News Release

November 25, 2016

Pioneer builds a map-based accident prediction platform and Intelligent Pilot, an ADAS solution for on-the-road cars

Tokio Marine & Nichido Fire Insurance Co., Ltd. has decided to use the system for its "Drive Agent Personal" service.

Pioneer Corporation aims to be a leading provider of in-car infotainment solutions. It is developing next-generation in-car devices and cloud services for connected cars. The market for connected car related technology has been growing strongly.
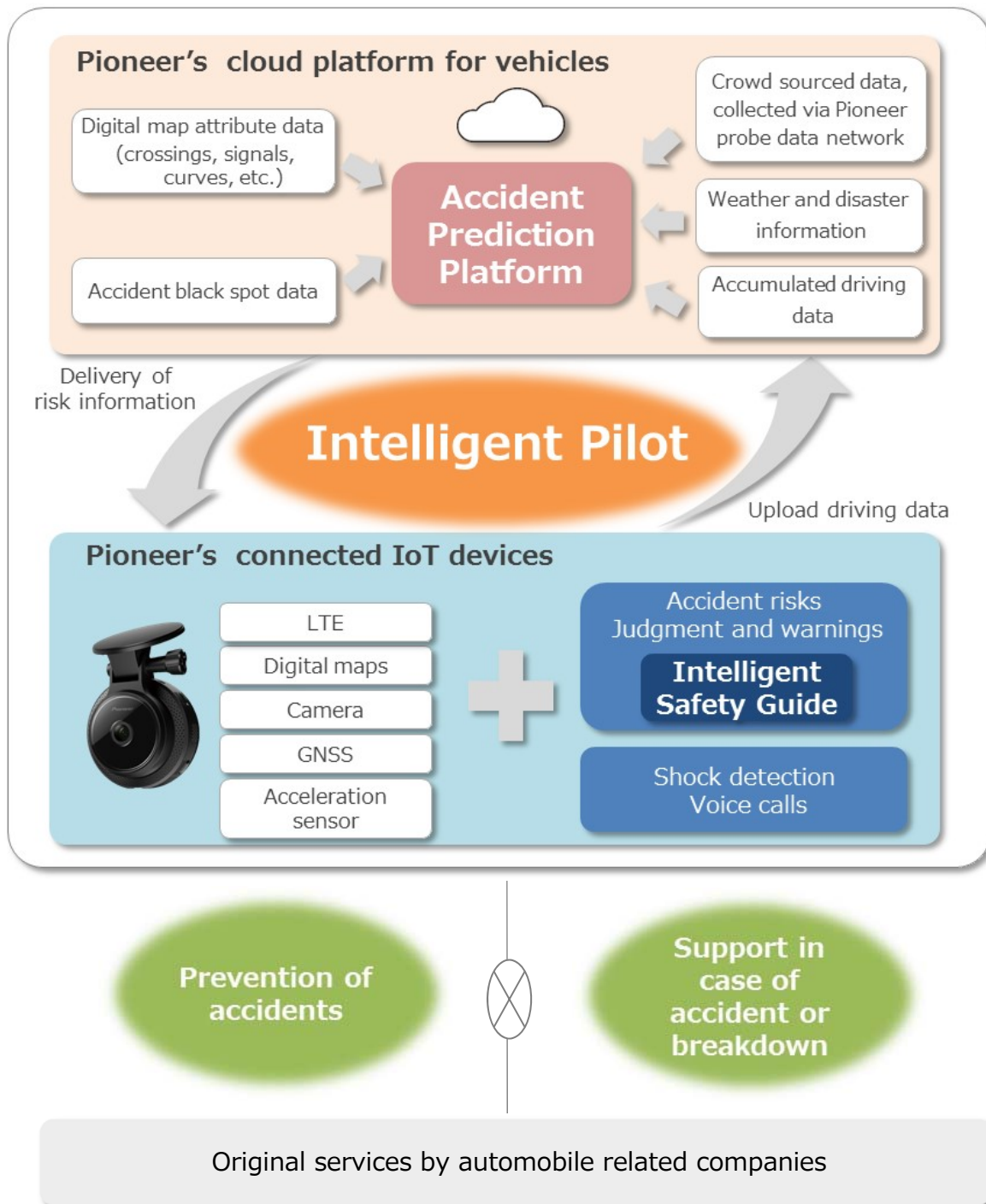
The Intelligent Pilot is an aftermarket ADAS solution, built using connected technology and Pioneer's accident risk prediction platform. This platform uses Pioneer's original map-based predictive technologies to provide driving context based risk prediction, enabling personalized advanced driving support.

