



Smart cities & Intelligent mobility India 2023

Panel Discussion on

- Safe City and Smart Mobility: The Vision for Future Urban Environments in India
- Creating Resilient Cities: Smart Mobility for Disaster Management and Emergency Response

Session Moderator:

**Dinesh Chand Sharma, Director Standards & Public Policy
Project SESEI**



Agenda

- Overview:
 - Smart Cities & Role of Digital Technologies in Disaster
 - Why Efficient urban mobility & public transport
 - Enabling Technologies for Smart transport
- Europe – Policy & Standards
 - Smart Cities Marketplace
 - Smart Cities Standardization
 - ITS – Policy, Legislations & Standardization
 - Disaster Preparedness
- India – Policy & Standards
 - Smart Cities Mission & Government Initiatives
 - Smart Cities Standardization
 - ITS – Standardization
 - Disaster Preparedness

Overview

- According to [United Nations](#), by 2030, the world will reach an urbanization rate of 60.4%.
 - ✓ Smart cities will create a more efficient way of life for its citizens and help boosting economic growth.
 - ✓ Development and deployment of technology will play a crucial role in the way that cities of the future capitalize on the use of data – especially in the context of mobility and transport.
- Digital technologies & Standards:
 - have a valuable role to play in Disaster preparedness, prevention and delivering effective and timely humanitarian aid.
 - offer an important tool for informing the public and helping relevant public authorities in their efforts to reduce the impact of disasters.
- Implementation of Interoperable Standards lift barriers to the uptake of digital technologies
- Standards are meant to clarify commonly accepted definitions, provide methods for measuring and testing

Why Efficient urban mobility & public transport

Why Smart Transportation in Smart Cities:

- Rapid urbanization has placed immense pressure on transportation systems. Issues such as traffic congestion, Air Pollution , inadequate infrastructure and inefficient Public Transit networks have emerged as significant challenges.

Smart Transportation aims to address these issues by promoting sustainable and Intelligent mobility solutions that enhance accessibility, reduce travel time and improve overall quality of Life.

Key Components of Smart Transportation:

- **Intelligent Traffic Management System:** Leveraging real time data and advance analytics, smart transportation system optimize traffic flow, monitor congestion and dynamically adjust signal timings to minimize delays and improve traffic efficiency.
- **Smart Public Transit:** Integrating smart technologies, like real time tracking, smart ticketing, predictive analytics, smart public transit systems enhance convenience, reliability and riders experience.
- **Shared Mobility Services:** Ride-sharing platforms, bike sharing programs and car-pooling services foster a shift towards a shared mobility culture, reducing congestion and carbon emission while improving urban connectivity.
- **Electric and Autonomous Vehicle:** Smart transportation envisions a future, where electric and autonomous vehicles play a vital role. Electric vehicles also reduce pollution while autonomous vehicles offer safer and more efficient transportation, optimizing routes and reducing accidents.

Enabling Technologies for Smart transport

- **Connectivity and Communications:** High speed wireless networks and vehicle to vehicle and vehicle to infrastructure communication system, enable real time information sharing, ensure efficient traffic management and improved safety.
- **5G:** With 5G everything from smart sensors to smart mobility, self-driving cars will be able to communicate at incredibly fast speeds with low latency resulting in more efficient systems and resources for smart cities.
- **Internet of Things (IoT):** IoT Devices, Sensors and connectivity enable the collection of real time data from vehicles, infrastructures and commuters, allowing for intelligent decision making and effective management of transportation networks.
- **Artificial Intelligence & Machine Learning (AI & ML):** AI & ML algorithms analyze data to derive patterns, predict traffic flow, optimize routes, and make autonomous vehicles safer and more efficient
- **Big Data analytics:** Advance analytics techniques process large volumes of data, providing valuable insights for transportation planning, traffic management and infrastructure development.

