

SIP-adus Workshop 2019

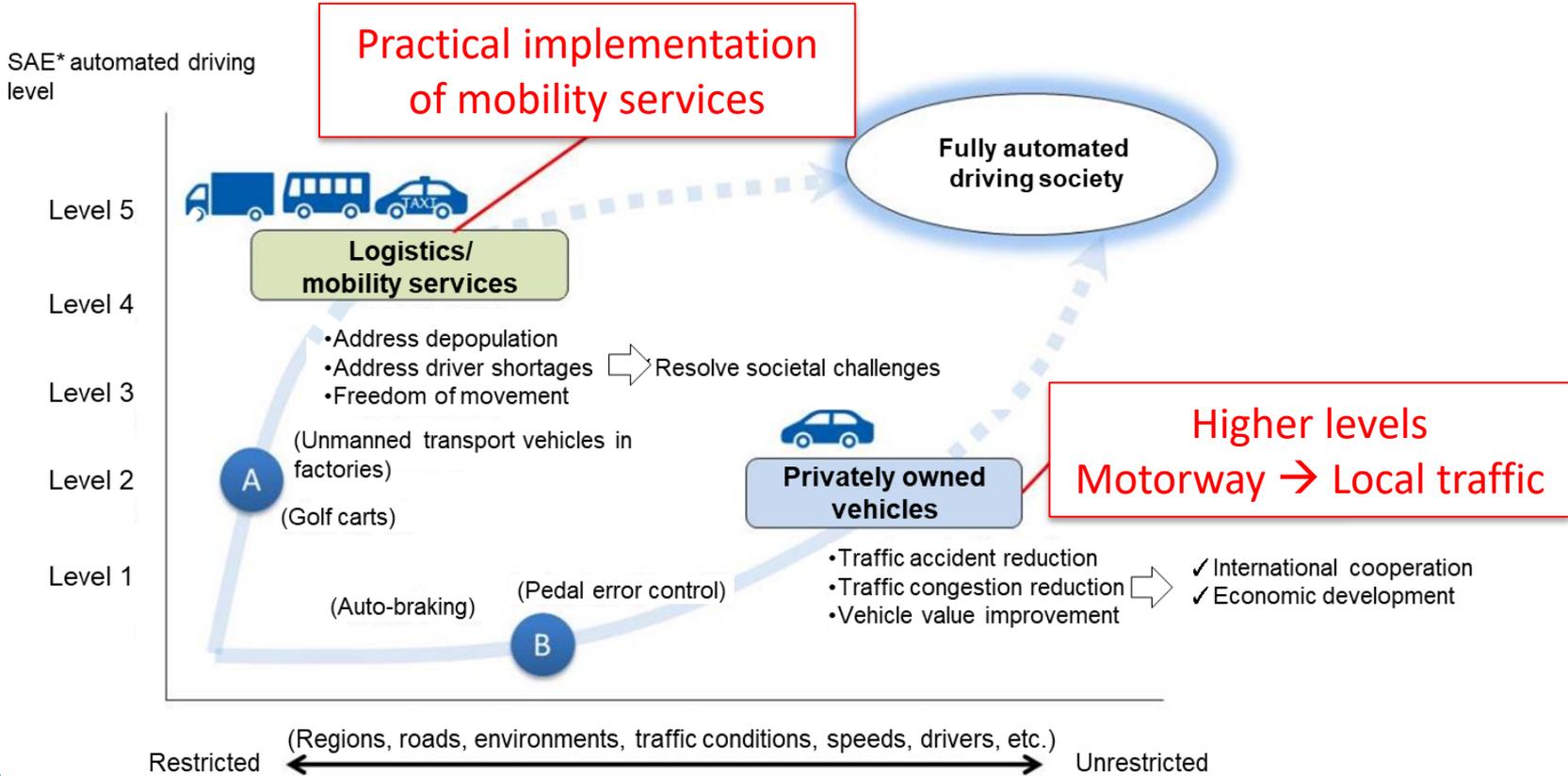
SIP-adus Phase 2 Human Factors Research Project

Satoshi Kitazaki, Ph.D.

