal from the external airbag control unit.

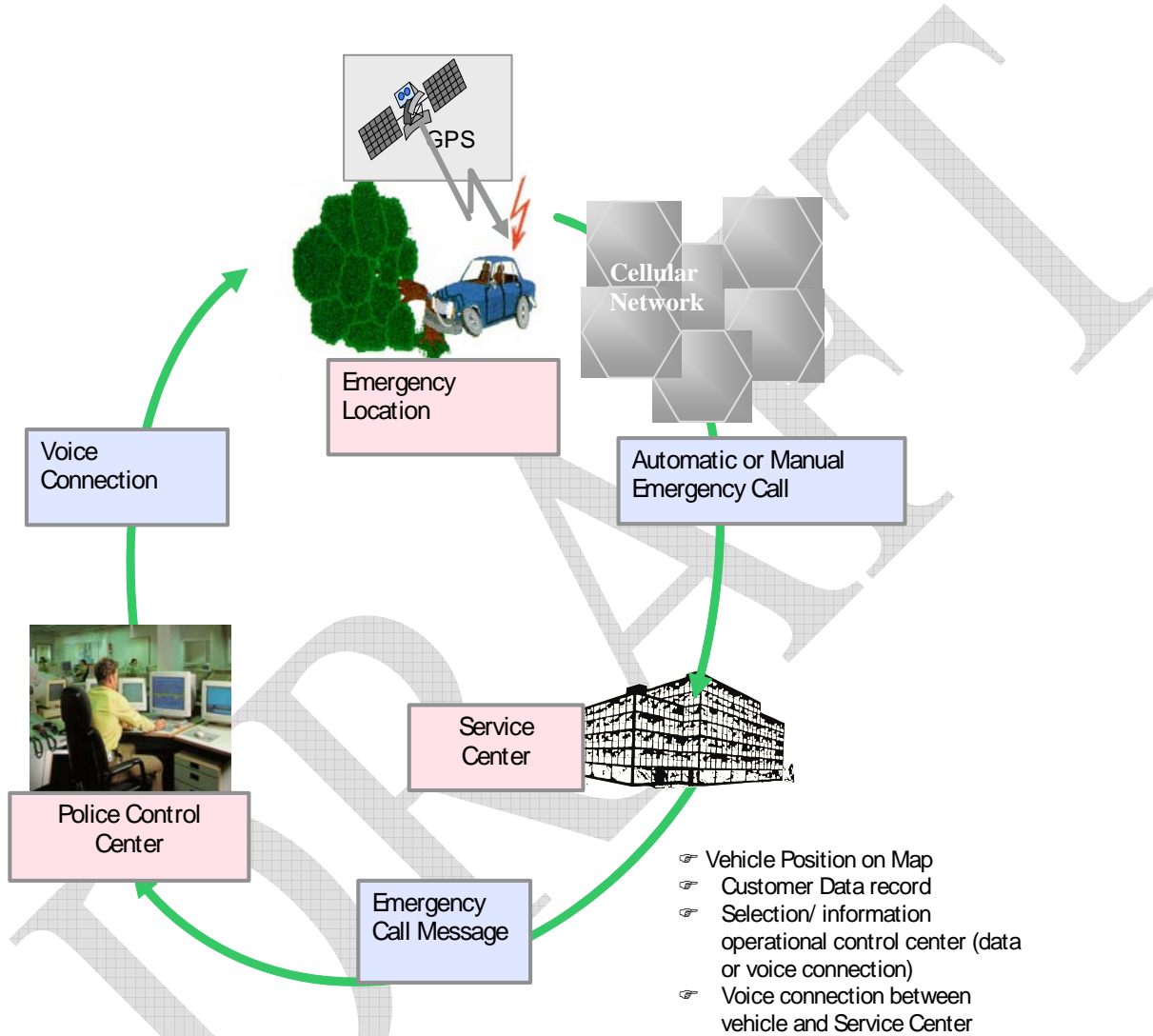


Figure 2: Emergency Call Overview.