Europe – Policy & Standards



23-08-2023

Smart Cities Marketplace: Europe

- **Smart Cities Marketplace** was created by merging two former platforms, the “**Marketplace of the European Innovation Partnership on Smart Cities and Communities (EIP-SCC Marketplace)**” and the “**Smart Cities Information System (SCIS)**”.
 - to bring cities, industries, SMEs, investors, banks, researchers and many other smart city actors together.
- **Marketplace's main areas of cross-cutting operation include:**
 - **sustainable urban mobility, integrated infrastructures and processes in energy, ICTs and transport**
 - integrated planning and management, business models, procurement and funding..
 - baselines, performance indicators and metrics
 - sustainable districts and built environment, citizen focus, policy and regulation
 - knowledge sharing
 - open data governance and standards

Smart Cities: Standardization activity

CEN-CENELEC-ETSI
Sector Forum on SSCC



CEN/TC 465 'Sustainable and Smart Cities and Communities'



ISO/TC 268
ISO/TC 268/SC 1



ISO-IEC/JTC 1
WG 11

Technical Committees

- ✓ Standardization Development (Standards, TS, TR, PAS...)

IEC SyC
Smart cities



ITU-T/FG
SSC



ISO/TMB/
Smart Cities SAG + TF



Jointly with IEC and ITU

BIS



[CED 59: Smart Cities Sectional Committee](#)

[LITD 28: Smart Infrastructure](#)

tsdsi
India's Telecom SDO

- ✓ transposed oneM2M Release 2 and Release 3



ITS – Policy & Legislations in Europe

ITS rollout to be effective, coherent and properly coordinated across the EU.

- **ITS Action Plan, launched in December 2008 by EC**
 - accelerating and coordinating deployment of (ITS) in road transport, interfaces with other transport modes
 - enhanced road safety, improved transport efficiency & reduced environmental impact
 - to speed up market penetration of ITS applications and services.

- **A new legal framework (Directive 2010/40/EU) adopted on 7th July 2010**
 - For coordinated implementation of ITS & interoperability across Europe
 - to adopt specifications within 7 years to ensure compatibility & interoperability
 - Priority to eCall emergency system, Intelligent truck parking and travel info.

- **Cooperative-ITS (C-ITS)**
 - next generation of ITS solutions: allow road users and traffic managers to share information and use it to coordinate their actions

ITS – Policy & Legislations in Europe

- **Intelligent Car Initiative** : A policy framework to tie up all activities relating to 'intelligent' automobiles that are equipped with ICT to increase road safety and/or the flow of traffic, or to reduce the environmental impact of road transport.
- **iMobility forum (former eSafety initiative)** : Policy and social framework, for resource-efficient and clean mobility in addition to ICT-based safety technologies.
- **Action Plan on Global Navigation Satellite System (GNSS) Applications** : The actions outlined in the document are designed to place European industry in a key position
- **Action Plan on Urban Transport** : The Action Plan for sustainable urban & green mobility.
- **EASYWAY Programme**: Provide a reference to develop guidelines for harmonisation, to build consensus, to exchange best practice and disseminate knowledge, to assess impacts of ITS and evaluate European deployment.

ITS Standardization – Europe

EC request for standards through **Mandate 453** for ITS: The Mandate is addressed to CEN, CENELEC and ETSI to support the interoperability of co-operative Intelligent Transport System (C-ITS) in the European Community.

CEN/TC 278 preparation of standards in the field of ITS and to exchange knowledge, information, best practices and experiences in ITS. Working groups of CEN/TC 278

- WG 1: Electronic Fee Collection, WG 3: Public Transport, WG 7: ITS Spatial Data, WG 8: Road Traffic Data, WG 10: Human - Machine Interfacing, WG 12: Vehicle identification, WG 15: e-safety / eCall, WG 16: Cooperative ITS, WG17: Urban- ITS

ETSI TC ITS develops standards related to the overall communication architecture, management (including e.g., Decentralized Congestion Control), security as well as the related access layer agnostic protocols.

