PIONEER CORPORATION
1-1, Shin-ogura, Saiwai-ku, Kawasaki-shi
Kanagawa 212-0031, Japan

News Release

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Proposal of high-performance sensor for automated driving and advanced driving support, and efficient creation and operation systems for advanced map data

Launch of in-car trials for development of 3D-LiDAR high-performance, compact, low-cost driving space sensor

- Implementation of 3D-LiDAR in mapping vehicles during 2016, and launch of advanced map creation
- Planned commercialization of 3D-LiDAR for business use in 2017, and for private passenger vehicles from around 2018

Pioneer Corporation has completed trial manufacture for inspection purposes of its 3D-LiDAR (Light Detection and Ranging) driving space sensor, considered necessary to enable automated driving and advanced driving support, and has launched development and in-car trials of technology for a high-performance, compact and low-cost system. Pioneer aims to put the system to practical use for mapping vehicles of advanced map during 2016, and it aims to commercialize 3D-LiDAR for business use in 2017 and for private passenger vehicles around 2018.

Specifically, during 2016, Pioneer will launch advanced map creation using mapping vehicles fitted with 3D-LiDAR, with Increment P Corporation (hereinafter, Increment P), its map creation subsidiary. In the near future, the Company aims to develop and propose an efficient creation and operation system for advanced map data ("data ecosystem") enabling differences in map data to be automatically processed, with low costs of operation, by collecting surrounding environment data in real-time from general-use vehicles equipped with 3D-LiDAR as well.

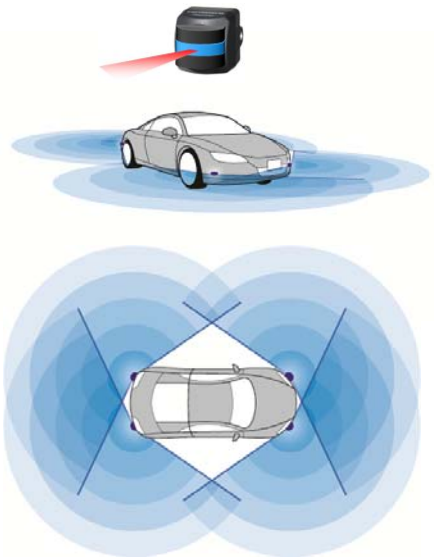
Recent years have seen major advances in the development of in-car devices to support safety and provide driver reassurance, such as sensing systems which prevent accidents by detecting information from the surrounding environment. In response to expectations for an even safer, more reliable, and more comfortable "automobile society" in the future, discussion and development are underway in various fields including "advanced map" necessary for automated driving, "sensors" for real-time appraisal of own-vehicle location and the surrounding environment, and "network system" for updating and disseminating such information at any time. Of these, in the field of sensors, the 3D-LiDAR driving space sensor is thought to be a key device indispensable to the achievement of highly advanced automated driving. In addition to being able to finely detect the distance of objects several dozen meters ahead, as well as their width, even object identification becomes possible, based on shape detection.

The 3D-LiDAR system for which trial manufacture for inspection purposes has been completed is equipped with a proprietary technology realizing high-performance. In the future, Pioneer plans to create a much more compact and lower-cost version to overcome the hurdles of size and price that hinder the spread of the system.

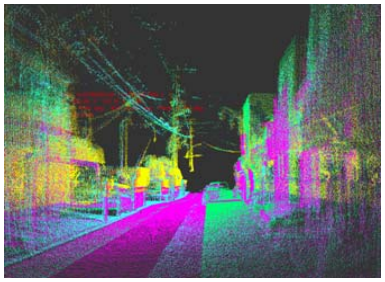
Backed by its wide range of resources including optical and navigation technologies,

probe data, cloud platforms and the expertise of its map creation subsidiary, Pioneer aims to become an “essential company” in the society of automated driving. In a Groupwide partnership, Pioneer aims to provide indispensable key devices for automated driving and advanced driving support of the future, and to propose lower-cost, highly advanced map data creation and operation systems.

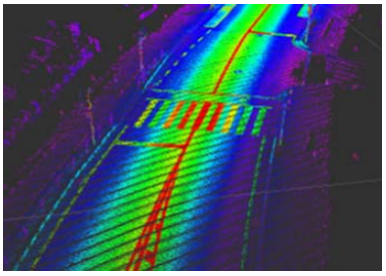
[Image of 3D-LiDAR sensing, mounted in a vehicle]



[Map data creation using 3D-LiDAR]



3D point cloud map data gathered by the LiDAR system

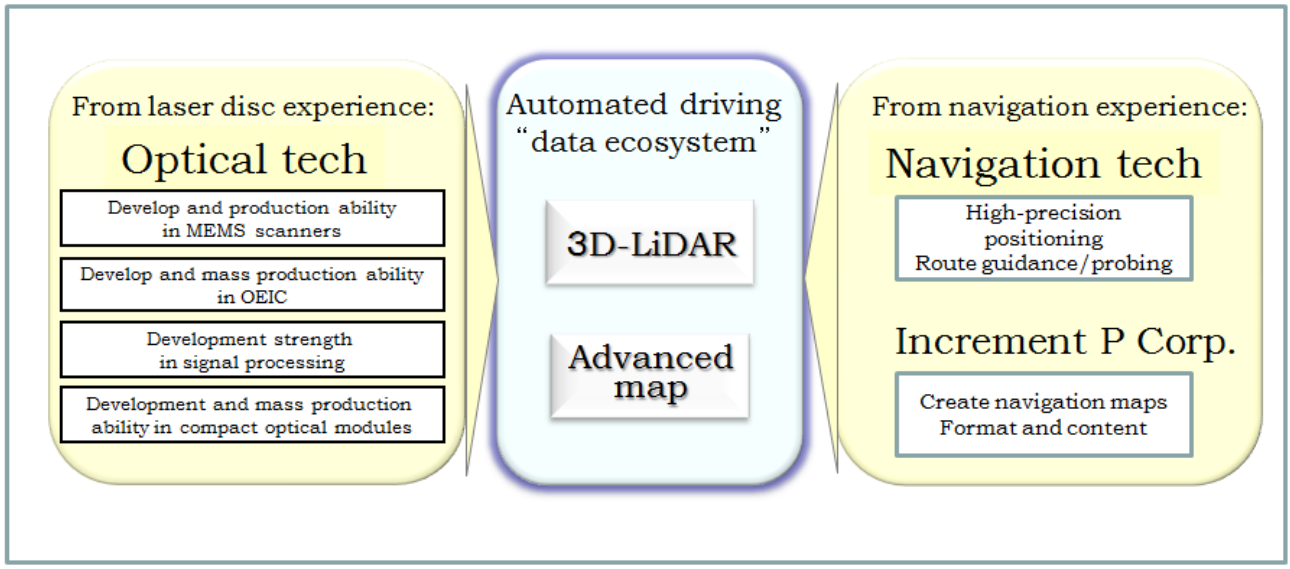


Road outline map data gathered by the LiDAR system

[Pioneer’s strengths for automated driving]

Pioneer is able to develop its high-performance, compact, low-cost 3D-LiDAR system for in-car applications by drawing on its optical disc technologies built up over many years, such as optical pickups. In addition to our track record in car-navigation technologies, by launching the *Smart Loop* proprietary network system using probe data in 2006 and forming an alliance leveraging the map creation and update expertise of Increment P, its map creation subsidiary, Pioneer is able to develop and propose efficient creation and operation systems (“data ecosystem”) which update and disseminate advanced map data using the surrounding environment information automatically collected from private passenger vehicles.

[Pioneer’s Strengths]



[Implementation Schedule]