The 4th Asia-Pacific Regional Forum on Smart Sustainable Cities and e-Government 2018
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Standardization of Services and Applications including Security for IoT and SC&C

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ITU-T SG20

- **Internet of things (IoT) and smart cities and communities (SC&C)**

Acronym		Title
WP1	**Q1/20**	End to end connectivity, networks, interoperability, infrastructures and Big Data aspects related to IoT and SC&C
	Q2/20	Requirements, capabilities, and use cases across verticals
	Q3/20	Architectures, management, protocols and Quality of Service
	Q4/20	**e/Smart services, applications and supporting platforms**
WP2	**Q5/20**	Research and emerging technologies, terminology and definitions
	Q6/20	**Security, privacy, trust and identification for IoT and SC&C**
	Q7/20	Evaluation and assessment of Smart Sustainable Cities and Communities

Q4/20 Overview

(e/Smart services, applications and supporting platforms)

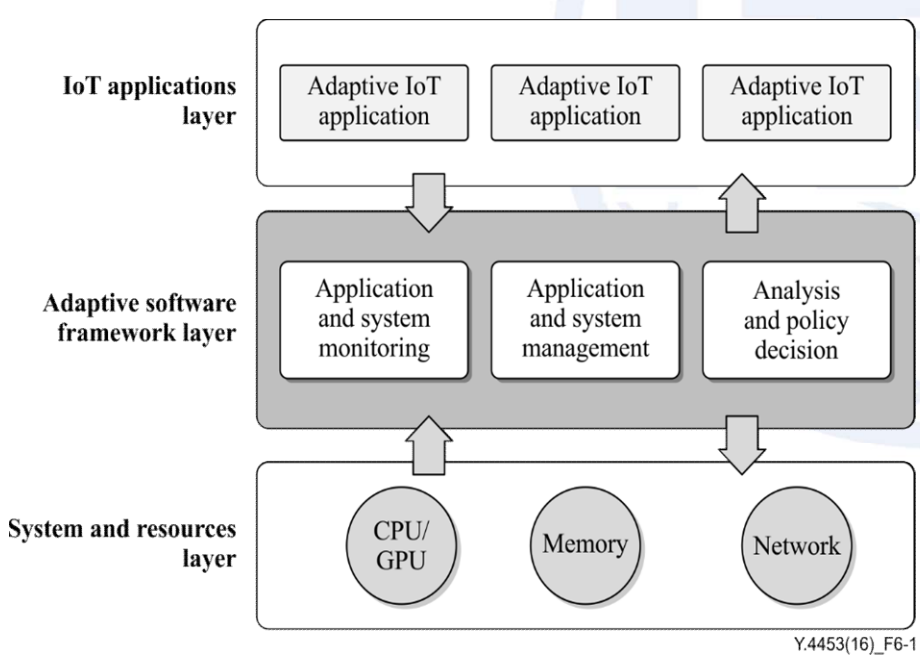
- Focus on e/smart services and applications aspects related to the verticals, to facilitate seamless services among heterogeneous IoT environments
  - Many vertical applications
    - Require service platforms to support applications
  - Common functionality of platforms
- Published Recommemdations
  - Y.4452 (ex Y.WoO-fw) - Functional framework of Web of Objects
  - Y.4453 (ex Y.IoT-ASF) - Adaptive software framework for IoT devices
  - Y.4553 (ex Y.IoT-SPSN) - Requirements of smartphone as sink node for IoT applications and services
  - Y.4456 (ex Y.SPL) - Requirements and Reference Framework for Smart Parking Lots in smart city
  - Y.4415 (ex Y.WoO-hn) - Architecture of web of objects based virtual home network
  - Y.4457 (Y.TPS-afw) - Architectural framework for transportation safety services
- Draft Recommendations under study
  - 13 Work Items

