# Workshop on Smart Sustainable Cities
# Samarkand, Uzbekistan, 1-2 June 2017

# ITU-T Focus Group on Data Processing and Management

Gyu Myoung Lee

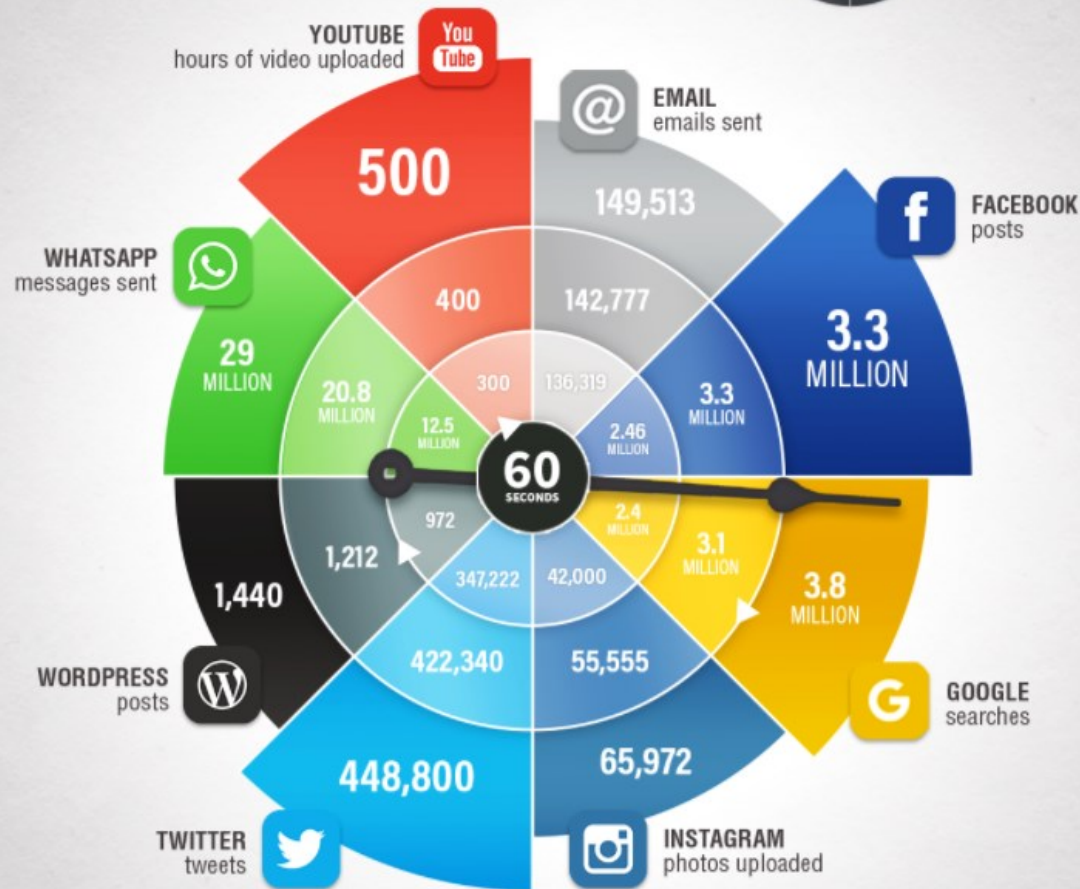ITU-T Chair of FG-DPM, WP3/13 Co-chair, Q16/13 and Q4/20 Rapporteur
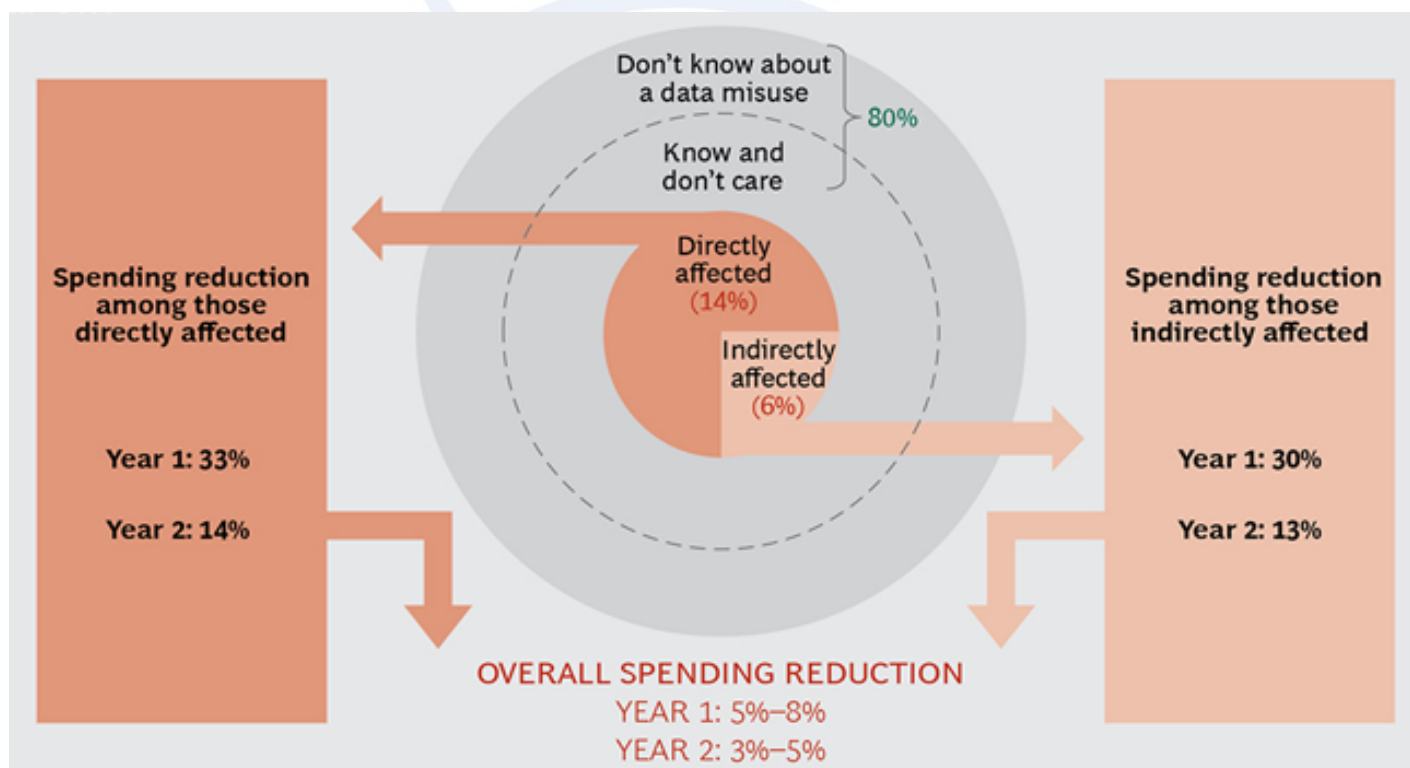
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# Introduction