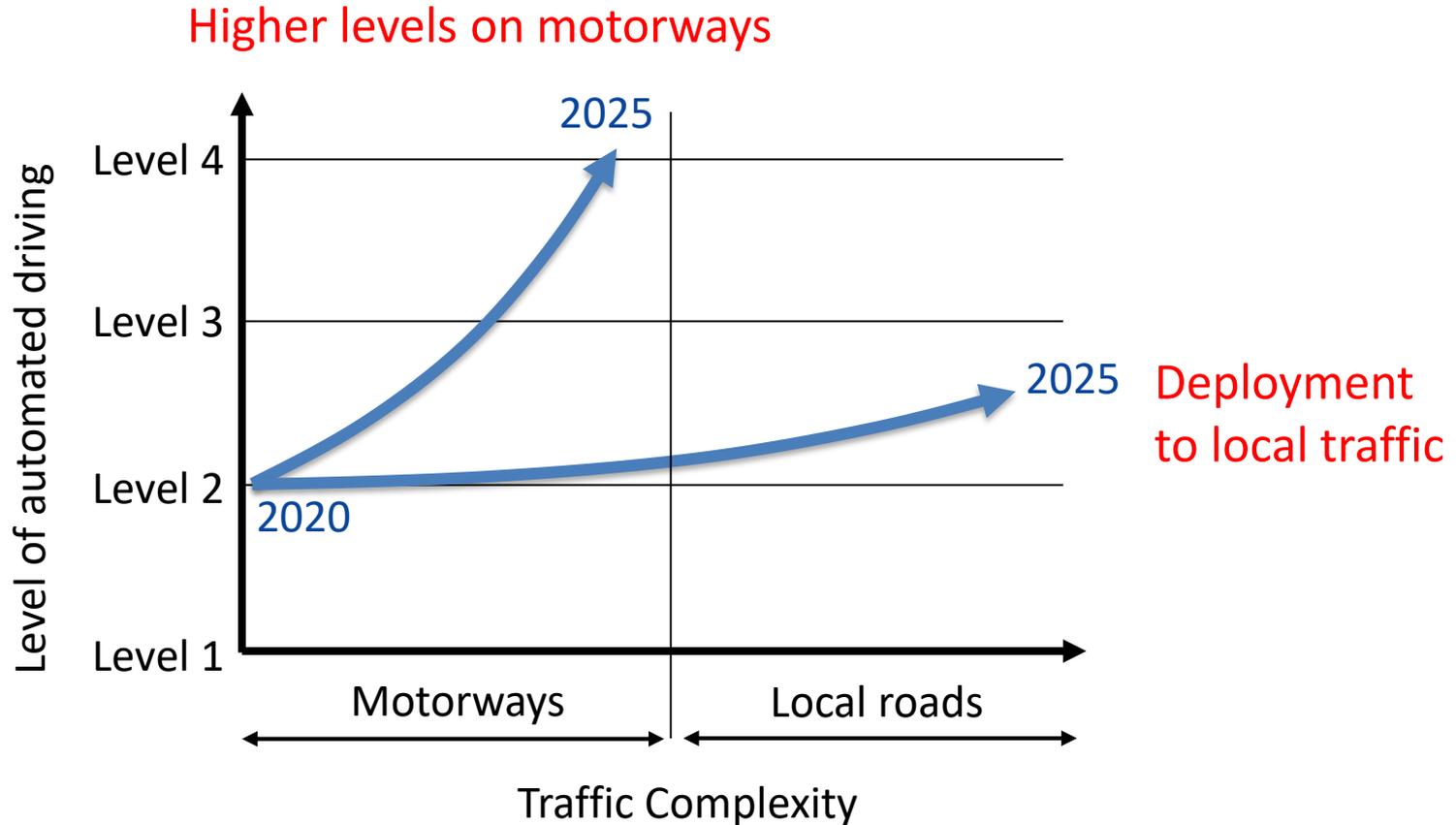
Director, Automotive Human Factors Research Center,
National Institute of Advanced Industrial Health and Technology (AIST)



SIP-adus Phase 2 Roadmap



Government's ITS Roadmap for private AV cars



Tasks of the project

Task A: Investigation of External communication of AVs with other road users.

Task B: Investigation of interaction between the driver and the system.

Task C: Investigation of user education.

Task A: External communication of AV

A-1) Negative effects of external HMI and design principle to minimize it.



External HMI may draw too much attention of pedestrians and cause “Thank you crash”.

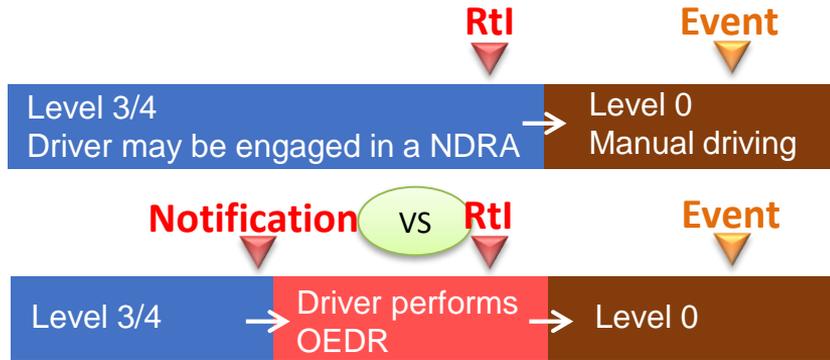
A-2) External communication of low speed AVs in last-mile services.

