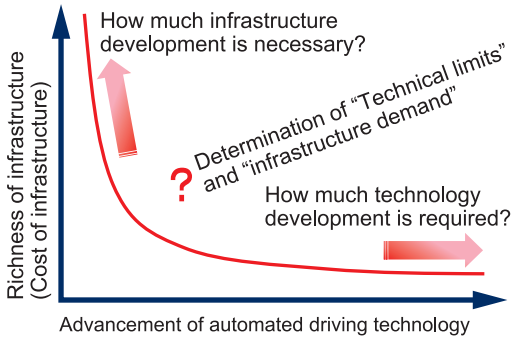
Research on recognition technologies necessary for automated driving (levels 3 and 4)

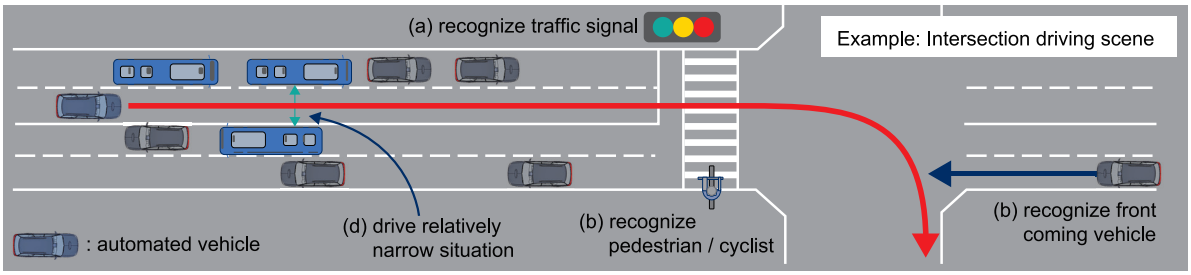
Objective

- Level 4 equivalent autonomous driving at urban area
  - It is necessary to have advanced perception and decision making system by onboard AI, as well as infrastructure such as road facilities and communication facilities to support it
- State-of-the-art autonomous vehicle technology
  - Competition area in the industry
  - Knowledge of academia is essential
- Determination of technical and infrastructure demand



Project Summary

Determine installation and maintenance demand for infrastructure-supported sensors during automated driving through real vehicle experiments and utilization of realistic simulator



(a) Development of **traffic signal recognition technology** and investigation of difficult conditions
- Determine installation demand for infrastructure-supported traffic signals
- Verification of effects by using infrastructure-supported traffic lights

(b) Development of **AI technology required to detect distant objects**
- Recognition of traffic participants required when entering an intersection

(c) Development of high precision **self-localization technology**
- Development of low-cost GNSS/INS system using QZSS
- Determine road marking maintenance demand for stable map matching

(d) Development of **behavior prediction technology** of traffic participants and path planning algorithm
- Behavior prediction of low-speed objects using deep learning
- Recognition of surrounding objects by extended object tracking
- Development of safety path planning in relatively narrow road conditions

(e) Investigation of problems in the situation where multiple autonomous vehicles exist

(f) Demonstration experiments at Kanazawa-city and Tokyo waterfront area

Public road demonstration at Tokyo waterfront area

Experiment record in FY2019	
Num. of driving day (incl. manual driving)	67 [day]
Autonomous milage	850 [km]

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