Welcome to the World of Standards

ETSI

World Class Standards

SMART CITY STANDARDIZATION

EMPOWER CITIES. EMPOWER PEOPLE.

ETSI work on Technology Standards and Smart City Coordination

Authors Keith Dickerson, David Boswarthick

SMARTCITY EXPO WORLD CONGRESS
14-16 NOVEMBER 2017
BARCELONA

Fira Barcelona

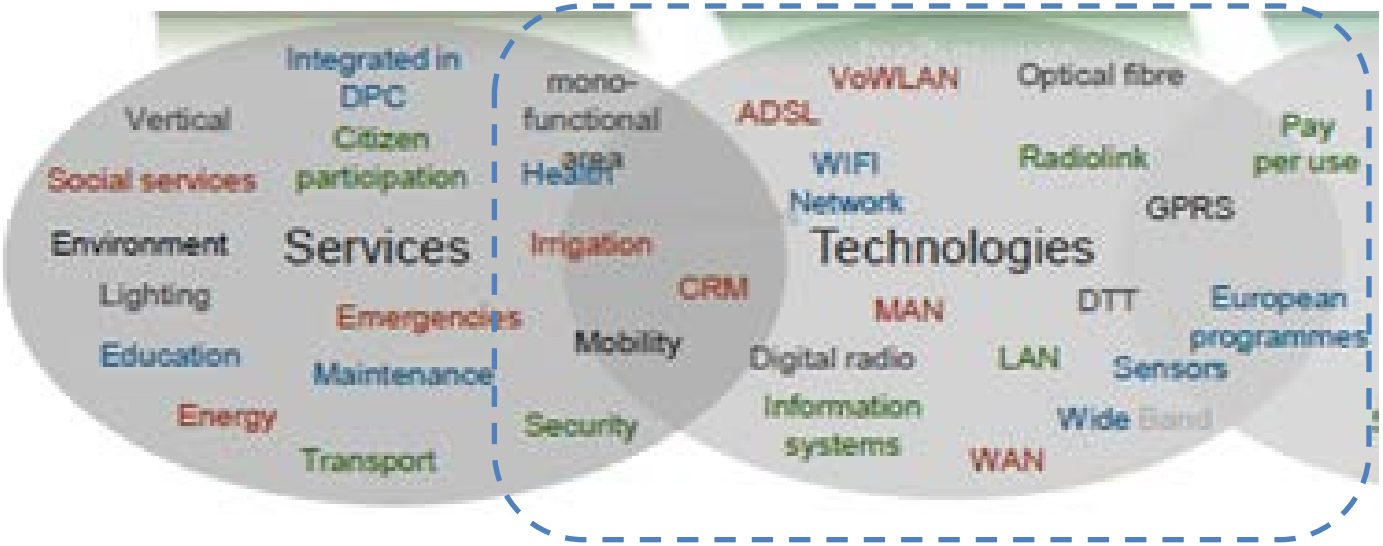
Agenda

- City Needs
- Smart City Standards
- ETSI Groups working on Smart City related Technologies
- ETSI work with External Smart City Groups
- Concluding Remarks

What do Cities need to Scale up Smart City Solutions?

- Best Practises / Roadmaps / Education in Standards
- Common (Cross-Domain) Use Cases / PoCs and Demos
- Benchmarking / KPIs
- Interoperability (infrastructure and data)
- Unified standards-based Platform Approach
- Clear, Interoperable Standards (vertical and horizontal)
- Profiling to allow for gradual deployment of key services

Standards shrink risks in Enabling Technologies



Fixed:

xDSL, Fibre, PoF, PLT, NGN, SDN/NFV, co-axial (cable)

Wireless:

Wi-Fi, LoRa, mWT, Digital Radio, Wide band, narrow band, LTE -> 5G, Satellite, NFC, RFID

Horizontals / Platforms:

Security/privacy, Energy efficiency, M2M, QoS/QoE, Interconnect & Interop, Secure IT platform & data management, semantics, Human Factors.