This system will be adopted in the "Drive Agent Personal" service for non-fleet (personal) automobile insurance policyholders (scheduled for launch in April, 2017) announced on November 25, 2016 by Tokio Marine & Nichido Fire Insurance Co., Ltd. (Head Office: Chiyoda-ku, Tokyo: President: Toshifumi Kitazawa, hereinafter "Tokio Marine & Nichido").

■Background for development

Adoption of Advanced Driver Assistance Systems (ADAS) has been growing strongly in recent years, contributing to the evolution of a safer driving experience. It has been a challenge however to find a way to bring such safe driving support systems to on-the-road cars. Such cars account for the majority of vehicles in service today.

There has been a growth in the market for dashboard mounted drive recorders. These devices can help understand the actual circumstances of an accident through analysis of sensor data and camera images.

Pioneer's cloud platform for vehicles

Digital map attribute data (crossings, signals, curves, etc.)

Crowd sourced data, collected via Pioneer probe data network

Accident black spot data

Accident Prediction Platform

Weather and disaster information

Accumulated driving data

Delivery of risk information

Intelligent Pilot

Upload driving data

Pioneer's connected IoT devices

LTE
Digital maps
Camera
GNSS
Acceleration sensor

Accident risks Judgment and warnings
Intelligent Safety Guide

Shock detection Voice calls

Prevention of accidents

Support in case of accident or breakdown

Original services by automobile related companies

■Characteristics of Pioneer's Intelligent Pilot ADAS solution

1) A digital map-based accident prediction platform

Pioneer has built an accident prediction platform which enables the prediction of accidents and danger through the analysis of both driving context and road attribute data. Contextual data considered include time, weather, disaster information and vehicle driving speed. Road attributes considered include traffic signals and curves, accident black spot data and driving trend data based on probe data[*1], crowd sourced data collected by Pioneer (places where

drivers tend to slow down suddenly, causing near accidents*2, for example). This new system offers an Intelligent Safety Guide that provides warnings based on the individual situation of each driver at the appropriate place and time.

【Intelligent Safety Guide - image -】

Accident Prediction Platform

In addition to the weather and time, traffic signals and curves are taken into consideration, and accident risk spots are given priority in receiving data which is highly effective in reducing the number of accidents.

You will reach a crossing where collisions frequently occur about 200 m ahead. Slow down.

It provides warnings based on the driver's situation.

2) Developing an aftermarket connected IoT device, targeting on-the-road cars

- Using embedded LTE communication modules to provide real-time cloud based services

This device is connected to an LTE network. It can receive automatic, over the air (OTA) software updates and use VoIP services for voice calls, while also providing a variety of next-generation telematics services using video and various types of sensing data.

- Providing safe driving support through an in-car front-view camera with a wide-angle lens and original image analysis technology

Using Pioneer original image analysis technology, this device provides safe driving support to drivers. It uses voice based and visual alerts to warn them of upcoming danger. It can also be used as a drive recorder for recording the front view. When it detects a shock on the vehicle, it will record the images and upload them automatically to the cloud service.

- Incorporating a 2-inch LCD screen and the speaker to provide visual and voice based warnings

- Incorporating GNSS (Global Navigation Satellite System), gyro/acceleration sensor, and digital maps

GNSS enables you to obtain a highly accurate position of your vehicle on the digital maps while driving events, such as sudden acceleration or deceleration are detected using a built-in sensor.

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【Connected IoT devices - image -】

■System to be used at Tokio Marine & Nichido.

　Tokio Marine & Nichido decided to adopt the system in its "Drive Agent Personal" for non-fleet (personal) automobile insurance policyholders. If the unit detects a strong impact, it will report the accident to the call center automatically. In addition to automatic recording while driving, it will provide accident prevention support through warnings based on image recognition and warnings of approaching dangerous areas.

　Pioneer has been working in cooperation with Tokio Marine & Nichido in the business of telematics services for automobile insurance policyholders. Pioneer will continue moving forward with measures to help expand and develop Tokio Marine & Nichido's telematics services.

■Future development

　This system can be used for a wide range of industries to address the reduction of traffic accidents by linking with various automobile-related service providers. Pioneer will propose practical uses for these solutions to automobile-related service providers, keeping a close eye on overseas business development.

　*1: Crowd sourced data which is accumulated through the network, such as places where vehicles drove and vehicle speed. Statistical processing is applied so that personal information will not be included.

　*2: Cases which did not result in accidents but near-accidents in the event of sudden incidents, such as rushing out or judgement mistakes while driving. This term is widely used on construction work sites and in the medical field as well as transportation.