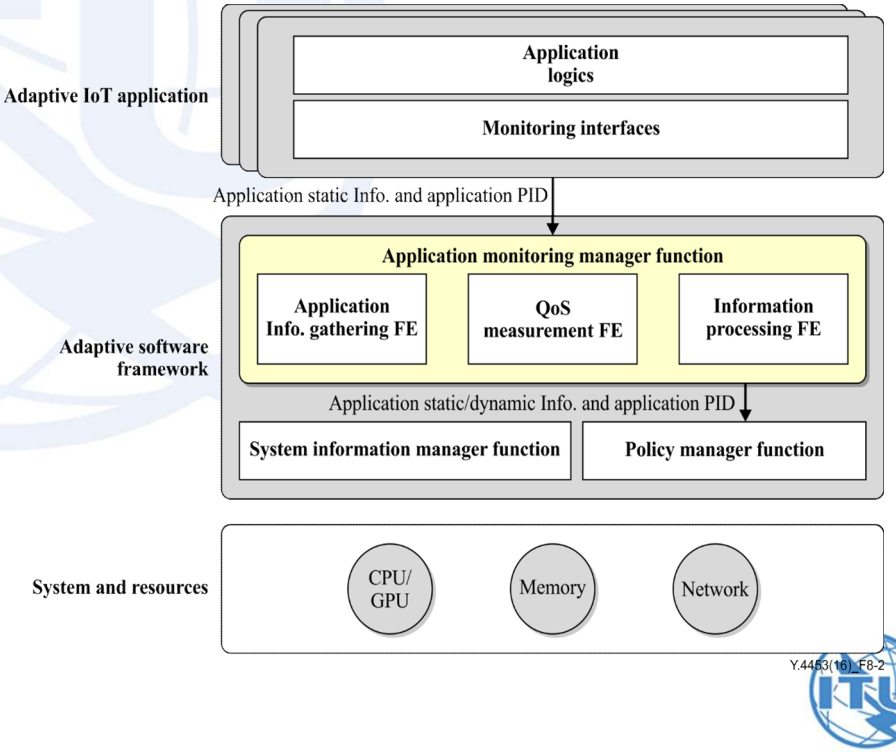
Q4/20 Work Items

Work Item	Title
Y.del-fw	Framework of delegation service for the IoT devices
Y.IoT-SQ-fns	Service Functionalities of Self-quantification over Internet of things
Y.ISG-fr	Framework of IoT-based Smart Greenhouse
Y.SC-Residential	Requirements of Smart Residential Communities
Y.smart-evacuation	Framework of Smart Evacuation during emergencies in Smart Cities and Communities
Y.social-device	Framework of the social device networking
Y.SSL	Requirements and Reference Framework for Smart Street Light
Y.STD	Reference Model for Smart Tourist Destinations: platform interoperability and functionalities
Y.energy-mMG	Application model for energy services on multiple microgrids
Y.IoT-BoT-fw	Framework of blockchain of things as decentralized service platform
Y.STIS-fdm	Function description and metadata of Spatio-temporal Information Service for SSC
Y.IoT-LISF	Lightweight intelligent software framework for IoT devices
Y.disaster_ notification	Framework of the disaster notification of the population in Smart Cities and Communities

Adaptive software framework - Y.4453

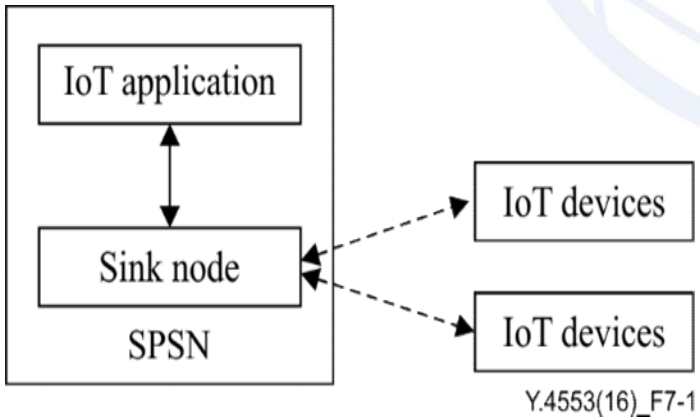
- **ASF**
  - Middleware used to enable optimal QoS performance for each adaptive IoT application by using static/dynamic information regarding applications and system resources in IoT devices