3.2 Roadside Assistance Overview

The Roadside Assistance service allows the customer to get in touch with the Service Center in case of a breakdown of the vehicle or for any non-emergency assistance. A request for the Roadside Assistance can be triggered by manually pressing a button available within the car. This service allows the service center to provide quick and efficient assistance to the customer. The service can also be triggered automatically when predefined thresholds (remaining distance, remaining time) have been reached.

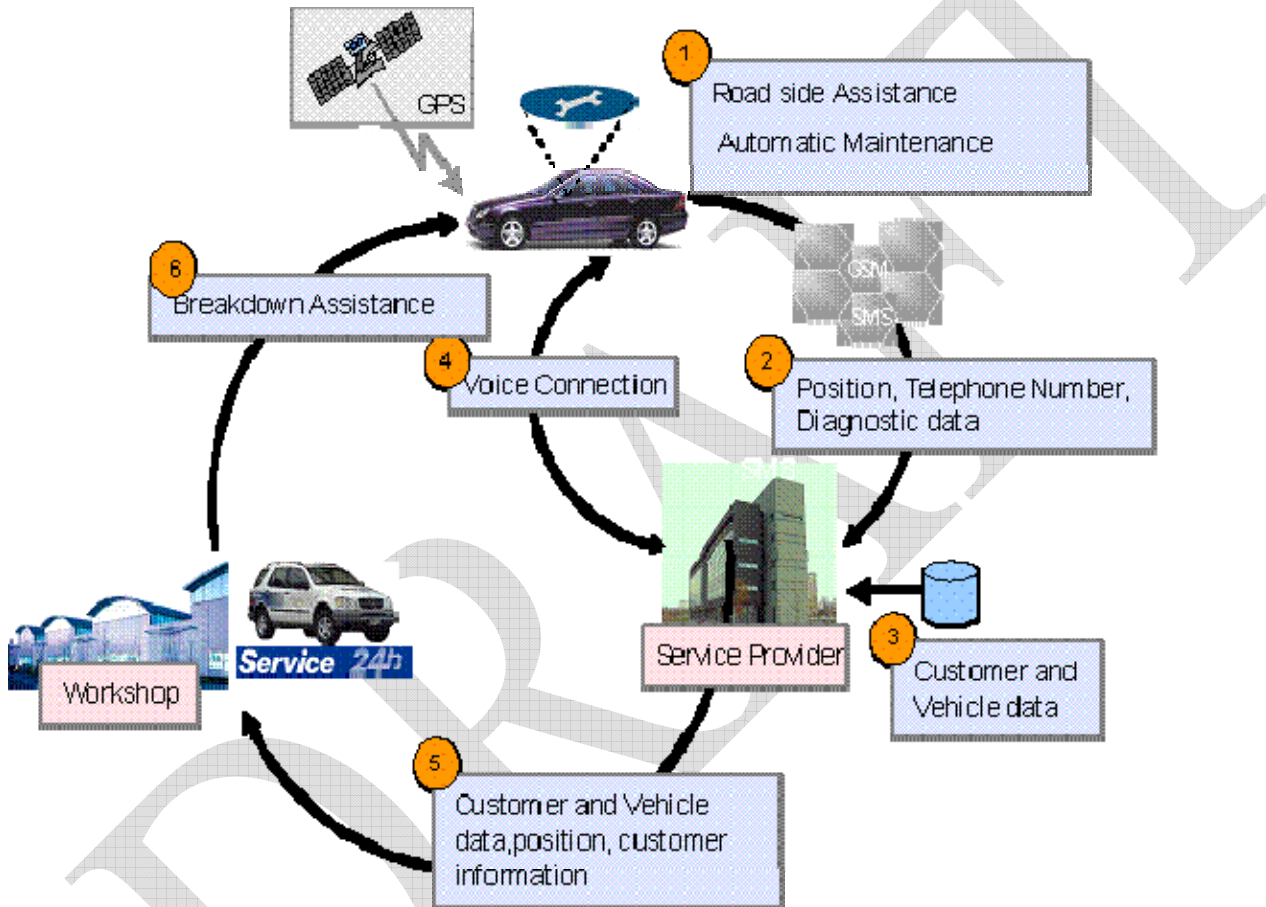


Figure 3: Road Assistance Overview.