Smart City related Technologies in ETSI

Impacted groups: (from ETSI portal) http://portal.etsi.org

BOARD	FC	GA	IPR	OCG	3GPP	oneM2M	ATTM	BRAN	BROADCAST	CABLE
CYBER	DECT	EE	eHEALTH	EMTEL	ERM	ESI	HF	INT	ITS	LI
MSG	MTS	NTECH	PLT	RRS	RT	SAFETY	SAGE	SCP	SES	SmartBAN
SmartM2M	STQ	TCCE	USER	CCM	CIM	ECI	ENI	IP6	ISI	MBC
MEC	mWT	NFV	NGP	OEU	QKD	SMT	OSM	NSO	STF	WORKSHOP

Fixed:

ATTM, CABLE, NTECH, PLT, NFV, NGP

Wireless:

3GPP, BRAN, DECT, EMTEL, ERM, mWT, MEC, ITS, MSG, RRS, RT, SES, TCCE-SA6

Horizontals:

Security (ESI, Li, SAGE, Cyber, ISI, QKD, QSC), Energy Efficiency (ATTM/EE/OEU), Machine (oneM2M, smartM2M), QoS/QoE (STQ), Interconnect & test (INT, MTS) Smart Card (SCP) data management / semantics (ISG CIM / smartM2M), Health (eHealth, SmartBAN), Other (USER, HF, SAFETY)

Smart City related Groups in ETSI

ISG CDP (City Digital Profile)

Problem – there is no one group in ETSI is working for Smart Cities

Cities need a place to come and:-

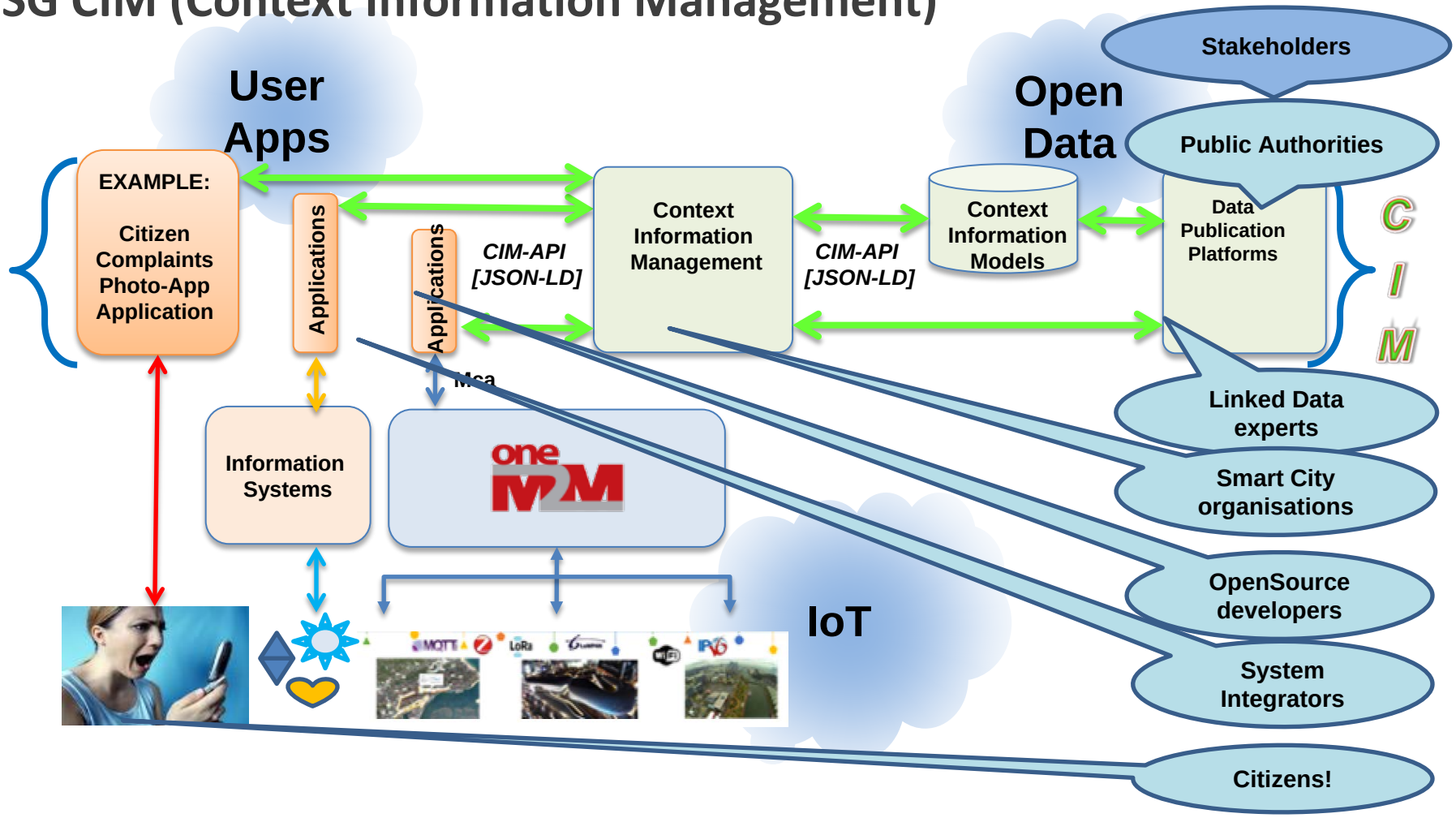
- Express their needs in ICT technology (and standards)
- Learn about the state of the art technology developments
- Exchange lessons learned during initial deployments,
  both relating to successes and failures (analyse what and why)
- Develop agreed cross-domain use cases and priorities for deployment
- Develop profiles for city deployments using simple non-tech specific language