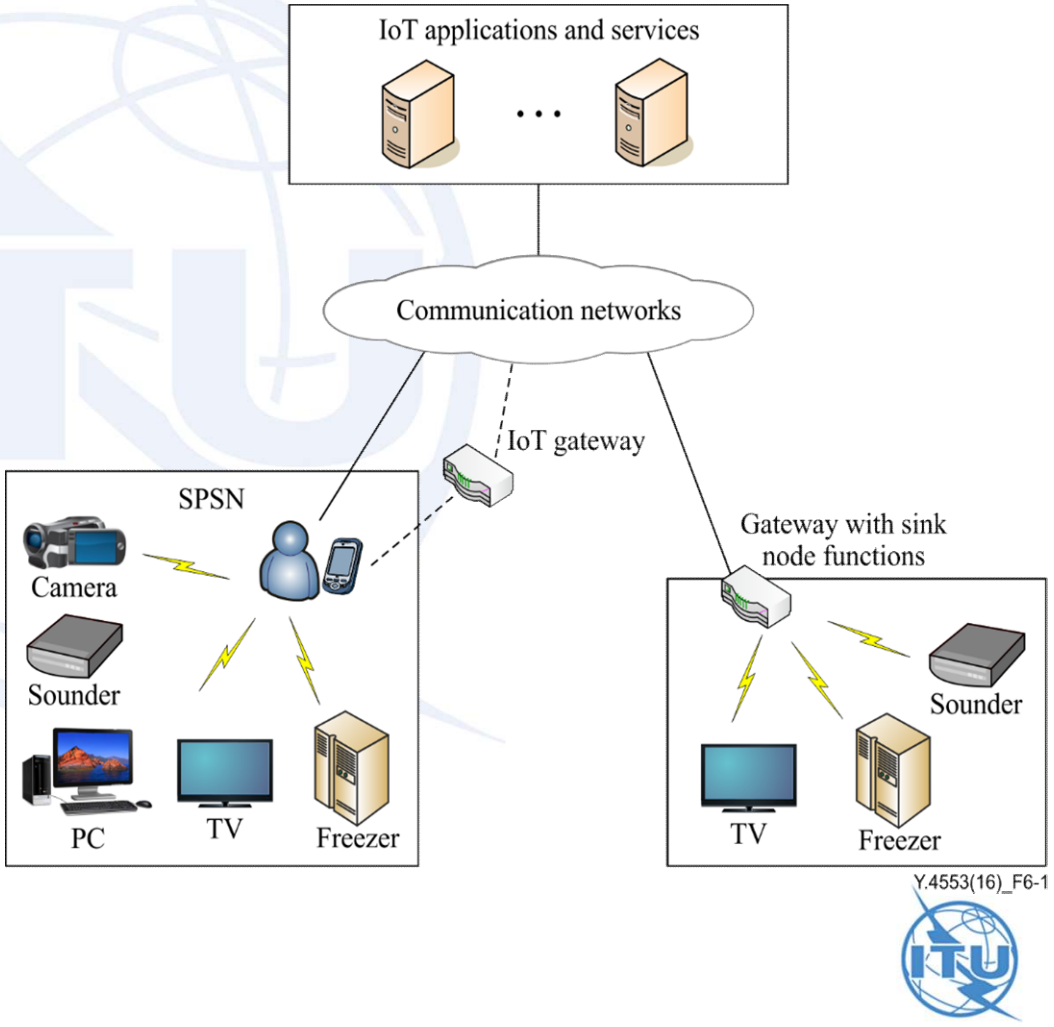




Smartphone as sink node - Y.4553

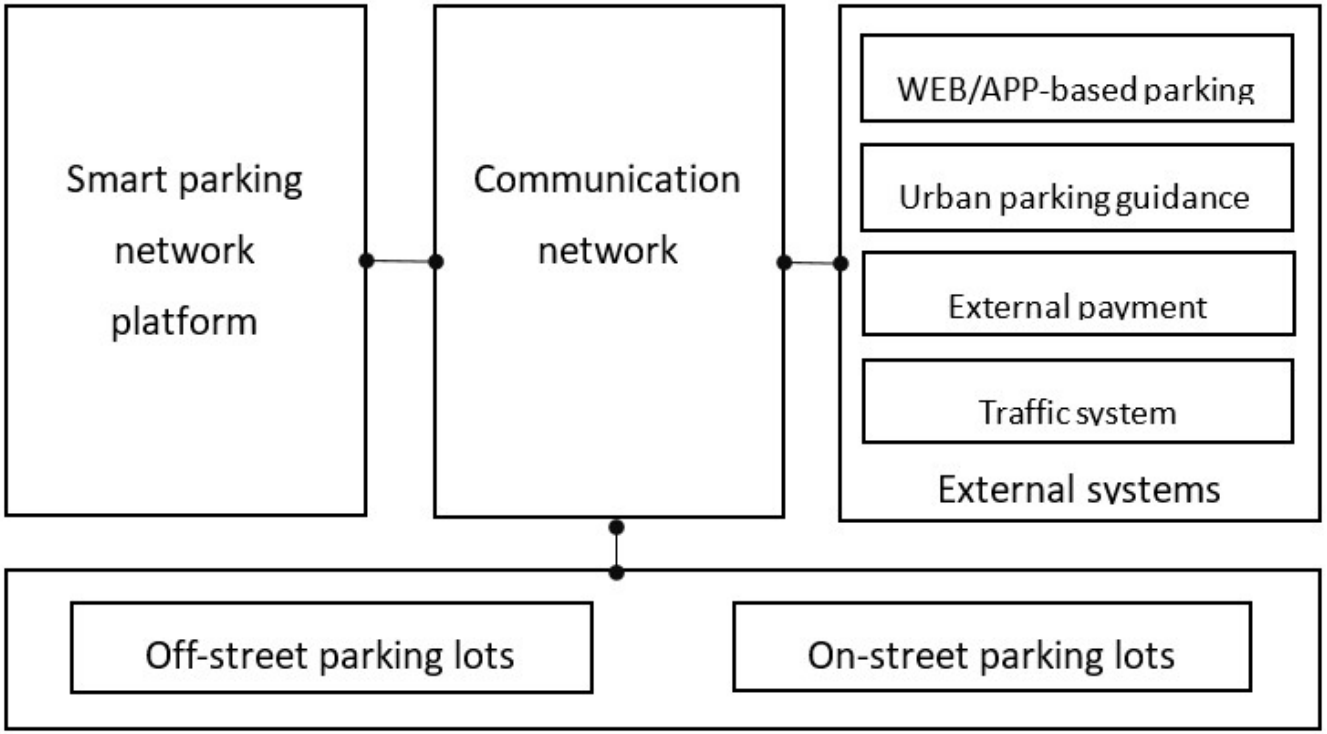
- SPSN
  - A smart phone that supports the functionalities of a sink node