- Cooperation with the last-mile service experiments at “Road Stations” conducted by MLIT.
- Focus on “Road Stations” near isolated villages in mountainous areas.
- Low speed may produce new needs for external communication.
- Larger dependence on external HMIs due to small vehicle motion with low speed.



Task B: Interaction between the driver and the system

B-1) Protocols for safer transition from Level 3/4 to manual on motorways.



- To minimize the mode confusion.
- To induce the best takeover performance.

Transition protocols

B-2) OEDR monitoring, HMI, ODD definitions for safer deployment of Level 2 to local traffic.



For secure driver-initiated takeovers

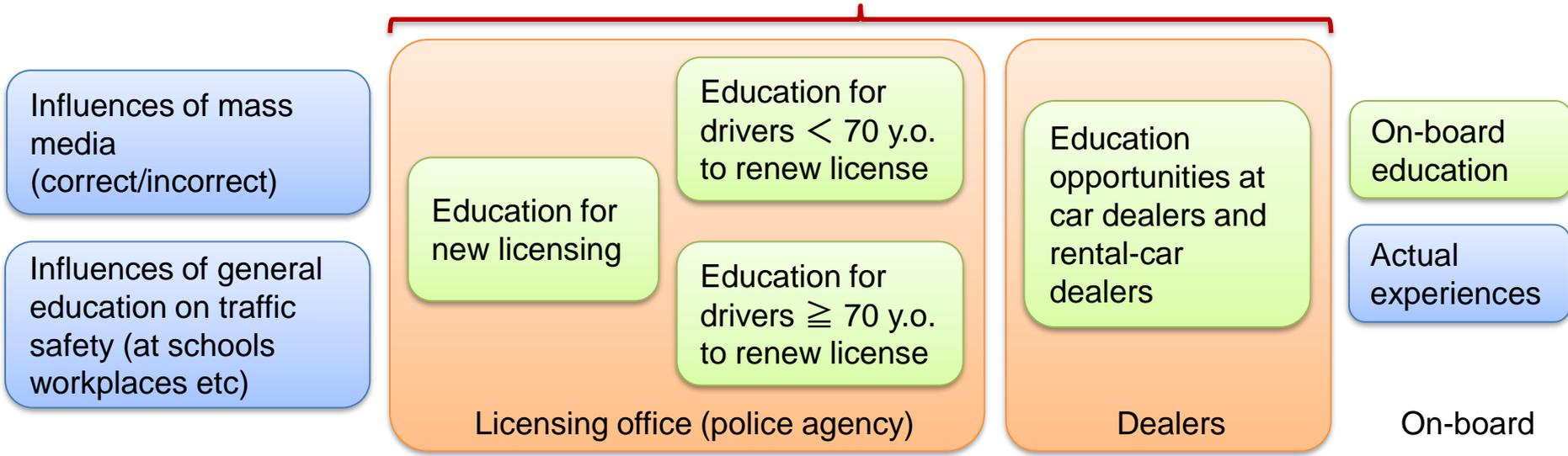
- Monitoring driver's OEDR task performance all the time.
- A HMI that informs the driver of detected/undetected objects and generates a correct "mental model" for swift takeovers.
- Upper limit of complexity (ODD) for safe deployment.

Task C: User education

C-1) Education at licensing office for fundamental knowledge common across systems (Level 3) of different manufacturers

C-2) Education at car-dealers for knowledge specific for a system of the manufacturer.

Prototype and evaluate education programs



Knowledge accumulation and education opportunities

Research consortium



Main contractor: AIST

Tokyoto Business Service Co., Ltd.
(Management support)

Keio University

Tokyoto Business Service Co.

