

SIP-adus Workshop 2020



Provision of Signal Phase and Timing (SPaT) information using cloud and other technologies (V2N)

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UTMS Society of Japan

SIP-adus Workshop 2020

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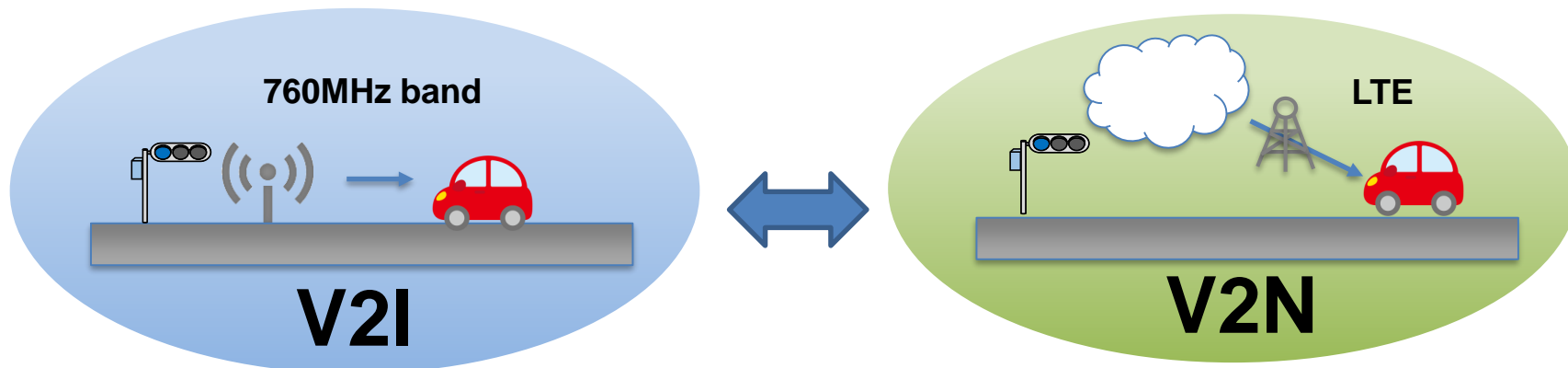
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1. Research on the provision of SPaT information in SIP

Feasibility confirmation and comparative examination of each type of SPaT information provision methods toward the realization of automated driving

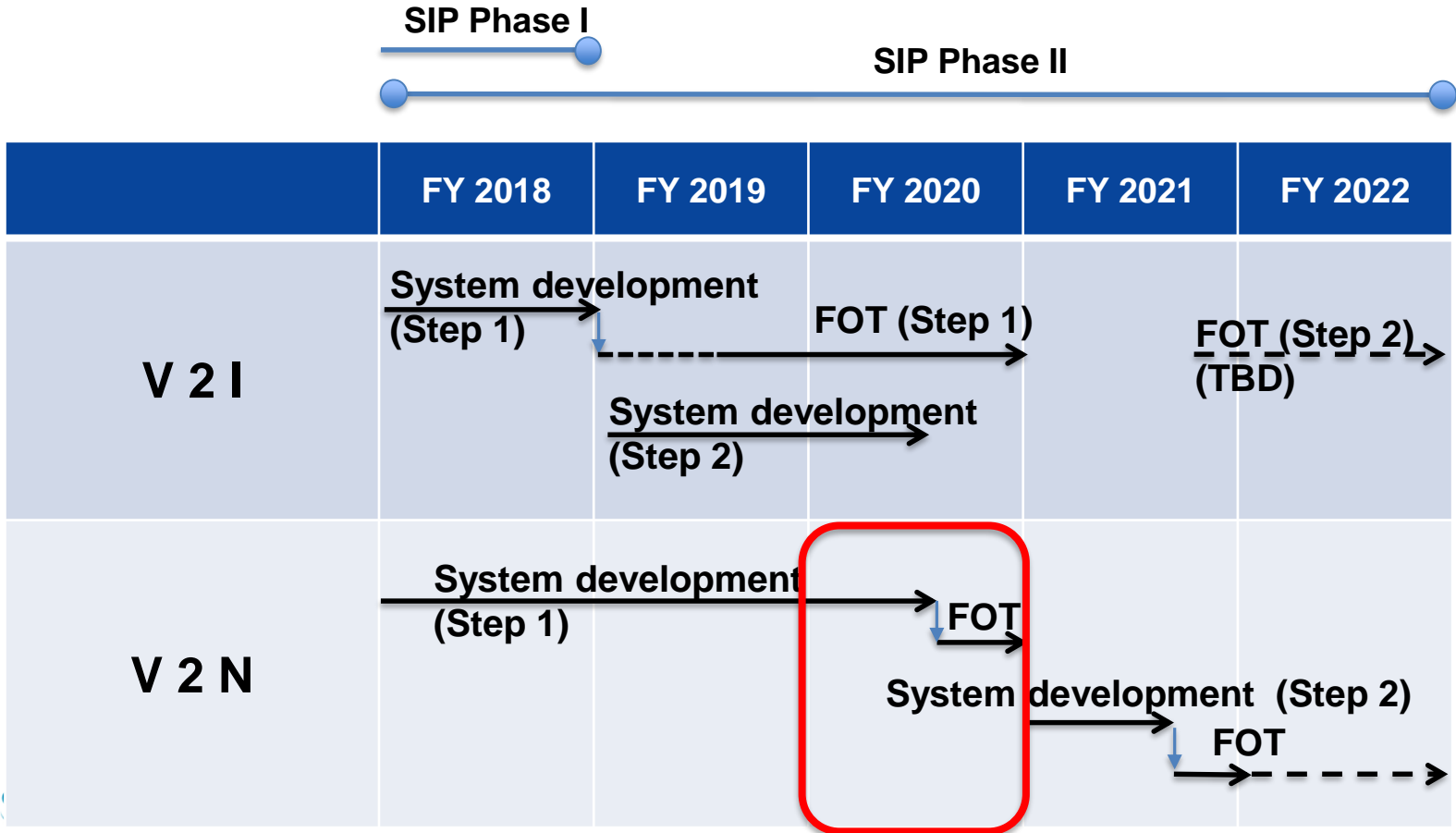
R&D on the enhancement of SPaT information provision technologies toward the realization of automated driving