- WG 1: Application Requirements & Services , WG 2: Architecture & Cross Layer , WG 3: Transport & Network , WG 4: Media & Medium related , WG 5: Security

Europe 1(2): Disaster Preparedness

- **European Public Warning System (EU-ALERT) using cell broadcast service to alert the public**
 - PWS required for all EU members states per Directive 2018/1972.

3rd Generation Partnership Project (3GPP): BB

- 3GPP SA WG6 is a dedicated group for Critical Communications (e.g., Mission Critical Push To Talk and Mission Critical Video, Public Protection & Disaster Relief (PPDR)).
- It has produced standards for **eCall**, which is an in-vehicle emergency call (112) service
- EU-Alert is based on 3GPP TS 22.268 and 3GPP TS 23.041
 - ETSI TS 102 900: European Public Warning System (EU-ALERT) using the Cell Broadcast Service

ETSI TC - TETRA and Critical Communications Evolution (TCCE): NB

- ETSI TC has produced TERrestrial Trunked RAdio (TETRA), a digital trunked mobile radio standard developed to meet the needs of traditional Professional Mobile Radio (PMR) user organizations such as: Public Safety , Transportation , Utilities , Government , Military , PAMR , Commercial & Industry , Oil & Gas

Europe 2(2): Disaster Preparedness

ETSI TC for Emergency Communications (EMTEL)

- responsible for European requirements concerning emergency communication services, covering typically
 - ✓ the four scenarios in case of an emergency e.g., communication of citizens with authorities, from authorities to citizens, between authorities and amongst citizens.
 - ✓ also deals with topics like location (e.g., Advanced Mobile Location), Next Generation 112 (NG112) opening emergency services communications to data, video and text, communications involving IoT devices in emergency situations and alerting.
- Transporting Handset Location to Public Safety Answering Points (PSAPs) for Emergency Calls (TS 103 625 new version was published in March 2023)
 - Commission Delegated Regulation (EU)2019/320 with regard to the application of the essential requirements referred to in Article 3(3)(g) of Directive 2014/53/EU to ensure caller location in emergency communications from mobile devices
- Pan European Mobile Emergency Application (PEMEA) - PEMEA server-side architecture to solve problem and make possible that data and communications arrive to the most appropriate PSAP wherever the call is made.: TS 103 945 publication expected in December 2023
- All standards published by ETSI TC EMTEL are available [here>>](#)

India – Policy & Standards



23-08-2023

Slide 14

Smart Cities

- Government of India introduced “[Smart Cities Mission](#)” initiative on 25th June 2015 to develop 100 smart cities all over the country to:
 - drive economic progress and boost the quality of life by fueling local development and harnessing technology to create smart outcome for the citizens.
- 100 smart cities selected in four rounds with a target for its completion by 2019-20, The Union Housing and Urban Affairs Ministry has decided to extend the deadline for the Smart Cities Mission till **June 2024**, following requests from some cities that sought more time to complete their ongoing projects,
- **Core infrastructure elements:**
 - ✓ Adequate water supply , Assured electricity supply , Sanitation, including solid waste management
 - ✓ **Efficient urban mobility and public transport , Safety, Security and resilience as key features for Disaster preparedness and prevention**
 - ✓ Robust IT connectivity and digitalization , Good governance, especially e-Governance and citizen participation
 - ✓ Sustainable environment , Safety and security of citizens, particularly women, children and the elderly, and Health and education

Government/Industry Initiatives to support “Smart City Mission”

Open Data Platform/India Urban Data Exchange (IUDX) by Ministry of Housing and Urban Affairs (MoHUA):

- [IUDX](#), an open-source software platform for Indian Smart cities facilitating secure and authenticated exchange of data amongst various data platforms, 3rd party applications, data producers and consumers. IUDX has also become first software platform to fully adopt BIS standards for Unified Data Exchange
 - Unified Data Exchange standard – IS 18003, for Indian Smart Cities to ensure a secure and sustainable digital infrastructure and to facilitate the implementation of various smart city projects.