What Happens Online in 60 Seconds?
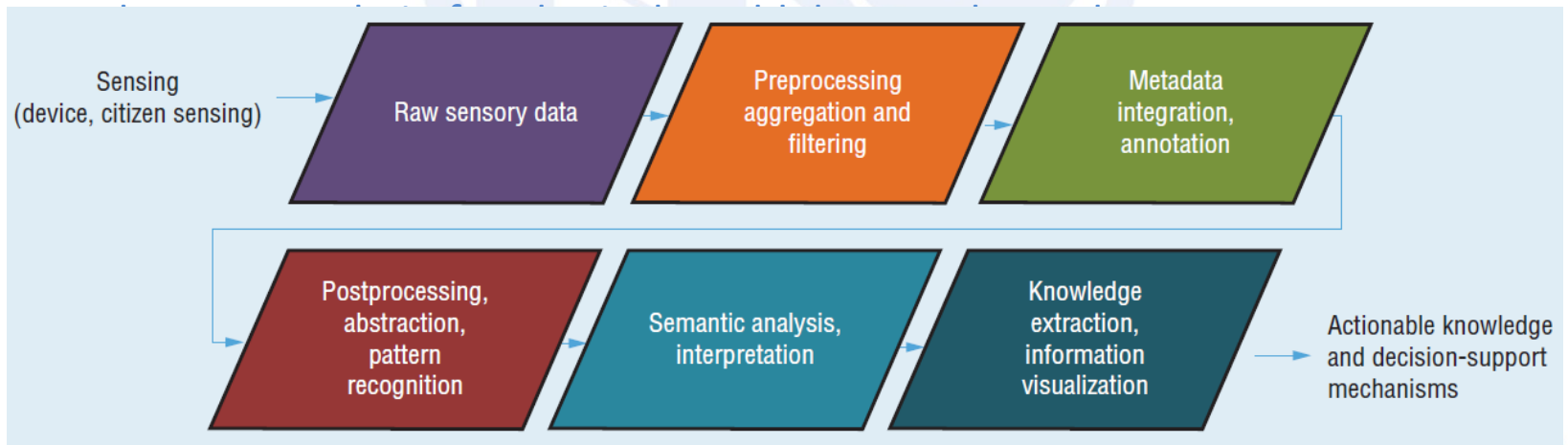Managing Content Shock in 2017