R&D on the provision of SPaT information using cloud and other technologies



- Requires an optimum combination of the methods in view of the diversity of intersections where SPaT information is provided and costs
- Also requires consideration on the adaptability to detailed developments of automated driving

2. Schedule of research and development



3. Structure of research and development

Cabinet Office and National Police Agency

NEDO (National Research and Development Agency)

Entrusted companies

UTMS Society of Japan
OMRON Social Solutions Co., Ltd.

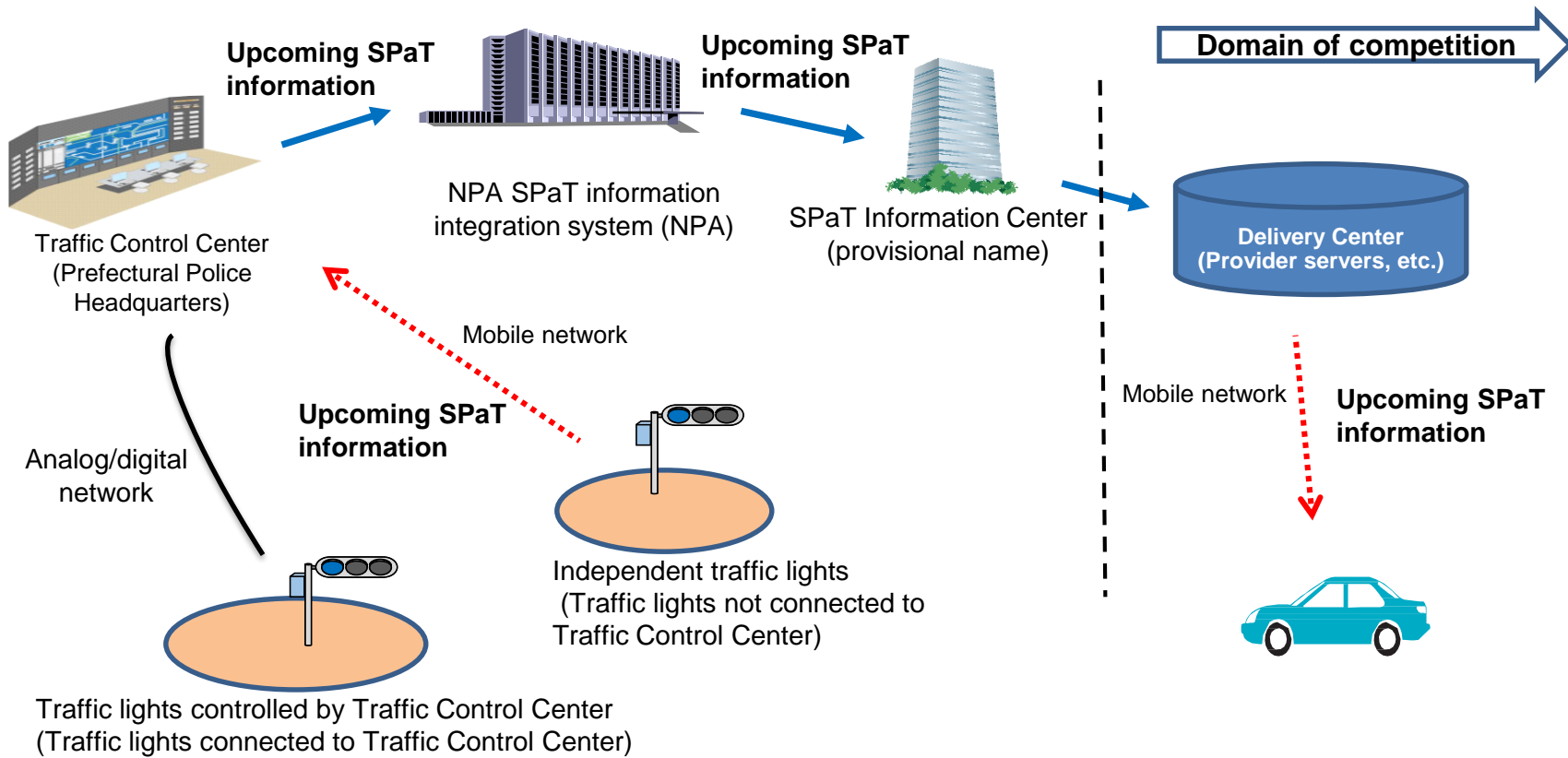
NIPPON SIGNAL CO., LTD.
Panasonic System Solutions Japan Co., Ltd.