National Urban Digital Mission (NUDM) by MEITY:

- to establish a digital infrastructure & formalize a citizen-centric and ecosystem-driven approach to urban governance and service delivery in cities by 2022.

Smartnet by Ministry of Housing and Urban Affairs (MoHUA):

- to create a resource-rich ecosystem of learning, sharing and dissemination for the city managers and primary stakeholders in the urban transformation of India.

Smart City Living Lab:

- an open-innovation ecosystem is set up at [IIITH](#), with support from MEITY, Smart City Mission, Govt of Telangana in collaboration with technology partners [EBTC](#) and [Amsterdam Innovation Arena](#) with an aim to discover & develop cutting edge innovations with smart city use cases and enrich them with the knowledge from research.

Freight Smart Cities by Commerce Ministry’s Logistics Division:

- to improve the efficiency of urban freight and create an opportunity for the reduction in logistics costs.

Smart City Standardization: India

Bureau of Indian Standards, National Standard Body of India, through its technical committees have been developing standards related to smart cities.

- [CED 59: Smart Cities Sectional Committee](#)
- LITD 28: Smart Infrastructure

Telecommunications Standards Development Society, India (TSDSI):

- transposed oneM2M Release 2 and Release 3
- produced several technical reports on M2M Use Cases in different verticals from Indian Context

Telecommunication Engineering Centre (TEC):

- adopted TSDSI-transposed oneM2M (Release 2) standards and 3GPP standards (402 nos.) for adoption as national standards
- released various [technical reports](#) related to smart cities

C-DOT, has also developed oneM2M standards based [Common Services Platform \(CCSP\)](#) for IoT which is of tremendous value to Smart city applications developers. IA 18004-1: 2021 is based on oneM2M CSF

List of Standards developed by CED 59 related to smart cities

SI No	IS_No	Title
1	IS 17000 : 2019	Sustainable Development of Habitats Indicators
2	IS 17451 : 2020	Smart Community Infrastructure - Best Practices for Transportation - Guidelines
3	IS 17456 : 2020	Smart Community Infrastructure Guidance on Smart Transportation for Allocation of Parking Lots in Cities
4	IS 17457 : 2020	Sustainable Development of Habitats - Vocabulary

List of Standards developed by LITD 28 related to smart cities

SI No	IS_No	Title
1	IS 802.15.4:2021	Low-Rate Wireless Networks (Adoption of IEEE 802.15.4)
2	IS 18002-1:2021	Unified Digital Infrastructure Data Layer Part 1 Reference Architecture
3	IS 18003-2:2021	Unified Data Exchange Part 2 API specifications (includes NGSI-LD (ETSI CIM))
4	IS 18008-1:2021	Smart Cities- GIS Part 1 Reference Architecture
5	IS 18006-1:2021	Municipal Governance - Part 1 Reference Architecture
6	IS 18006-3-1:2021	Municipal Governance Part 3 Property Tax Section 1 Taxonomy
7	IS 18004-1:2021	IoT System Part 1 Reference Architecture (based on oneM2M CSF)

ITS Standardization: India

Bureau of Indian Standards (BIS):

- [TED 28-Intelligent Transport Systems Sectional Committee](#) of Bureau of Indian Standards (BIS) is responsible for
 - a) Standardization of information, communication and control systems in the field of urban and rural surface transportation, including intermodal and multimodal aspects thereof, traveler information, traffic management, public transport, commercial transport, emergency services and commercial services in the intelligent transport systems
 - b) Co-ordination of work with ISO/TC 204 excluded in-vehicle transport information and control systems (ISO/TC 22) and ISO/TC 241
 - c) Published around [20 standards](#)

Automotive Research Association of India (ARAI):