3.3 Remote Nearby Service Overview

The Remote Nearby service allows the customer to unlock the vehicle, if the customer is nearby the vehicle. The customer can call the service center to request for the RDU service.

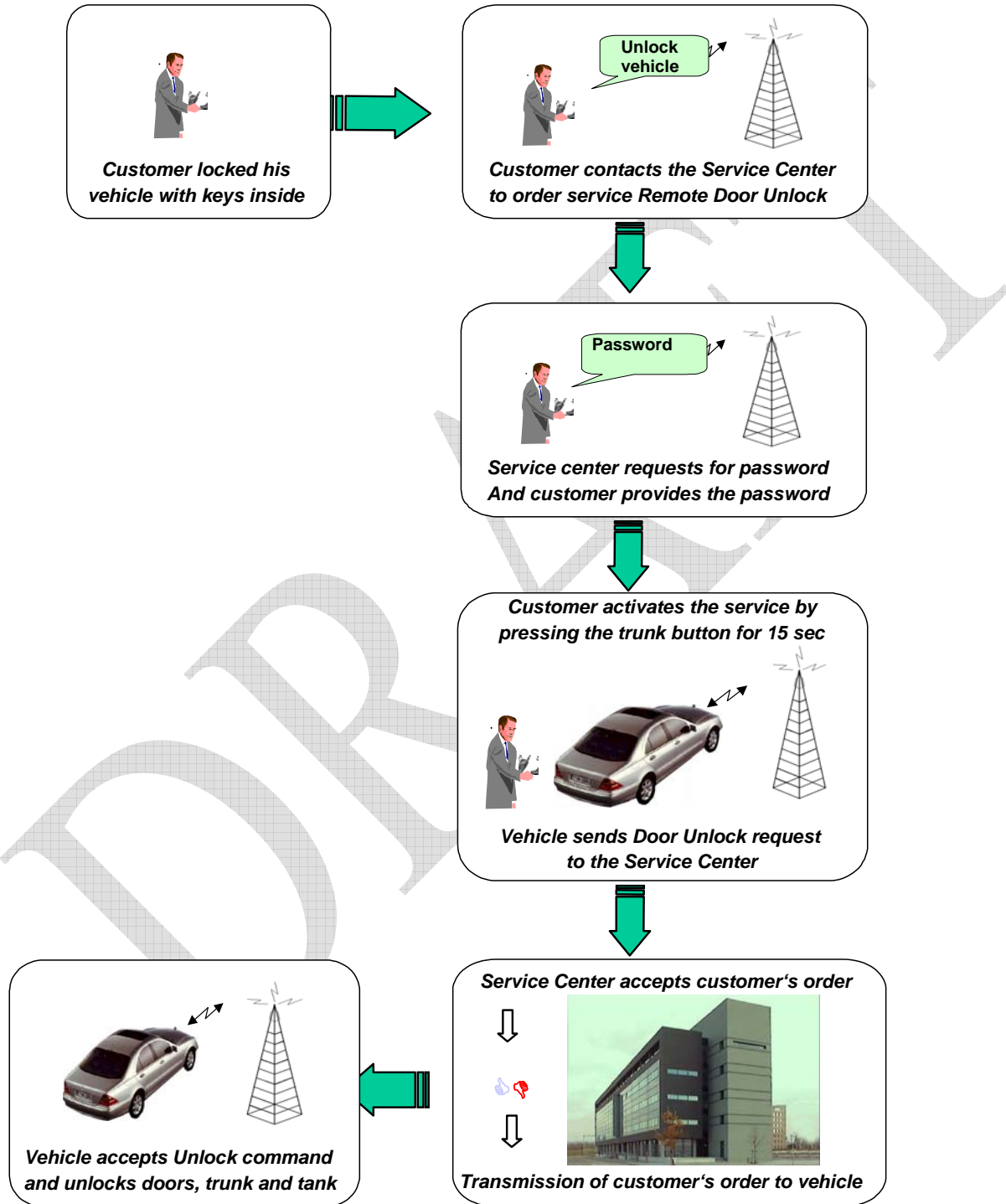


Figure 4: Remote Door Unlock Overview.