Companies participating in the committee

Kyosan Electric Manufacturing Co., Ltd.
KDDI CORPORATION
Sumitomo Electric Industries, Ltd.
TOYOTA MOTOR CORPORATION
NEC Corporation
Honda R&D Co., Ltd.
Mobility Technologies Co., Ltd.
Japan Automobile Manufacturers Association, Inc.

KYOCERA Corporation
KOITO ELECTRIC INDUSTRIES, LTD.
DENSO Corporation
Nissan Motor Co., Ltd.
NTT DOCOMO, INC.
BOLDLY Inc.
Japan Road Traffic Information Center

4. System configuration to implement V2N

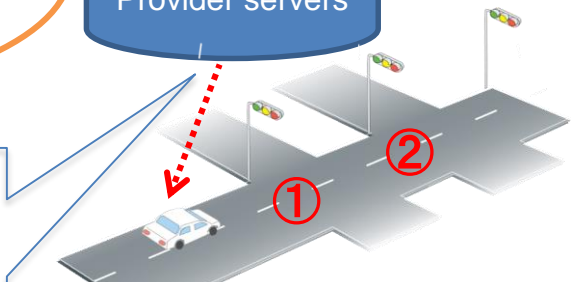
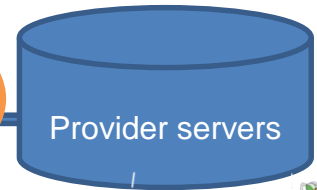
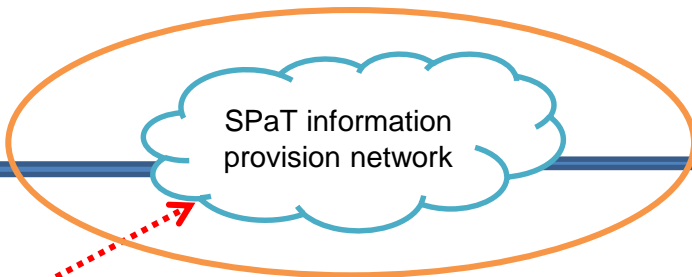



5. Requirements

SPaT information generator

Vehicles

Time lag (delay) between signal light indication and receiving of SPaT information by OBU: 300 ms or less