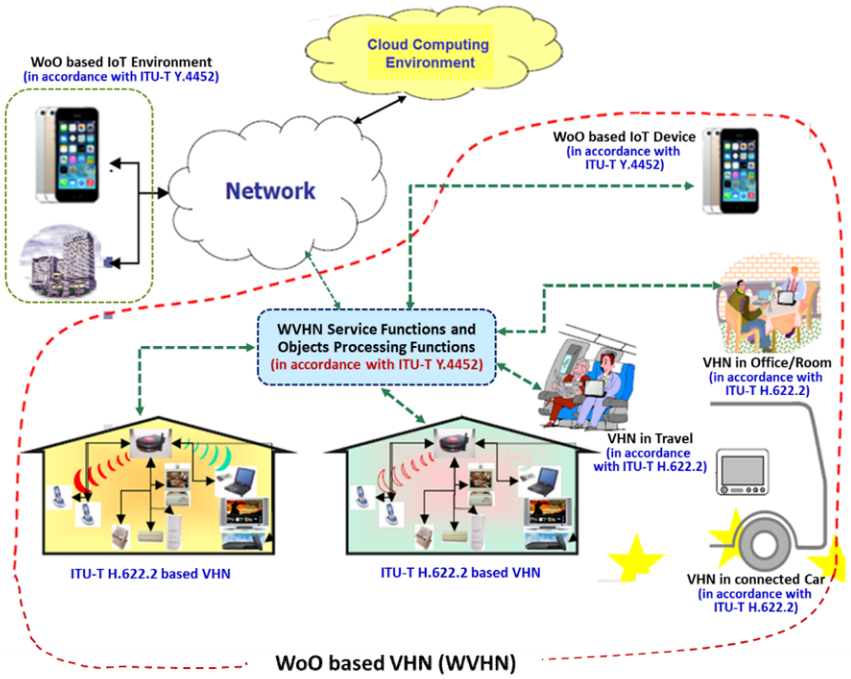


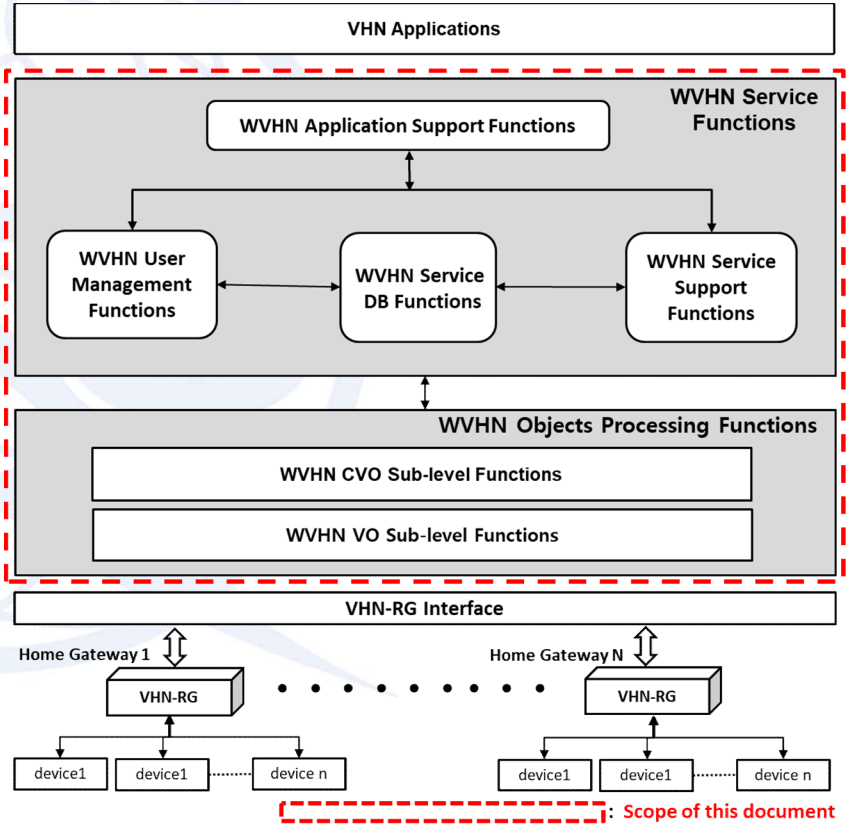
Smart Parking Lot – Y.4456

- Smart Parking Lot (SPL) integrates parking information to enable coordination of parking facilities within smart cities. Smart Parking Lot works with other systems to provide various parking services



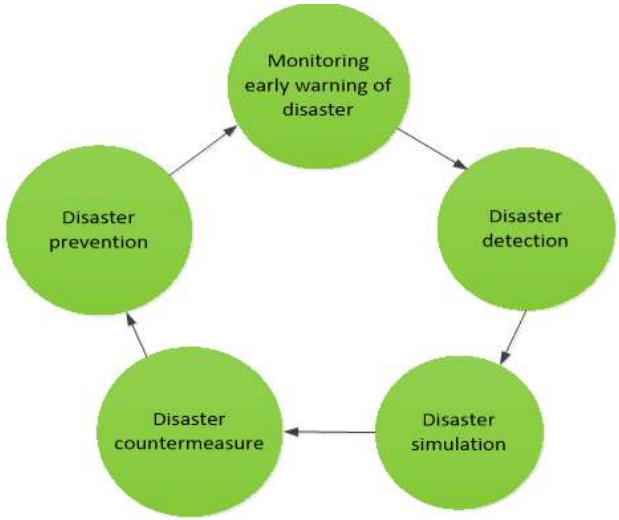
Web of objects based virtual home network – Y.4452 and Y.4415