Solution – ETSI ISG CDP (City Digital Protocol)

- New Group, Kick off meeting next week (20/21 November)

Smart City related Groups in ETSI

ISG CIM (Context Information Management)



Goal = interoperable exchange of data & metadata between systems

Smart City related Groups in ETSI

TC ATTM Working Group on Sustainable Digital Multiservice Cities

New Working Group, chaired by eG4U (City of Bordeaux CIO, chairman of the standardization group of EuroCities)
Works on deployment of ICT systems, and networks, and sites allowing interactions for data capture (both data consumers and providers) and management of data within each service and between different functions and services and will produce:

- Standardisation work on specific engineering of ICT for Sustainable Digital Multiservice Cities
- Specifications of topology and functional requirements
- Specifications of functional and physical characteristics of interfaces
- Standardisation work on operational sustainability management

Smart City related Groups in ETSI

ISG OEU "Operational energy Efficiency for Users"

ISG OEU brings together ICT professionals from a wide cross-section of European industry including the aeronautical, automotive, banking, insurance and **smart cities**. Key deliverables include:

- ETSI GS OEU 001 « Energy Management; Global KPIs for ICT sites»
- ETSI GS OEU 006 Referential specification for sustainable levels of ICT Sites
- ETSI GS OEU 018 « Waste management of ICT equipment »
- ETSI GS OEU 020 « Definition of CO2 equivalent emission level for ICT sites »
- Work on "Global KPI Modelling for **Green Smart Cities**" with the **City of Bordeaux** as Rapporteur relates to the creation of a new NGO **eG4U**
- **http://eg4u.launchrock.com/**

e.green for users

Smart City related Groups in ETSI

ETSI Human Factors Group

Working on standards requirements of **users / citizens** living in and interacting with the smart city.

For example, activities related to accessibility of mobile devices having a direct impact on the user experience in smart cities (e.g. accessibility of intelligent transport information for the blind or visually impaired).

3 new work items arising from CEN/CLC/ETSI SSCC-CG requirements on accessibility.