Task A

AIST

University of Tokyo

Task B

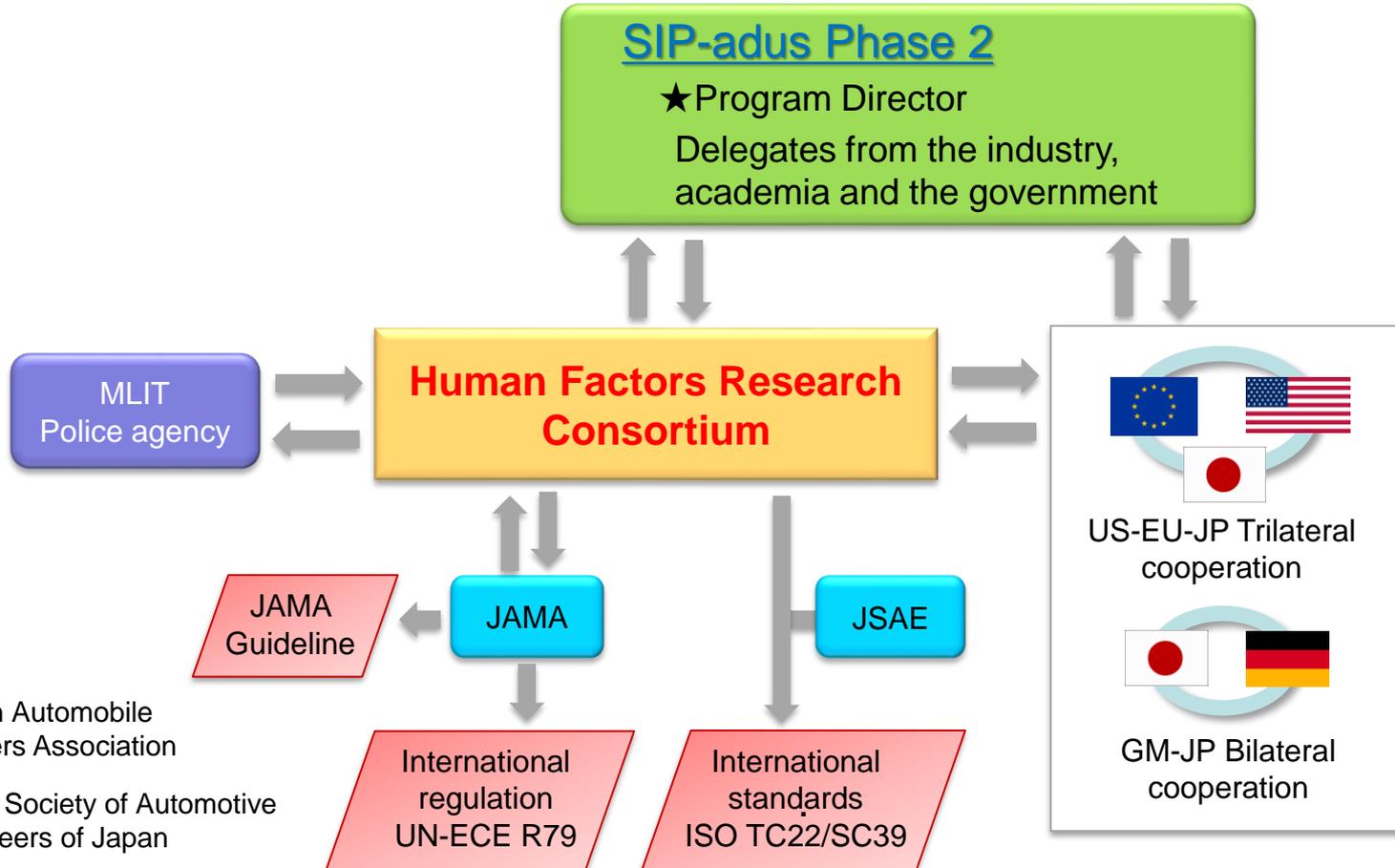
University of Tsukuba

University of Kumamoto

Tokyoto Business Service Co.

Task C

Domestic and international collaborations



※JAMA: Japan Automobile
Manufacturers Association

※JSAE: Society of Automotive
Engineers of Japan

Germany-Japan cooperation on Human Factors

■ Purpose of collaboration :

- Accelerate successful introduction of safe automated vehicle technology by this collaboration.
- Increase social acceptance of automated systems for broader international markets based on cross-cultural comparisons and considerations of obtained results.

■ Coordinators: Klaus Bengler (TU Munich) & Satoshi Kitazaki (AIST)

■ Period: Q3 2019 – Q1 2022

■ Collaboration scheme :

- Biannual workshops
- Exchanging staff
and students
- Exchanging lecturing
- Coauthoring papers

Work Package		Japanese members	German members
WP1	External communication (Task A)	Keio U Tokyoto BS Co.	TU Chemnitz TU Dresden Ulm U TU Munich DLR
WP2	Education and training (Task C)	U of Tsukuba U of Kumamoto Tokyoto BS Co.	TU Dresden TU Munich
WP3	Drivers' interaction with automated systems (Task B)	AIST U of Tokyo	TU Munich Ulm U

The background of the slide is a dark night sky filled with vibrant, multi-colored light trails. These trails, in shades of yellow, orange, blue, and purple, appear to be long-exposure photographs of light sources, possibly from a city or a light show, creating a sense of motion and energy. The trails are most prominent on the right side, where they curve and swirl, while on the left, they are more linear and extend towards the horizon.

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Thank you

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