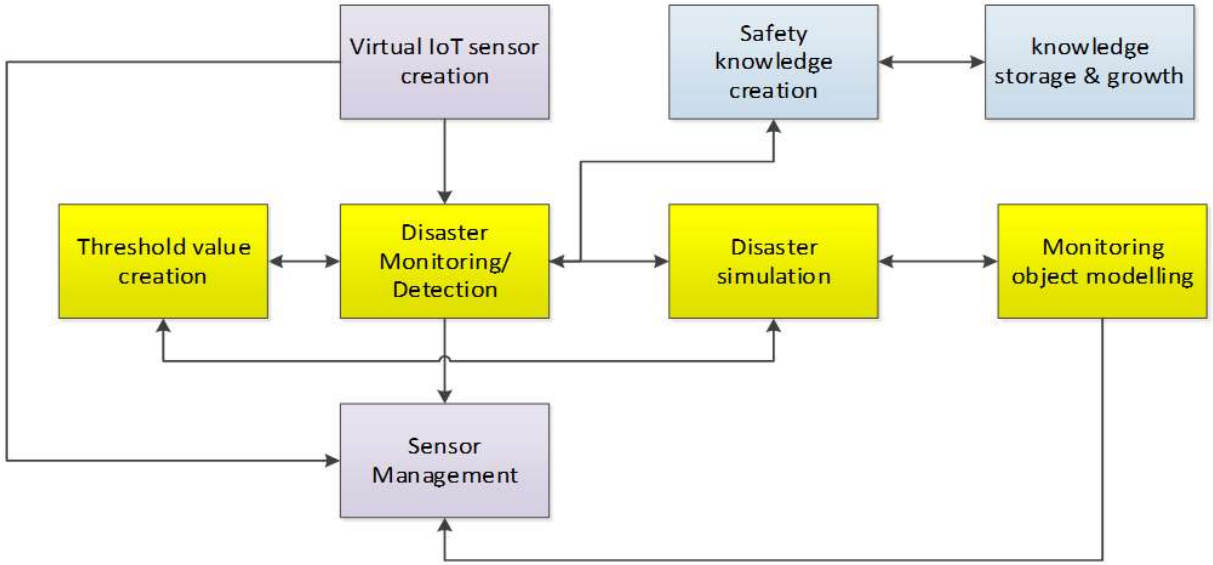




Transportation Safety Service - Y.4457

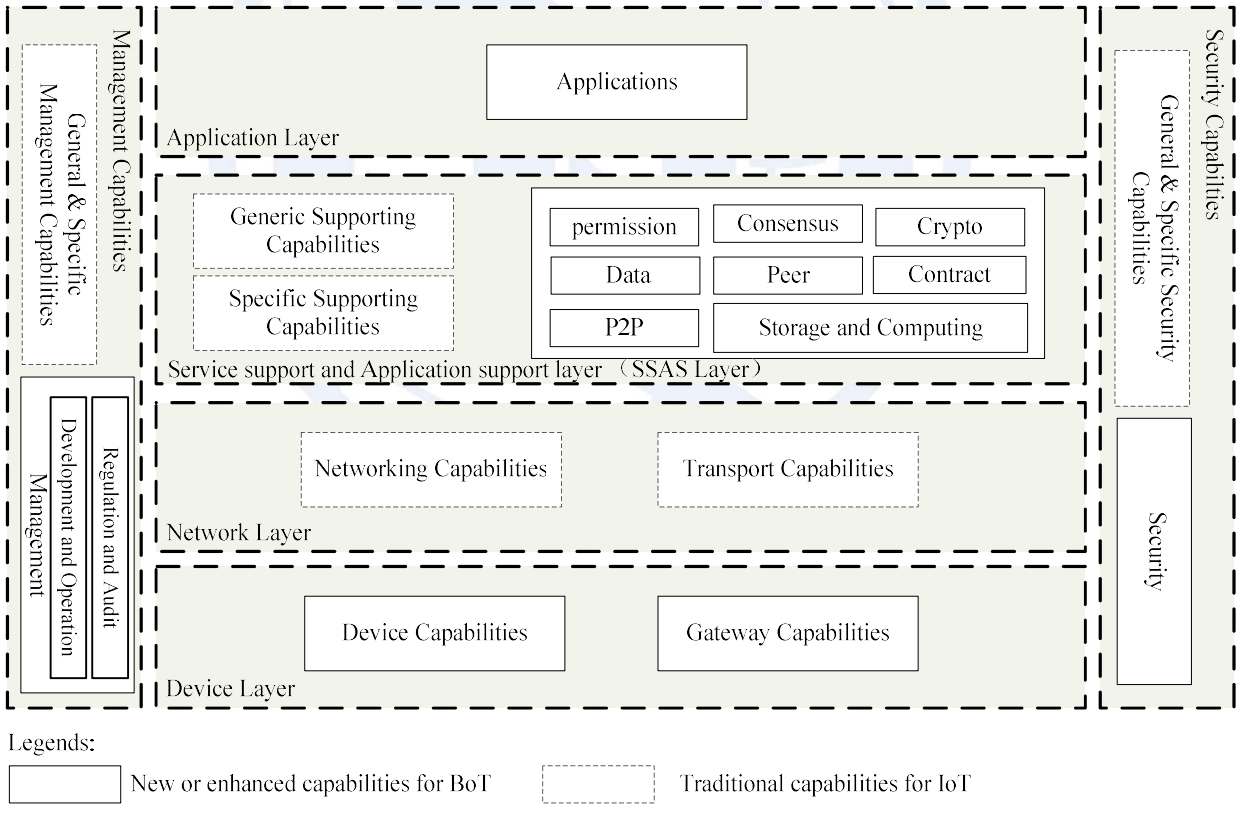
- Transportation safety services based on IoT technologies can reduce the occurrence of accidents and disasters, and save the lives and damage to properties.





On going activities – 1

- Blockcahin of things



On going activities – 2

- Various IoT applications
  - Smart green house
  - Smart residential communities
  - Smart street light
  - Smart energy service with micro grid
  - Smart evacuation, disaster notification
  - Delegation services for IoT devices
  - Lightweight intelligent software framework

Q6/20 Overview

(Security, privacy, trust and identification for IoT and SC&C)

- Focus on
  - Authenticity, confidentiality, integrity, non-repudiation, and availability of IoT devices, systems, applications, protocols, platforms, and services
  - Security and trust provisioning
  - The protection of privacy
  - Identity discovery and identity management
- Published Recommemdations
  - Y.4805 (ex Y.SC-Interop) - Identifier service requirements for the interoperability of Smart City applications
  - Y.4806 (ex y.IoT-sec-safety) - Security capabilities supporting safety of the Internet of Things
- Draft Recommendations under study
  - 8 Work Items

