



*Intelligent Transport System
TSDSI-EU Workshop*

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Agenda

- ITS @ TSDSI
- Intelligent Transport System
 - Focus Areas
 - Challenges
 - Requirements
 - Standardization
- Contributions

ITS @ TSDSI

- Developing, promoting and standardizing for Intelligent Transport System (ITS) requirements for India.
- Taking these India specific requirements to global standards organizations.
- Helping create standards based on these requirements.

Intelligent Transport System

- ITS in India
 - Need to cater more than 200 million vehicles on Indian road
 - Support varied requirements in terms of
 - Disparity in road conditions
 - Diversity of traffic patterns
 - Diversity of Infrastructure available
 - Lack of traffic rules



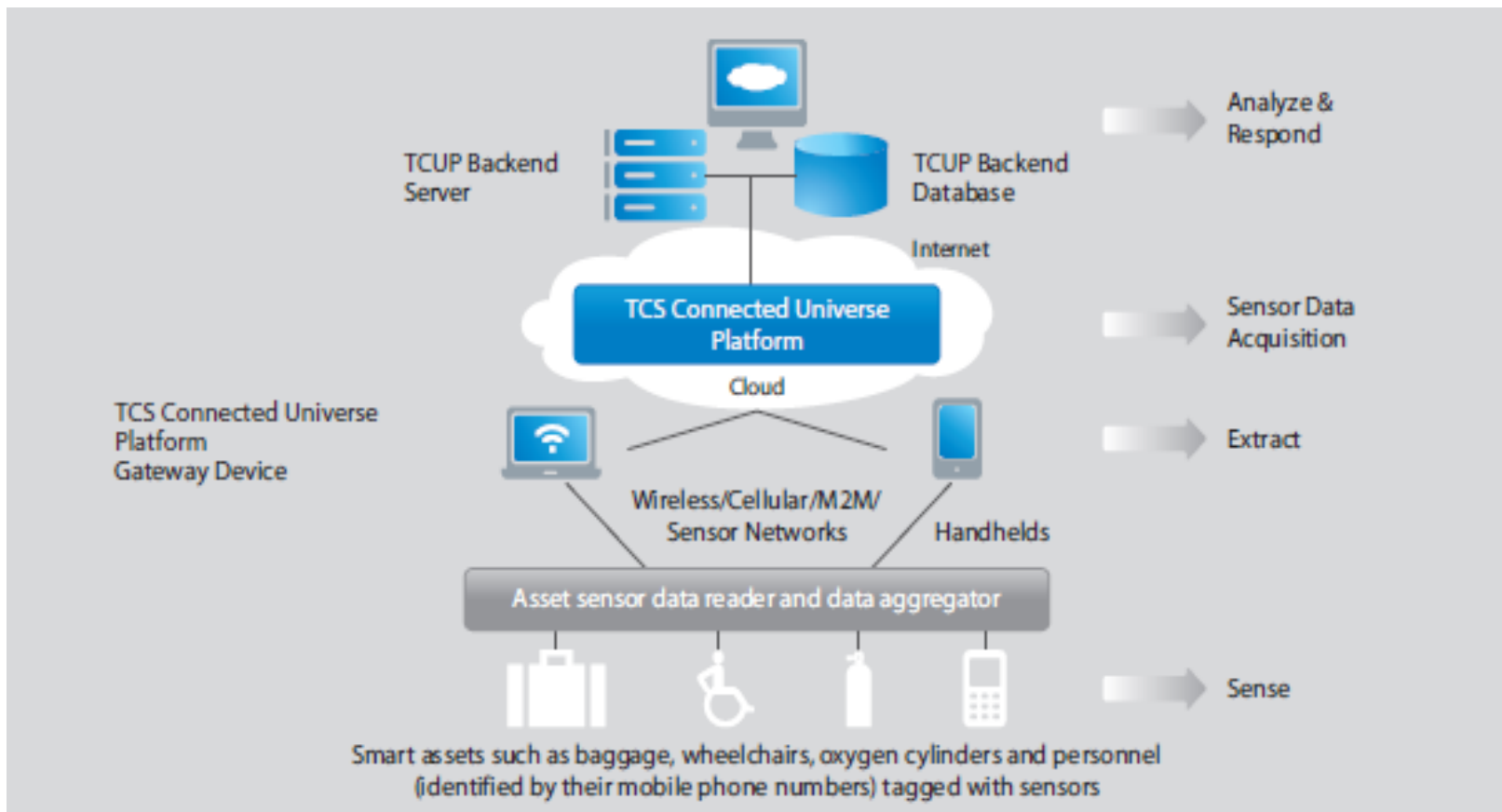
A Typical Road in India

Intelligent Transport System

- Current ITS Standardization effort in India.
 - Ministry of Road Transport & Highways
 - Ministry of Heavy Industries & Public Enterprises
 - National Automotive Testing and R&D Infrastructure Project (NATRiP)
 - A collaborative project between Govt of India, State Governments and Indian Automotive Industry
 - Automotive Research Association of India (ARAI)
 - a co-operative industrial research association established by the automotive industry with the Ministry of Industries, and Government of India.

Intelligent Transport System

- TCUP (TCS Connected Universe Platform)
 - An IoT/M2M Service Platform based on Open Standards

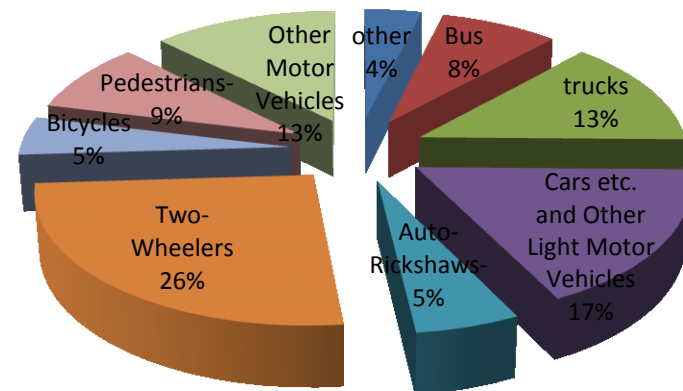


ITS – V2X Focus Areas

- Immediate focus areas are
 - Road Safety
 - Traffic and Signal Violation Monitoring
 - Emergency Calling
 - Traffic Monitoring and Notification

ITS – V2X Challenges

- V2X is vehicle to everything; V2V, V2I, V2P etc.
- Primary challenges to address