# Data misuse



Don't know about a data misuse
Know and don't care
80%

Directly affected (14%)

Indirectly affected (6%)

Spending reduction among those directly affected

Year 1: 33%

Year 2: 14%

Spending reduction among those indirectly affected

Year 1: 30%

Year 2: 13%

OVERALL SPENDING REDUCTION
YEAR 1: 5%–8%
YEAR 2: 3%–5%
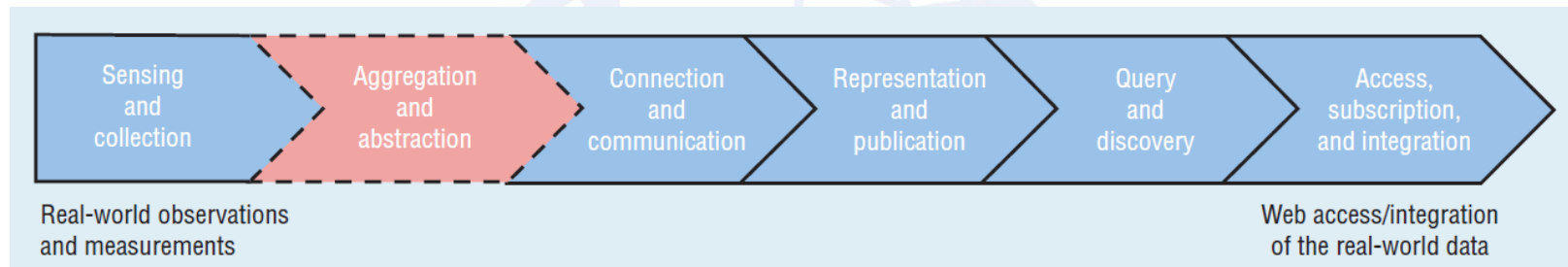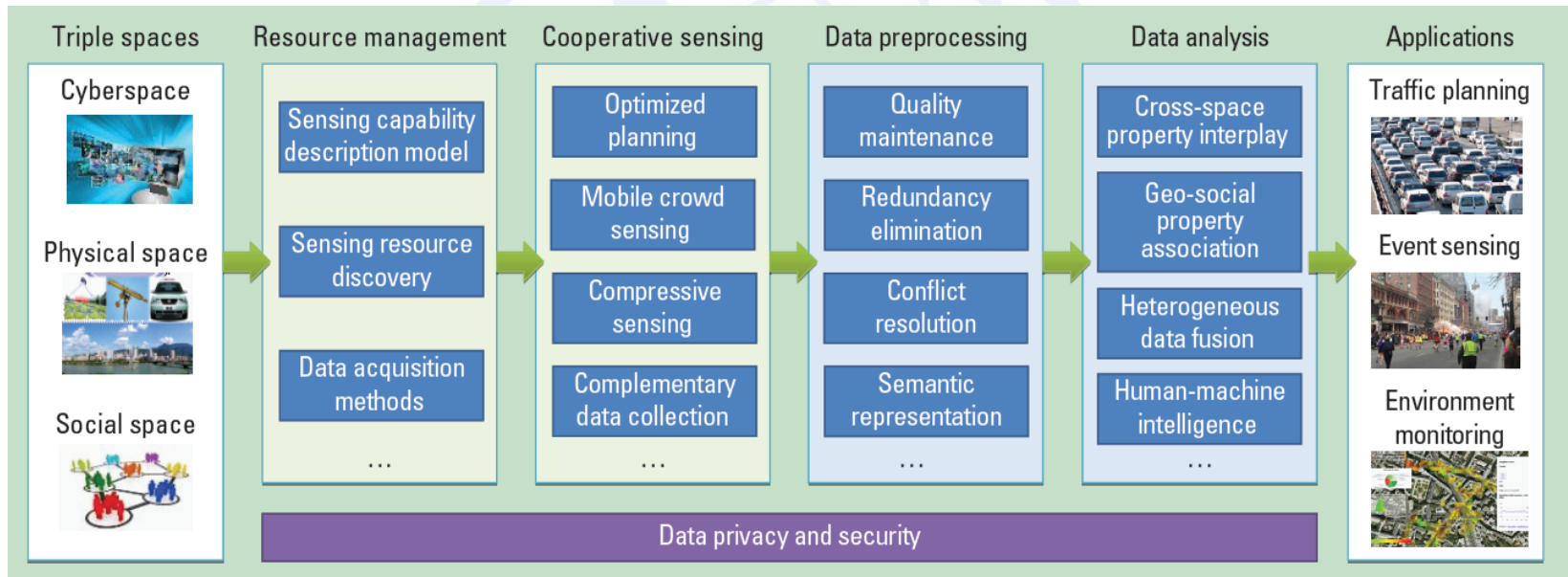
Source: BCG Big Data and Trust Consumer Survey of more than 8,000 consumers of the US, UK, Germany, France, Italy, and Spain, November and December 2015.