- Government approved test agency to carry out mandatory certification testing
- Provides technical expertise in R&D, test, certification, homologation and framing of vehicles regulations.
- Published/drafted several standards that are related to electric/smart mobility
 - [AIS-140 & Amd 1 and 2: Intelligent Transportation Systems \(ITS\) - Requirements for Public Transport Vehicle Operation](#)

India 1(2): Disaster Preparedness

- Telecom regulator (TRAI) had in 2018 [recommended](#) setting up a pan-India integrated Broadband PPDR (BB-PPDR) communication network (to be called “National BB-PPDR Network”) based on 3GPP PS-LTE technology to handle communications at the time of natural disasters.
- In March 2019, Telecom Engineering Centre (TEC) has also released [a study report](#) on PPDR Communication System: This paper gives a brief overview of PPDR communications and system requirements for effective PPDR communications.
 - DoT/MHA is working on allocating dedicated spectrum for emergency services rollout for Mission Critical Application -PPDR: B5 (850MHz)
- February 2019, India launched a PAN India service of single emergency helpline number 112 for police (100), fire emergency (101), Ambulance (102) and women (1091)
 - Emergency number 112 is launched under the Emergency Response Support System (ERSS) and has been designed by the Centre for Development of Advanced Computing(CDAC).
- Currently ERSS does not support emergency calls related to Disasters
 - National Disaster Management Authority (NDMA) of India is working to roll out emergency number 112 during any Natural Disaster.
 - NDMA is also working to roll out a common alert protocol that will use all communication mediums like SMS, mobile apps, radio and television in an automated manner to send out early warning messages to people in the danger zone.

India 2(2): Disaster Preparedness

- The Centre for Development of Advanced Computing (C-DAC) has developed a portable terrestrial trunked radio (TETRA) base station to be deployed in disaster sites for effective communication between rescue team members: NB
 - TETRA is a European standard for professional mobile radio and transceiver systems used for emergency services, including the police, the Fire and Rescue Services, railway and other transport services.
 - C-DAC TETRA network (CTN) portfolio comprises 25 products, including base stations, mobile terminals, network manager, dispatcher units, voice logger, radio location tracker and gateways to interconnect with other communication systems.
- India is a member of Coalition of Disaster Resilience Infrastructure (CDRI)
 - CDRI is a partnership of national governments, UN agencies and programmes, multilateral development banks and financing mechanisms, the private sector, and knowledge institutions that aims to promote the resilience of new and existing infrastructure systems to climate and disaster risks in support of sustainable development.

Conclusion

- Smart cities are in essence data-driven urban spaces. As a result, the use of Smart Mobility forms the foundation of smart city architecture.
 - deployment of ITS means the integration of advanced information and communication-based technologies into the mobility infrastructure of the city.
- New Technologies will profoundly impact economies and societies as it will provide the necessary communication infrastructure required by various smart city applications.
 - **ITS is one of the many smart city applications that can be realized**
- To raise the level of preparedness for possible future disaster:
 - it is necessary to choose a common approach to the use of digital technologies and standards.
- **Harmonised Standards also play an important role in :**
 - ✓ Provide the right conditions for open innovation and reduces barriers to integration (includes APIs)
 - ✓ Enables collaboration, open ecosystem and Open innovation
 - ✓ Resulting in productivity increase and service transformation

Thank you!

Dinesh Chand Sharma

(Seconded European Standardization Expert in India)

Director – Standardization & Public Policy

SESEI C/O EBTC, DLTA Complex, Gate No 3, 1st Floor, 1, Africa Avenue,
New Delhi 110029

Mobile: +91 9810079461, **Tel:** +91 11 3352 1525,

dinesh.chand.sharma@sesei.eu

www.sesei.eu ↔ **www.sesei.in**



SESEI | Seconded European
Standardisation
Expert in India
Enabling Europe-India Cooperation on Standards

23-08-2023

Slide 22