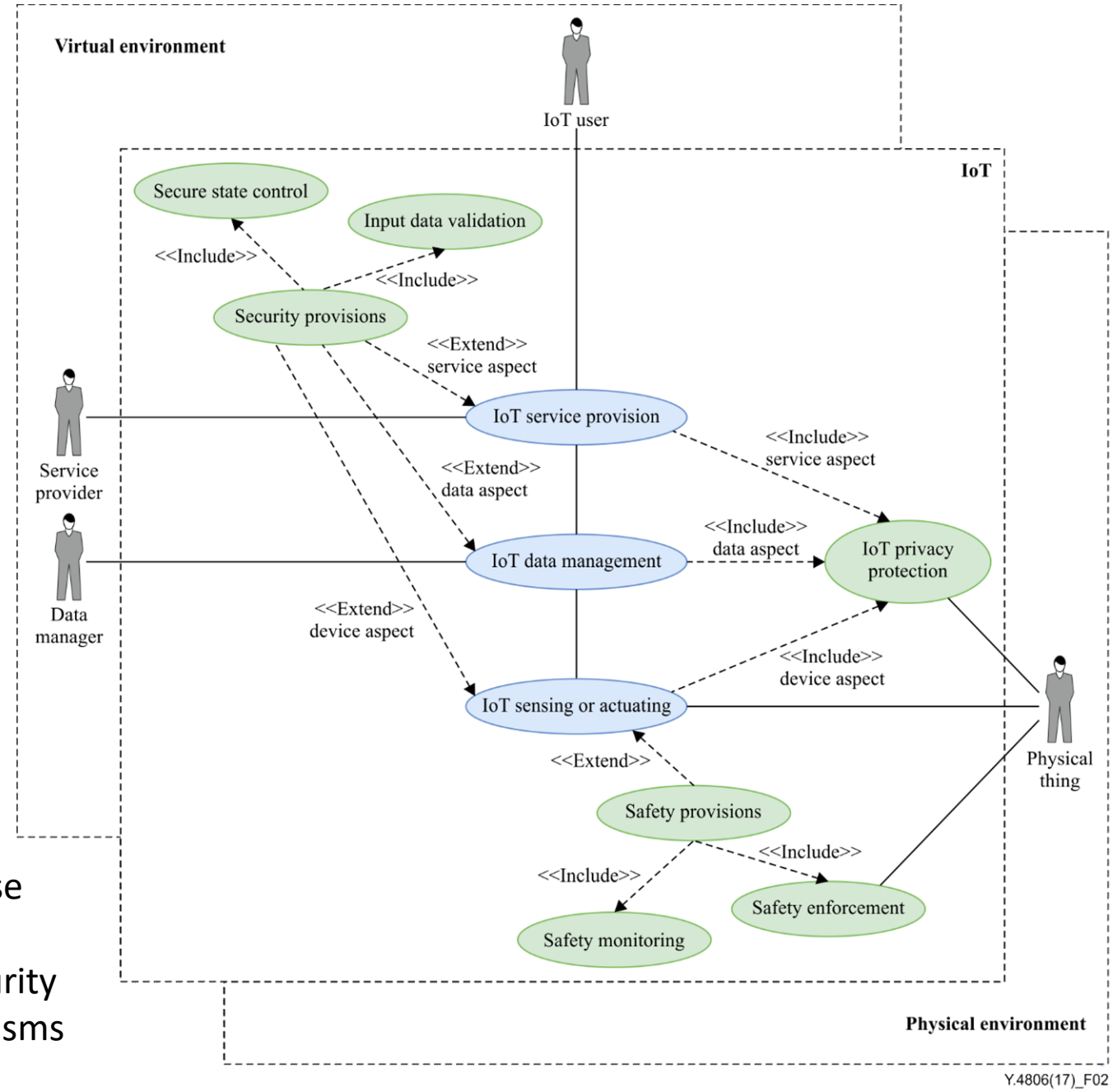
Q6/20 Work Items

Work Item	Title
Y.API4IOT	API for IoT Open Data in Smart Cities
Y.FW.IC.MDSC	Framework of identification and connectivity of Moving Devices in Smart City
Y.IoT-DA-Counterfeit	Information Management Digital Architecture to combat counterfeiting in IoT
Y.IoT-Interop	An Interoperability framework for IoT
Y.IoT-IoD-PT	Identity of IoT devices based on secure procedures and ensures privacy and trust of IoT systems
Y.LPWA	Security, interoperability and identification aspects for Low Power Wide Area (LPWA) systems
Y.IoT-Agility	Algorithm Agility for IT Systems and Supporting Infrastructure used in the Internet of Things
Y.IoT-Ath-SC	Framework of IoT-devices authentication in Smart City

Identifier services in smart city applications - Y.4805

- General identifier service requirements
  - Compatibility with existing smart city practice
  - Extendibility
  - Efficiency in resolution
  - Scalability
  - International support
- General security requirements
  - Secure resolution
  - Discretionary access control
  - Distributed management and administration interface

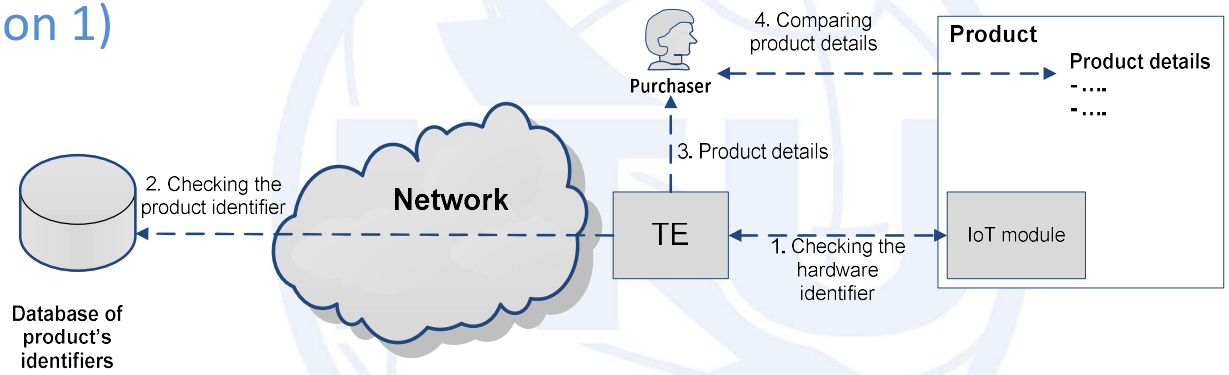
Security capabilities supporting safety - Y.4806