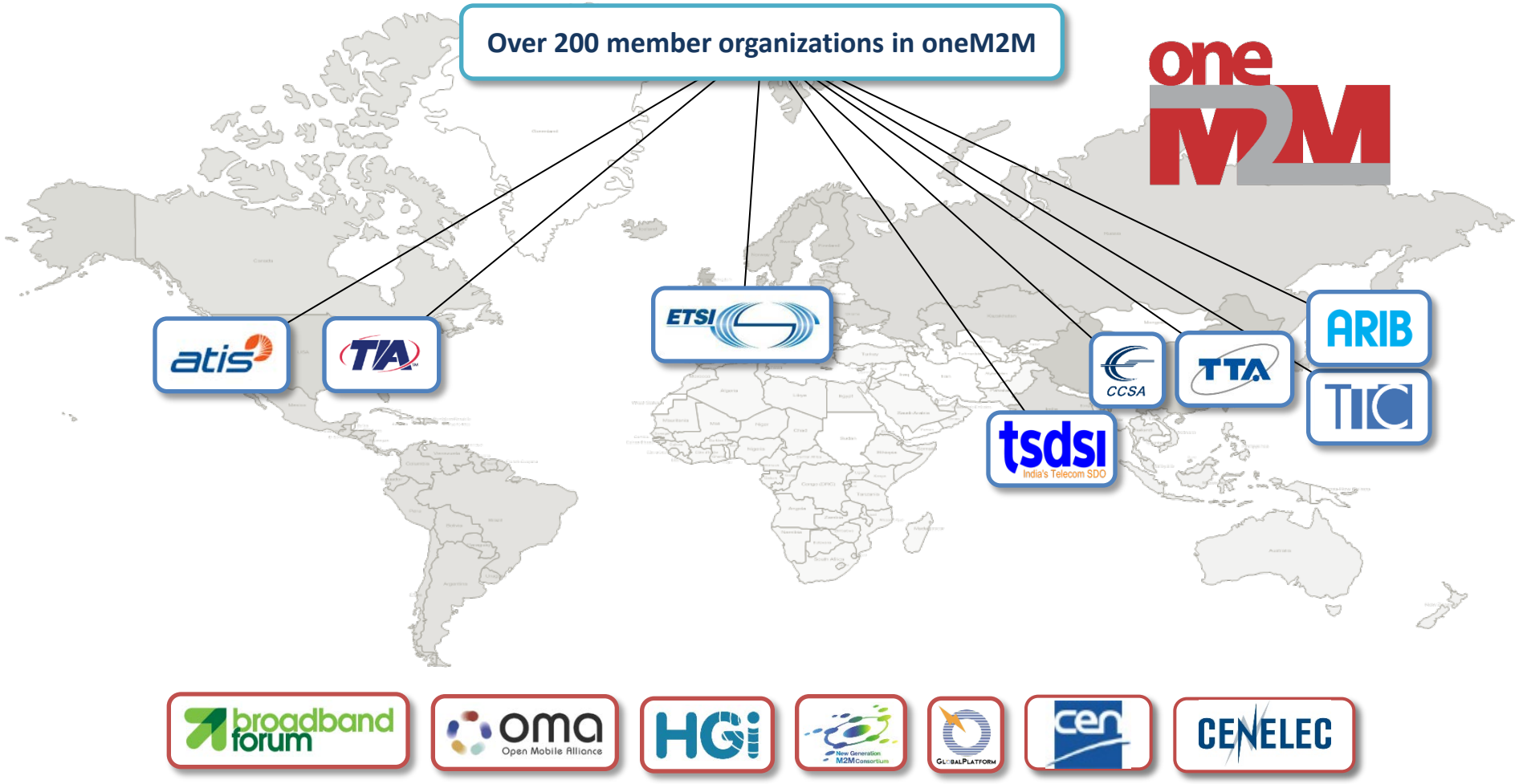
Proposed task group awaiting evaluation for funding by EC.

