



## Expansion of the field of automated driving to general roads Formatting of technologies in the “cooperative area” is required for its achievement.

Reduction of traffic accidents and congestion, securing means of mobility in underpopulated areas, and a shortage of drivers in the logistics industry – automated driving and its technologies are key to solving these social issues. Program Director (PD) Seigo Kuzumaki, who oversees cutting-edge technological developments for an automobile company, was interviewed.

**Q:** Please give a summary of the automated driving program, including the difference between the first and second phases of SIP-adus(Cross-ministerial Strategic Innovation Promotion Program (SIP) Automated Driving for Universal Services).

**PD:** In the first phase, the development and FOT of dynamic maps (traffic environmental data that links to static high-precision 3D maps with dynamic information) were conducted, to realize advanced automated driving on expressways. In the second phase, the technology will be further refined and expanded to include general roads.

Moreover, Japan is currently facing many social issues due to the aging society, such as a shortage of drivers, therefore ways to solve such social issues will be found through the practical implementation of mobility and logistics services, using automated driving technology.

Therefore, in the second phase, we will promote the program by focusing on four primary goals. The first is the promoted planning of FOTs, the second is further technological developments, the third is fostering public acceptance, and the fourth is international cooperation.

### "Automated driving is not the same as unmanned driving"

**Q:** Since the numbers of truck drivers in logistics services, and taxi and bus drivers in mobility services, are decreasing, is the intention to eventually achieve unmanned driving?

**PD:** The use of automated driving technology will have various social benefits, such as the reduction of traffic accidents and congestion. It will also enable senior citizens who are starting to find it difficult to drive to continue doing so with the support of automated driving technology.

**I don't think automated driving is the same as unmanned driving. For example, in logistics services, a combination of conventional manual operation driving and automated**

**driving will become possible in certain sectors. I think it is a solution that will make the job more attractive, and reduce the physical burdens put upon drivers.**

To realize unmanned driving, there are various challenges that need to be overcome, including risk management, technological challenges, and public acceptance. Considering the possibilities of hacking and terrorism as new threats, I believe it is more realistic to first ensure human involvement in the project, and then afterwards to realize better mobility methods, by uniting humans, vehicles, and infrastructure.

**Q:** How about the commercialization of mobility services in underpopulated areas?

**PD:** I think mobility services will advance faster in local region. Securing a means of mobility is a very serious issue in underpopulated areas. For example, it may become possible to use an automated vehicle and entrust a senior citizen with driving it. I think that these kinds of services will be the start.

### "People's mindsets must also be changed."

**Q:** Automated driving is a large-scale project with a big budget, isn't it?

**PD:** Automated driving is a once-in-a-century revolution in the automobile industry. To actually put automated driving into practice, it is necessary to overcome three challenges: technological issues, regulatory issues, and public acceptance. Technology progresses daily, but people will not feel safe if the technologies are not legally ensured. I believe that the Road Traffic Act and the Road Vehicle Act were only revised because the SIP was promoted through cross-ministerial and industry-academic-government collaboration in the first phase.

In particular, because automobiles have taken root in our society and daily lives, it will be necessary to change infrastructure and regulatory systems along with people's mindsets, meaning that a



very broad range of tasks will need to be performed.

**"Where is the border between competitive and cooperative areas?"**

**Q:** There are competitive and cooperative areas in technological development. Where is the border between them?

**PD:** To take an example concerning dynamic maps; at first there were different opinions on the position of the border between competitive and cooperative areas. However, through FOTs, discussions regarding the technological aspects progressed, and a consensus was formed on the degree of coordination without which "we'll end up exhausting our individual strengths."

**When driving a vehicle automatically, large amounts of data are used. Data formats and interfaces must be coordinated. If individual companies have data in different formats, it means a waste of data.**

**Q:** Next is a question about industry-academic-government collaboration. In the case of dynamic maps, an all-Japan system involving ministries and the "industrial" sector is required, obtaining precise location information, and including electric equipment, surveying, mapping, automobile, and other companies. How about the collaboration with the "academic" sector?

**PD:** In fact, weaknesses of the collaboration with the academic sector were pointed out at the beginning in the first phase. However, in both competitive and cooperative areas, the strength of the industrial sector is not enough. Therefore, active participation from the academic sector will be encouraged in this phase.

**"I think technologies will stop progressing if competitive areas do not exist."**

**PD:** Kanazawa University plays a central role in FOTs, and the Kanagawa Institute of Technology does likewise in safety assurance simulations. I myself have particularly high expectations of the strengths of the academic sector concerning standardization, including that of the interfaces.

**Q:** Competitive areas are included in FOTs, aren't they?

**PD:** Of course. We provide sites, traffic signal data and other traffic environmental data, as well as data, including high-precision 3D maps. In return, automobile companies and other participants prepare vehicles and drivers. In other words, individual companies may work freely in competitive areas, but must feedback to the infrastructure, to maintain the PDCA cycle. I do believe that technologies would stop progressing without competitive areas.

**"The final goal is to reduce traffic accidents. That's what we aim for."**

**Q:** The field of automated driving will expand from expressways to general roads in the second phase. What do you find difficult about it?

**PD:** **On general roads, the number of objects (e.g., pedestrians, bicycles and motorbikes) is an order of magnitude greater. There are also factors such as traffic signals or intersecting roads. The situation is obviously different from that of expressways, where there is a unidirectional vehicle flow. I think it is ten times more difficult.**

Therefore, it is quite difficult to run the same procedure on general roads. We intend to find what we can to overcome these issues, and eventually reduce traffic accidents and congestion.