4 Technical Specifications

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5 Definitions and Acronyms

OTA: Over the Air

Ambient Temperature: Temperature surrounding the component as tested in a test chamber or as installed in the vehicle.

Category and subcategory: In this document, electronic modules, electric motors and inductive devices are classified into categories and subcategories, which determine the appropriate test requirements.

ECU: Electronic Control Unit

DUT: Device Under Test

Component: Any electrical or electronic assembly used in the vehicle, such as engine control module, instrument cluster, junction block, sensor, switch, etc. Also used interchangeably with terms such as ECU, Module, Device, DUT, etc.

Ignition Voltage Lines: The supply voltage lines to a DUT that are fed from the vehicle electrical power distribution system through the ignition switch.

Inductive Device: An electromechanical device that stores energy in a magnetic field. Examples are solenoids, relays, buzzers and electromechanical horns.

IOD: Ignition Off Current Draw.

IP Class: International Protection classification for solid and/or water intrusion for automotive applications as described in DIN 40 050.

RKE: Remote Keyless Entry

TPM Sensor: Tire Pressure Monitor Sensor

Non-operational: A component shall be considered "Non-operational", if it is connected to a power source, but does not perform any normal operating functions during the test. The condition requires use of mating connectors during the test. This condition is similar to the one experienced by an E/E component in a parked vehicle.

NTC: Negative Temperature Co-efficient (Device with NTC feature shuts off power supply or reduces certain component applications (e. g. CD-playing for a car radio) when device temperature goes below certain minimum operating temperature specified).

Operational: A component shall be considered "Operational", if it performs functions as experienced during vehicle operations on a continuous basis (without any interruptions). Power source may be from vehicle battery, ignition feed or an independent power source, as in case of, RKE, or TPM Sensor, etc.

PET: Parametric Evaluation Technique.

Power-off: A component shall be considered "Power-off", when it is not electrically connected to a power source, as in case of shipping or storage conditions. "Power-off" condition may require use of mating connectors during some of the tests and shall be specified clearly in the "Test Parameters".

PTC: Positive Temperature Co-efficient (Device with PTC feature shuts off power supply or reduces certain component applications (e. g. CD-playing for a car radio) when device temperature goes above certain maximum operating temperature specified).

PV: Production Validation.

Soak Time (T_{soak}): Time taken by component to reach chamber ambient temperature at high or low temperature during thermal cycling tests from the time chamber temperature reaches corresponding high or low temperature levels.

Temperature class: Classification of maximum temperature a component will experience based on its mounting location and specific packaging variations in the vehicle.

T_{min} : Lowest ambient temperature experienced by any component (Usually -40 0C).

T_{max} : Highest ambient temperature experienced by any component. Value of T_{max} depends on temperature class of the component.

Usage Life Profile (ULP): It is a software tool that assists in selecting the applicable qualification tests and test parameters for a component based on input data such as design or service life, in-vehicle component location, customer driving/usage pattern or other environmental stresses.

Vibration Class: Classification of vibration intensities a component will experience based on its mounting location in the vehicle.

6 FCC Compliance

This device conforms to the FCC rules. Any change or modification to Hughes Network Systems' equipment, not expressly approved by Hughes Network Systems, could void the user's authority to operate the equipment.

To comply with the FCC RF Exposure requirements, this device must be operated with a minimum separation distance of 20 cm or more from a person's body. Other operating configurations should be avoided.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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