Upcoming SPaT information
12:56:54  ×2

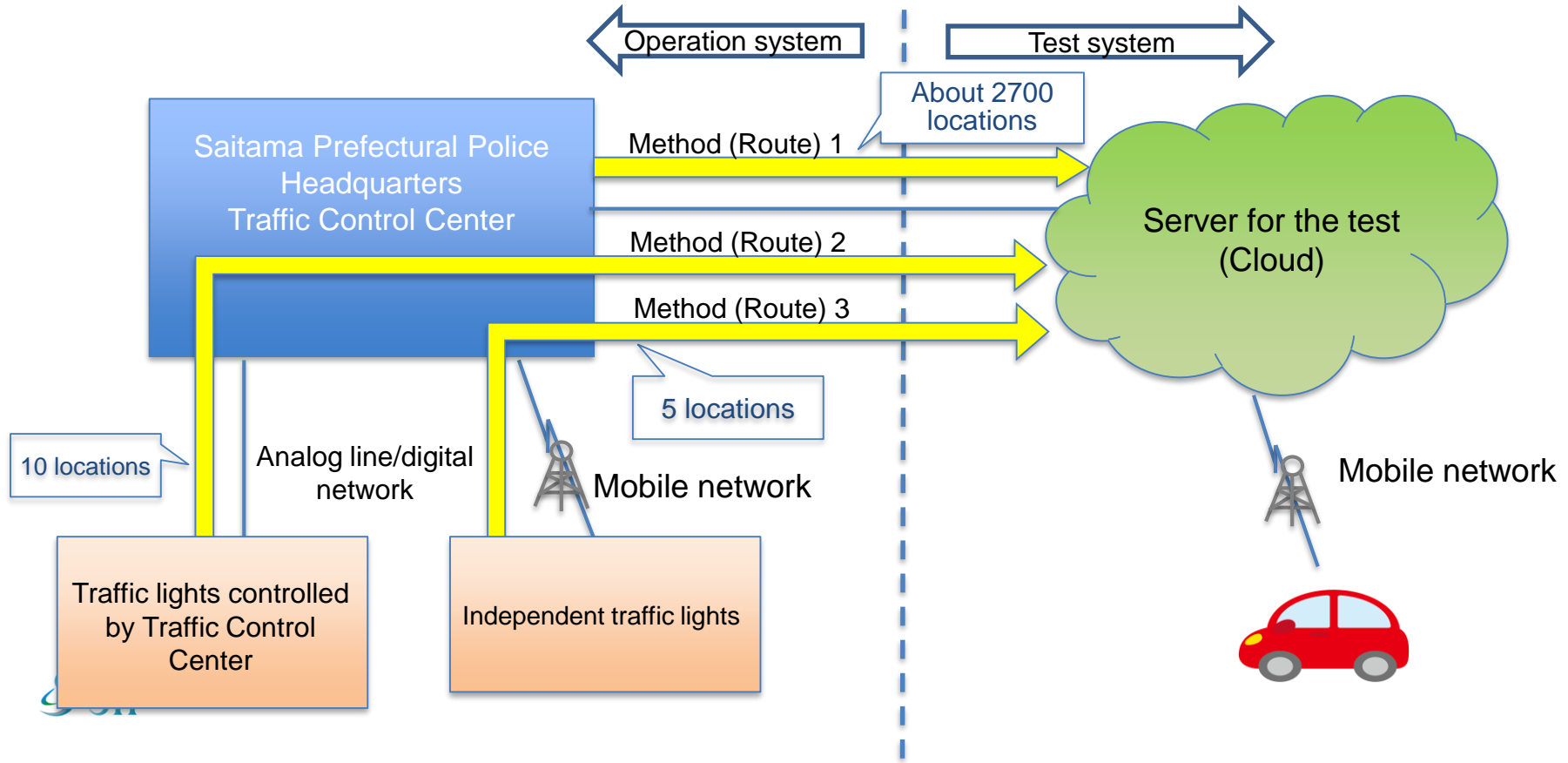
Solves problems such as transmission delays through the provision of SPaT information using absolute times on condition that the clock of each equipment is synchronized.