# 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
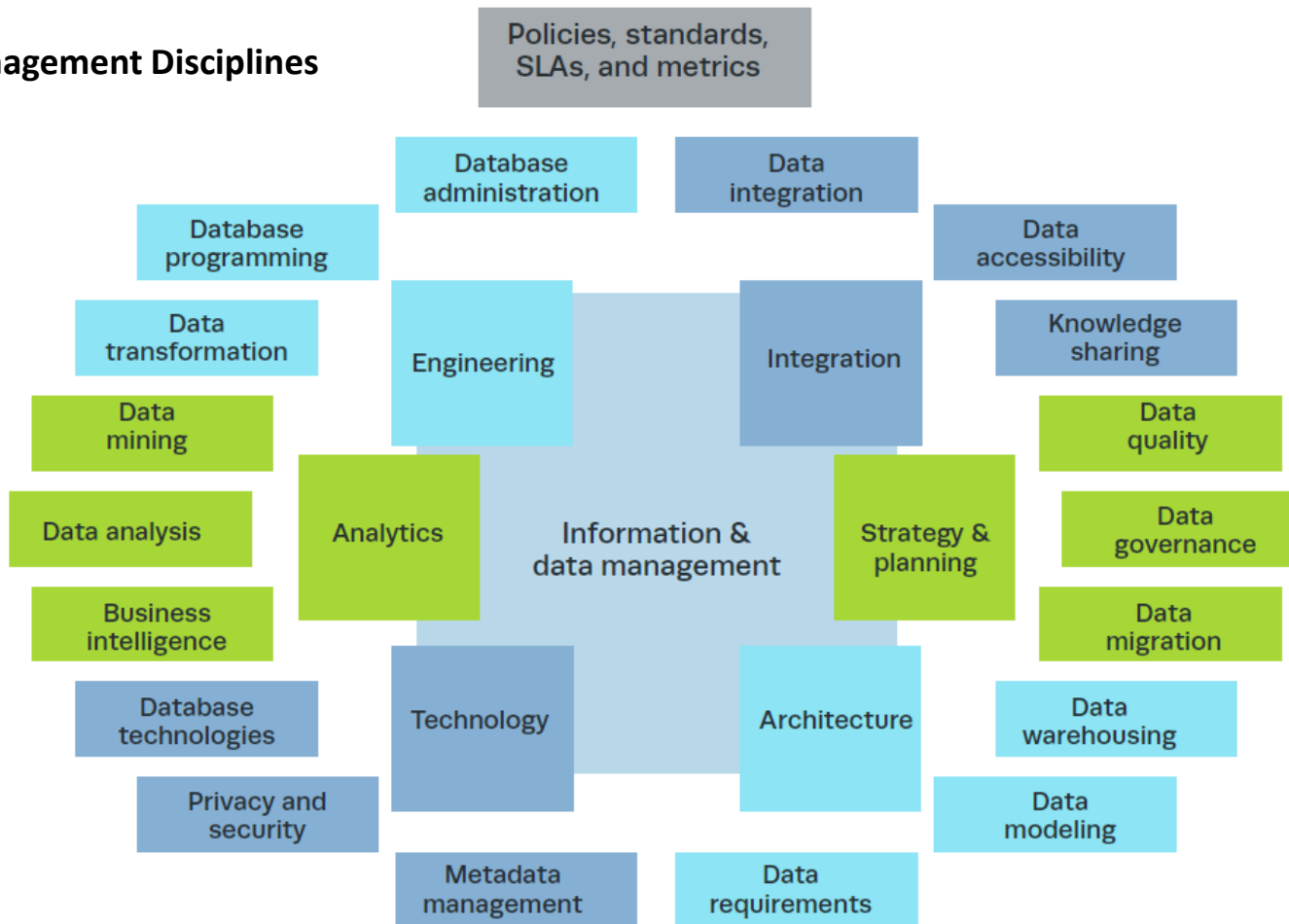
# Data-driven cyber-physical-social systems