 - Most accidents happen due to
 - Driver Distraction
 - Lack of discipline and violation of rules
 - Misjudgment of speed, distance etc.
 - Heterogeneity of Vehicles
 - Varied communication capabilities
 - ✓ Traffic Congestion, pollution, accidents can be controlled with effective V2X communication.



Types of Vehicle on a Busy Indian Road

ITS – V2X Requirements

- Standards requirements for V2X
 - Communication Standards
 - e.g. Dedicated Spectrum or LTE or ...
 - Security & Privacy
 - Public and Private key management
 - Interoperability
 - Standards for interoperability of various 3rd party entities
 - Infrastructure Requirements
 - Safety Standards
 - Standards for Infrastructure ensuring their respective interoperability
 - Policy Enforcement
 - Policy Enforcement in India Inc.
 - Taken over by TEC.

ITS – V2X Standardization

- Defining and Standardization
 - V2X - Communication Standards (M2M WG)
 - Dedicated Spectrum for V2V communication
 - Embedded SIM usage and specification for V2X and other communication
 - V2X - Communication Standards (Wireless WG)
 - Evaluation of 802.11p vs LTE-D
 - V2X UE Drop Model for Indian Scenarios

- Several active projects funded by DEITY and other government bodies.

Contributions

- Technical Reports (TR)
 - TR (ITS) consists of exhaustive collection of India specific use cases
 - Consist of in-detail analysis of several important use cases
- TSDSI has made a submission to ITU
 - Use Cases are submitted to NWG20 (Two from ITS)
- CDOT – a TSDSI member organization has contributed to oneM2M
 - Two Change Requests have been submitted and accepted at oneM2M
 - Remote Security Provisioning Frameworks
 - MAF-Based Symmetric Key Security Association Establishment Frameworks

**Thank You For
Your Attention !!**



Questions ?

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