- Current signal color information
- Upcoming information of the next and subsequent cycles (two cycles or more)

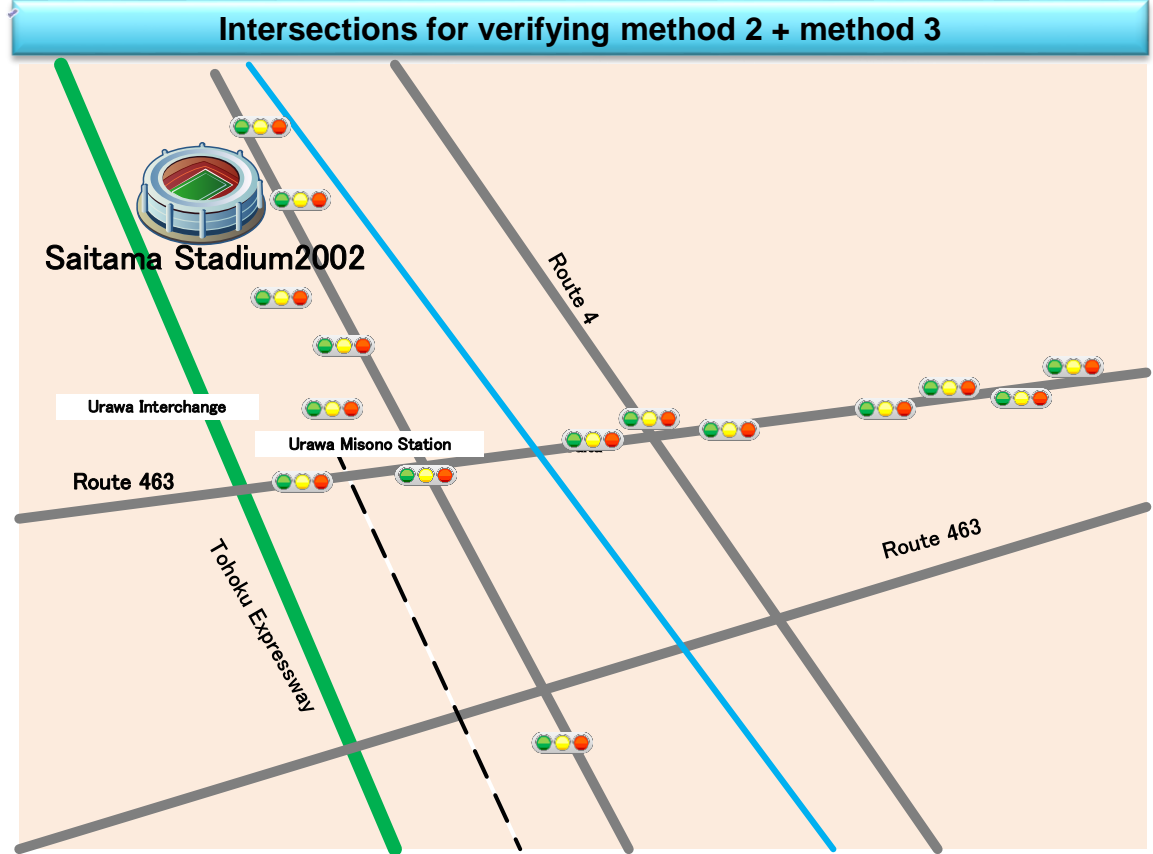
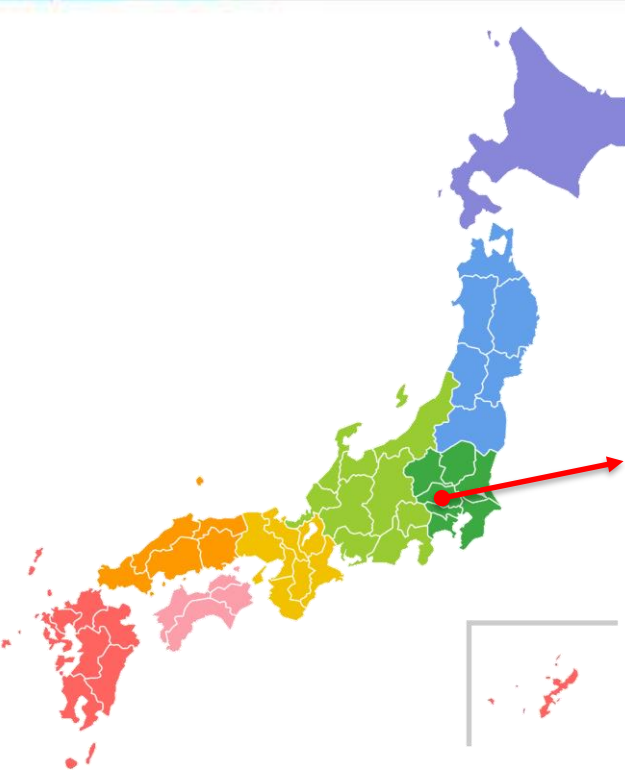
- ① An intersection through which a vehicle passes next
 - ② An intersection through which a vehicle passes after the next intersection
- SPaT information of two intersections