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

# Technology Map

**Data Management Disciplines**



Policies, standards, SLAs, and metrics

Database administration — Data integration — Data accessibility — Knowledge sharing

Database programming — Data transformation — Engineering — Integration — Data quality — Data governance

Data mining — Analytics — Information & data management — Strategy & planning — Data migration

Data analysis — Business intelligence — Technology — Architecture — Data warehousing — Data modeling

Database technologies — Privacy and security — Metadata management — Data requirements

# FG-DPM overview

# FG-DPM: Management team

**Chairman**

- Mr Gyu Myoung Lee (KAIST)

**Vice-Chairmen**

- Mr Raphael Rollier (Swisscom)
- Ms Jiayu Bi (China Telecom)
- Mr Bilel Chabou (Tunisia)
- Mr Antonio Harris (CABASE, Argentina)
- Mr Robert Lewis-Lettington (UN-HABITAT)
- Mr Abdulhadi AbouAlmal (Etisalat)
- Mr Dave Faulkner (Climate Associates)
- Mr Martin Brynskov (Open and Agile Smart Cities Initiative)

**Secretariat**

- Mr Rob Clark (ITU)

# FG-DPM: Background

- **Parent study group**: ITU-T SG20 (IoT and SC&C)
- **Established**: ITU-T SG20 meeting (Dubai, 22 March 2017).
- **First meeting**: Geneva, 17-19 July 2017 (collocated with SG20 Rapporteur group meetings)
- **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

# Important Keywords

- IoT/data ecosystem, value chain, stakeholders
- Data driven smart cities and communities
- Data processing and management (DPM)
- Data interoperability and open data platforms
- Identification and data governance
- Security, privacy and trust in DPM

# FG-DPM Objectives

- To study, review and survey existing technologies, platforms, guidelines and standards for data processing and management including data format in support of the mandate of SG20;
- To recognize and highlight the various perspectives for the future of data driven eco-environments;
- To promote security and trust within data management frameworks;
- To identify and study data protection techniques;
- To facilitate cross-cutting data interoperability issues and point the way to the development of efficient and scalable approaches to managing systems data;
- To study meta-data;
- To study trust in data management frameworks including digital identification and certification;
- To investigate the role of emerging technologies to support data management and emerging trends including blockchain;
- To identify challenges in the standardization activities for data processing and management.
- To establish liaisons and relationships with other organizations which could contribute to the standardization activities for data processing and management.

