



Interoperability of Intelligent Transportation Systems (ITS)

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Background



In a complex system like ITS, adopting an open architecture and selecting an optimal integration point to avoid vendor lock-in, and maximize flexibility and resilience is challenging!

ITS entail the integration of many different technologies:



Speed Detecting Systems



Weigh in Motion



Tolling



Environmental Monitoring



Traffic Management



Collision Detection



Passenger Information Systems



Disaster Response Management



Emergency Services



Connected Vehicles



Strategy



Pick the most relevant standards for each layer of your stack.. Tough but necessary.. Examples include (non exhaustive list):



ITS Service Groups

ITU-T SG20 is currently working on developing a framework of cooperative intelligent transport systems based on the Internet of Things. (Y.IOT-ITS-Framework).

ITU-R is working on spectrum requirements (operating bands, and needed bandwidth).

ISO 14813-1 shows one good example of standards elaborating on ITS service groups like traveler information, traffic management and operations, freight and public transport, and electronic payment.

Urban Traffic Controllers and Interoperability with Field to Center Protocols

Commonly used urban traffic controllers following some specifications (e.g. OCIT, SCATS, SCOOT) can be difficult to integrate with highway management systems.

Using the American NTCIP is a widely used standard though in the industry for connecting to field devices, and especially for the variable message signs. But NTCIP devices are not compatible with some of the major urban traffic controllers standards.

IoT and Traffic Management Center Platforms .. Smart Cities Platforms are converging

Efforts to standardize IoT platforms which can also serve ITS applications:

- ITU-T Y.4200: Requirements for the interoperability of smart city platforms; and
- ITU-T Y.4201 High-level requirements and reference framework of smart city platforms



Results and Impact



Standards can definitely realize:

- High level of interoperability between different system
- Avoidance of vendors lock-in and hence better services, higher quality and better performance versus costs options
- Future scalability, by adopting a modular approach based on a standardised architecture
- Better maintenance planning
- Lower overall TCO

Challenges & Lessons Learned



Perhaps that's the tricky part!!.. How can you select the best standard for your end-to-end systems?

- Different SDOs, fora, consortia
 - Different scope
 - Different level
 - Competing industries.. Complementing Industries (a very complex ecosystem)
- Use cases are converging.. → Interoperability, and standards implantation planning are key
- International Implementation Standardization Task Force (ISTF) is needed for proper implementation of Standards and Specifications



Thank you

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