6. Model system for verification in FY 2020

Three methods are evaluated by building a model system for verification consisting of a traffic control center + test system



7. FY 2020 test fields About 2700 intersections in Saitama Prefecture

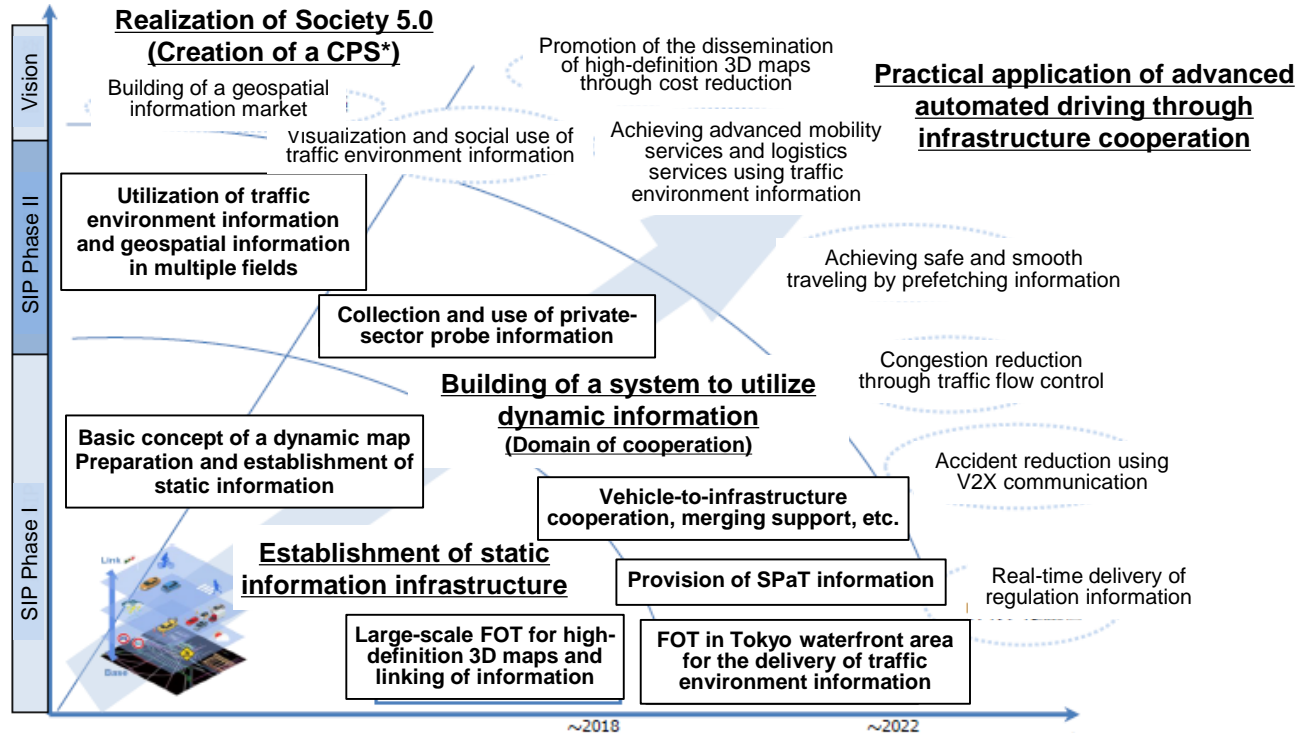


8. Verification items and others

Verification item	Issue	Goal
Error	Shorten the time length of signal color indication errors by improving the time accuracy of each equipment	The difference in time of actual signal color changes and signal color changes provided by upcoming SPaT information shall be 300 ms or less, including communication delays. (Minimize delays in transmission to OBU)
Communication delay	Shorten transmission delays from the SPaT information generator to OBU.	
Support for traffic-actuated and push button signal lights	Determine upcoming SPaT information in advance for intersections where the signal color changes abruptly through the revision of signal control operation.	It must be ensured that vehicles can travel safely and that there is no impact on traffic flow after the revision of operation.
Other	Security	The implementation method shall be under the uniform standards for information security measures for government agencies.
	Means of notification in case of failure	Maintenance and operation personnel and users shall be able to receive notifications via a failure notification function.

9. Schemes for FY 2021 and beyond

- Installation of V2I and V2N in the same field
→ Implementation of verification on the assumption of actual operation



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Thank you