TC SmartM2M in ETSI (4 of 4)

- **ETSI SmartM2M:**
  - Developed two releases of M2M specifications.
  - Used as one of the initial baseline proposals for the oneM2M initiative

- **ETSI SmartM2M is currently working on:**
  - Supporting the European industry and institutions on the identification and adoption of standards, in particular regarding the oneM2M framework
  - Bridging the European needs in the area of M2M/IoT towards **oneM2M**
  - Smart Appliance REFerence ontology SAREF / oneM2M IoT Semantic Interoperability

oneM2M Partnership Project

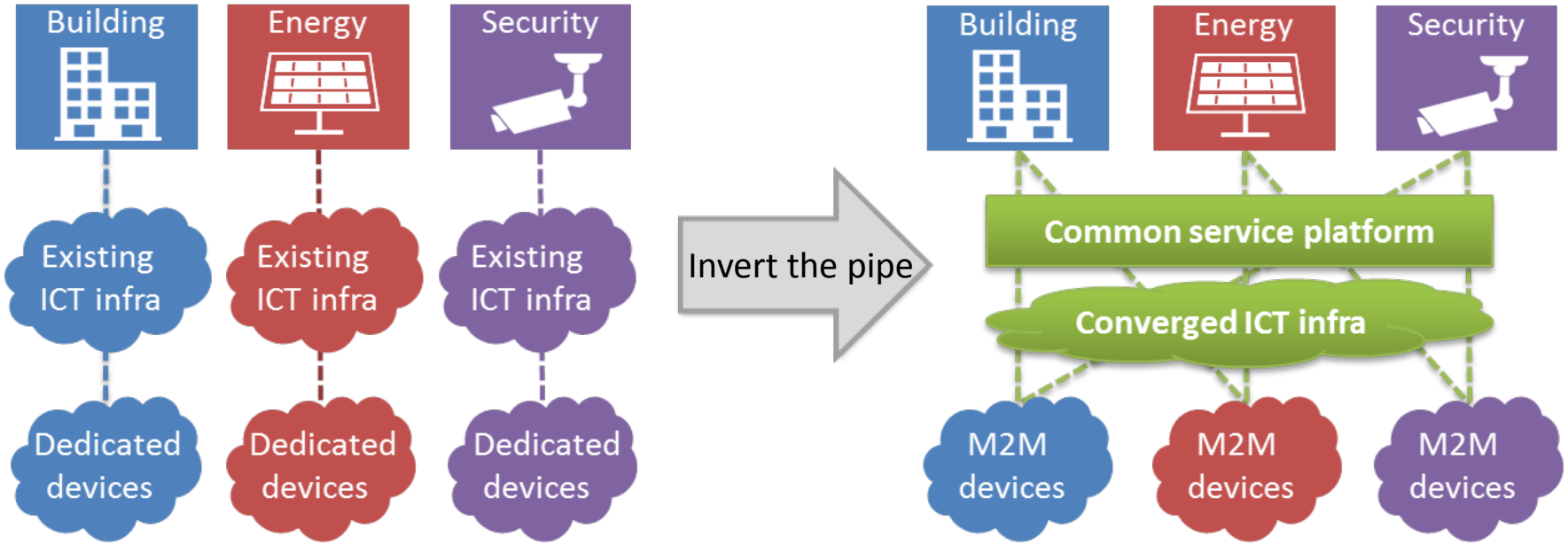


Source: oneM2M

www.oneM2M.org

All documents are publically available

IoT cross-domain interoperability



- Highly fragmented market with small vendor-specific applications.
- Reinventing the wheel: Same services developed again and again.
- Each silo contains its own technologies without interop.

- End-to-end platform: common service capabilities layer.
- Interoperability at the level of communications and data.
- Seamless interaction between heterogeneous applications and devices.