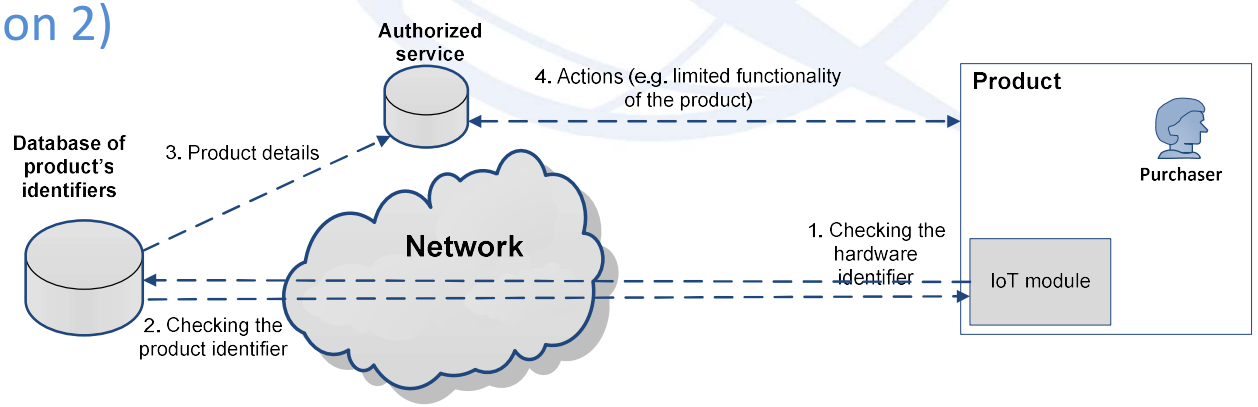
The general use case model of the IoT extended with security and safety mechanisms

On going activities - Information Management Digital Architecture

- Verification of product identifiers using an independent technical solution (Option 1)

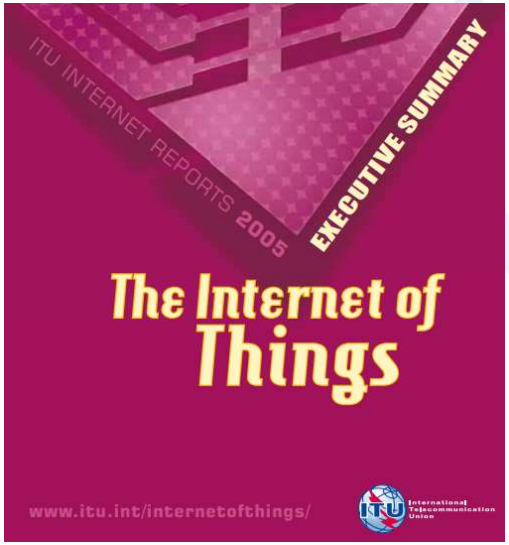


- Verification of product identifiers using the facilities of the product (Option 2)



Internet of Things and Data

- From connecting devices to **creating value**



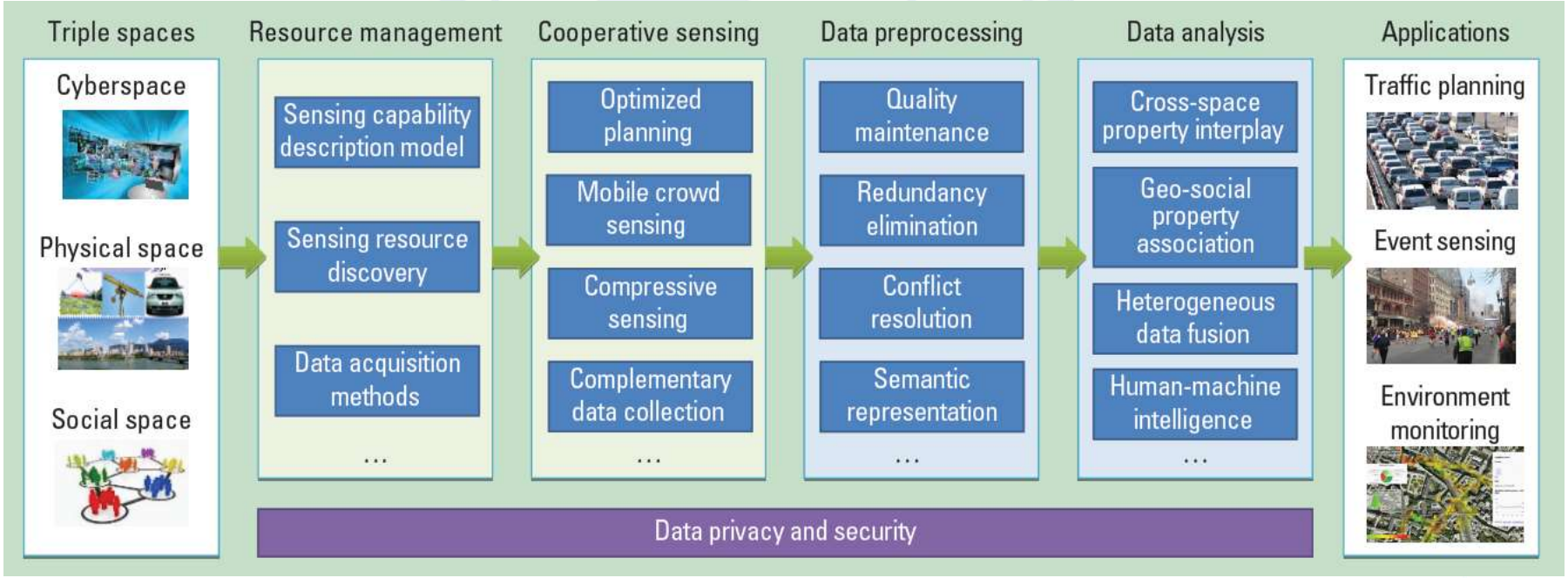
https://www.itu.int/osg/spu/publications/internetofthings/InternetofThings_summary.pdf

Data Explosion

http://www.smartinsights.com/internet-marketing-statistics/happens-online-60-seconds/attachment/what-happens-online-in-60-seconds/