# FG-DPM: Expected deliverables

The following deliverables are expected to be submitted to ITU-T Study Group 20 for further consideration and action:

- Draft technical reports/specifications

- Guide to DPM definitions, terminology and taxonomy

- Regulatory policy-maker toolkits for data privacy/security

- DPM standardization roadmap

# FG-DPM: Focus group structure

- **Working group 1**: [to be defined]
- **Working group 2**: [to be defined]
- **Working group 3**: [to be defined]
- **Working group 4**: [to be defined]
- **Working group 5**: [to be defined]

# FG-DPM: Working methods

**Rules, terms and conditions**:

- Terms of Reference for the focus group:
  www.itu.int/en/ITU-T/focusgroups/dpm/Documents/FGDPM_ToRs.docx

- Focus Groups: Establishment and working procedures:
  www.itu.int/rec/T-REC-A.7

**In practice**:

- Open to all stakeholders (ITU members & non-members)

- Within its remit, participants themselves decide on:

  - deliverables,

  - timescales, and

  - working practices (e.g., working groups, technical leadership)

# FG-DPM: How to follow the work

From the focus group homepage you may:

- Set up **ITU Guest account** to access services (ITU members may use their TIES account)

- Subscribe to the **mailing list**, or view the archive

- Access **meeting documents**

- Find details about **forthcoming meetings/activities**

# FG-DPM: Written contributions

Written contributions from participants and members drive the work of ITU-T.

- **Types of contribution**:
    - case studies,
    - reports of work completed/in progress, and
    - draft deliverables,
    - etc.
- **Contribution format**:
    - Basic template
    - Work item template (for technical reports/draft specifications)
- **Contribution submission**:
    - Email to: tsbfgdpm@itu.int

# FG-DPM: Meetings

Physical meetings:

- Approximately every three months

- In Geneva, or hosted by members

- Remote participation available

- First meeting: Geneva, 17-19 July 2017

- Second meeting: Venue/dates TBC

Virtual meetings:

- [led by working group chairs? TBC]

# Related SDOs

- ETSI ISG CIM
- ISO/IEC JTC1 – Big Data
- GSMA – IoT Big Data
  - http://www.gsma.com/iot/iot-big-data/
- OGC – Big Data DWG
  - http://www.opengeospatial.org/projects/groups/bigdatadwg
- W3C – Big Data
  - https://www.w3.org/blog/2016/10/w3c-and-big-data/
- IEEE Technical Sub-Committee on Big Data
- oneM2M – smart city

# Related entities for collaboration

- US NIST – big data and smart cities
  - https://www.nist.gov/el/cyber-physical-systems/big-data-pwg
  - https://pages.nist.gov/smartcitiesarchitecture/
- British Standards Institute (BSI) Hypercat Alliance
- Smart Dubai
- Open & Agile Smart Cities (OASC)
- Global telecom operators
  - Swisscom, China Telecom, etc.

# Research activities

- European Large Scale Pilot on IoT for Smart Cities
- Big Data Europe - https://www.big-data-europe.eu/
- Projects and forums
  - Smartie: http://www.smartie-project.eu/
  - Smart city monitor: https://smartcity.win2biz.com/
  - http://1000smart.coeer.org/
  - CITYKeys: http://citykeys-project.eu/
- Academia

# Invited speakers

- 20 min presentation + 10 min Q&A
  - Related activities/approaches/challenges in align with the FG-DPM ToR
  - Possible collaboration issues, any plan for contributions to the FG-DPM
- Submit presentation slides as an input contribution of FG-DPM by 10 July (Monday)

# Candidate deliverables (Tentative)

- Terms and definitions, Taxonomies
- Use cases for data driven applications
  - Collect use cases (based on a template) and identify requirements
- Gap analysis for each technical item
- DPM framework, Reference architecture, Functional architectures
- Data identification and data format including metadata
- Data analytics for DIKW process, Quality (QoI)
- Data life cycle management
- Data interoperability, including open data
- Data security, privacy, and trust, data protection, data governance
- Use of Blockchain approach in DPM
- DPM applications - case studies, business models using DPM
- Standards Roadmap