Source: oneM2M

3GPP Partnership

Organizational Partners

- Standards organizations:
  - ARIB (Japan),
  - ATIS (USA),
  - CCSA (China),
  - ETSI (Europe),
  - TTA (Korea),
  - TTC (Japan),
  - TSDSI (India)

Market Representative Partners

- 14 Market partners representing the broader industry:
  - 4G Americas,
  - COAI (India),
  - GSA,
  - GSMA,
  - IMS Forum,
  - InfoCommunication Union (Russia),
  - IPV6 Forum,
  - MDG (formerly CDG),
  - NGMN Alliance,
  - Small Cell Forum,
  - TCCA,
  - TD Industry Alliance,
  - TD-Forum,
  - UMTS Forum

Source: 3GPP

3GPP Standards for the Internet-of-Things

- In **Release-13** 3GPP has made a major effort to address the IoT market
- The portfolio of technologies that 3GPP operators can now use to address their different market requirements includes:
  1. **eMTC** - Further LTE enhancements for Machine Type Communications, building on the work started in Release-12 (UE Cat 0, new power saving mode: PSM)
  2. **NB-IoT -** New radio added to the LTE platform optimized for the low end of the market
  3. **EC-GSM-IoT** - EGPRS enhancements which in combination with PSM makes GSM/EDGE markets prepared for IoT
- Freeze of the protocol specifications achieved in Q2-16

Source: 3GPP

Smart City Standards Landscape

GSMA

3GPP

ETSI
smartM2M

oneM2M

ETSI
ISG CIM

H2020
ESPRESSO

TM
Forum

ETSI
SDMC

H2020
VICINITY

CPS

NIST
IES-CITY

EUROCITIES

H2020
SYNCHRONICITY

BSI

City Standards
Inst.

Future Cities
Catapult

SCC-EIP

H2020
CITIKEYS

AIOTI
(WG3 & WG8)

IEEE
P2413

CEN/CENELEC/ETSI
SF-SSCC

Fiware
Foundation

OCG

OASC

ITU-T
FG SCC

IEC
SEG1

ISO
TC 268

ISO/IEC
JTC1

SC1
Infra.

SG5
Cities

SG11
IoT

WG11
S.City

Covenant of
Mayors

ETSI's Smart City Cooperation Initiatives

- ETSI is active in and/or cooperating with:
  - **SF - SSCC**: CEN-CENELEC-ETSI Coordination Group Smart and Sustainable Cities and Communities (ISO, IEC, UN, ITU-T..) + SM-CG + SEG-CG
  - AIOTI www.aioti.eu: **WG3** (IoT Standardisation) and AIOTI **WG08** (Smart Cities) with many SDOs (ITU-T, W3C, IEEE, ISO, IEC, JTC1, ETSI, oneM2M, 3GPP..), OSS, Industry/Verticals and IoT Alliances, IERC, IoT-EPI, IoT LSPs…
  - FIWARE / OASC.. in the new ISG CIM (next slide)
- ETSI is a partner in the H2020 Smart City project ESPRESSO (OGC, CITYKEYS/Eurocities, Sharing Cities, EIP-SCC, Urban Platforms), IoT-EPI/UNIFY-IoT and IoT LSP CSA CREATE-IoT

ETSI and IES-City Project (NIST)

- ETSI and NIST have signed a partnership agreement (early 2016) to explore opportunities for cooperation in the domains of Smart Cities and IoT (Internet of Things)
- ETSI hopes that through this collaboration with NIST and other partners we may encourage global cooperation and knowledge sharing as well as the development of global technical specifications and recommendations to help accelerate the numerous Smart City deployments around the globe.
- Three workshops in both US and Europe have progressed the work on identifying potential “Pivotal Points of Interoperability (PPIs)” between numerous IoT frameworks
- https://pages.nist.gov/smartcitiesarchitecture/

Conclusions

Clearly Standards bodies need to:-

- Help cities to fully understand the various technology options and the relevant standards
- Simplify, demystify, educate and “prove concepts by doing”
- Build on early successes, and analyse implementation failures
- Cooperate, coordinate, communicate
- Re-use the work already, do not reinvent

ETSI contact(s) for the Smart City Work
Keith Dickerson (Board Champion)
David Boswarthick (ETSI Secretariat)