Data-driven
IoT and Smart Cities & Communities

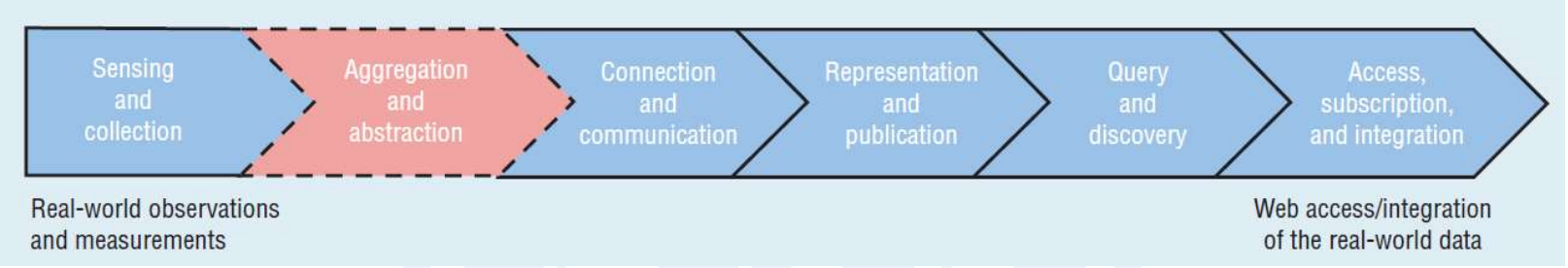
- Support higher volume and velocity of data

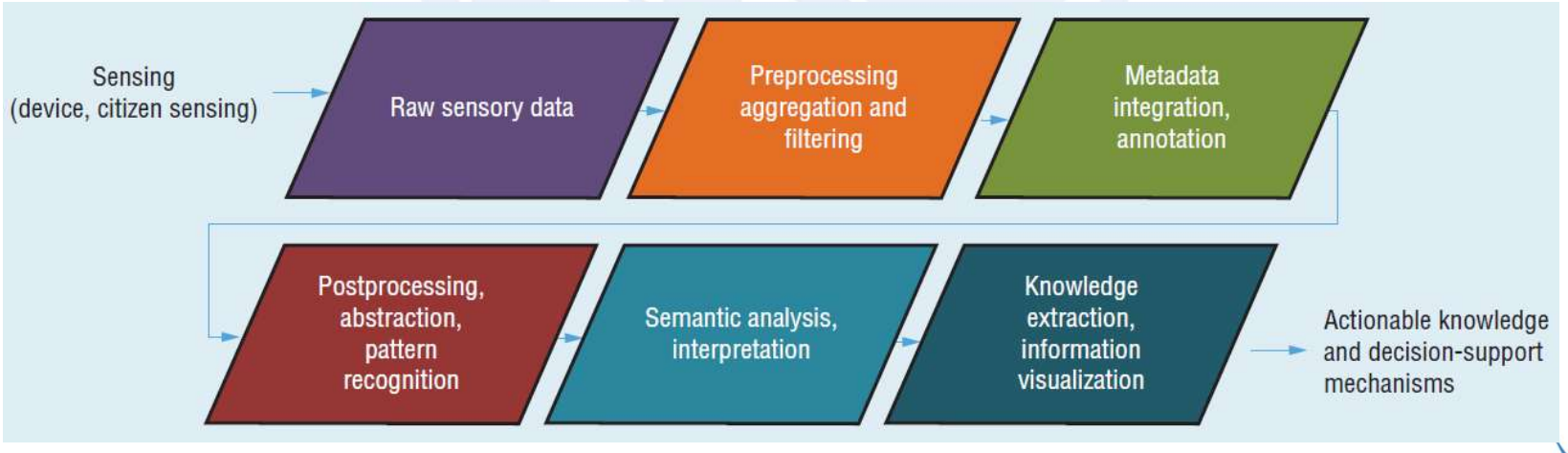


"A Data-Centric Framework for Cyber-Physical-Social Systems", IEEE IT Professional, Nov.-Dec. 2015.

From Data to Actionable Knowledge

- The data production and access chain





"From Data to Actionable Knowledge: Big data challenges in the WoT," IEEE Intelligent System, 2014

ITU-T FG-DPM

- **Parent study group**: ITU-T SG20 (IoT and SC&C)
- **Established**: ITU-T SG20 meeting (Dubai, 22 March 2017)
- **Open to all stakeholders** (ITU members & non-members)
- **Overall objectives**:
  - promote the establishment of trust-based data management frameworks for IoT and SC&C
  - investigate existing and emerging technologies
  - Identify and address standardization gaps and challenges

FG-DPM Deliverables

Deliverable	Title	Output document
D0.1	TS - "Data Processing and Management for IoT and Smart Cities and Communities: Vocabulary"	FG-DPM-O-072
D1.1	TS - "Use Cases Analysis and General Requirements for DPM"	FG-DPM-O-078
D3.3	TR - "Framework to support data interoperability in IoT environment"	FG-DPM-O-075
D3.5	TS - "Overview of Blockchain for supporting IoT and SC&C in DPM aspects"	FG-DPM-O-073
D3.6	TS - "Blockchain-based data exchange and sharing technology"	FG-DPM-O-074
D4.1	TR - "Framework of Security and Privacy in DPM"	FG-DPM-O-067
D4.3	TS - "Technical Enablers for Trusted Data"	FG-DPM-O-071
D4.4	TR - "Data quality management for trusted data"	FG-DPM-O-065
D4.6	TS - "Risk Management in DPM for IoT and smart cities"	FG-DPM-O-064
D5.1, D5.2, D5.3, D5.4	TS - "Data Economy Impact, Commercialization and Monetization"	FG-DPM-O-069

TS: Technical Specification, TR: Technical Report

Recent Progress and Future Plans

- **Reported 1st year activities** to the SG20 May meeting
  - Requested the extension of FG-DPM lifetime
- **Finalize Phase 1 deliverables**
  - Candidate deliverables (D1.1, D2.1 and other ones)
- Make progress for other deliverables
  - Prioritize deliverables and concentrate them
- Promote related activities
  - Workshops, liaisons
- **Next meeting** – 17 – 20 September 2018, Tunisia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