Remarks on security, privacy and trust for smart sustainable cities and Internet of Things

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Smart Cities and communities: Effective integration of physical, digital and human systems in the built environment to deliver a sustainable, prosperous and inclusive future for its citizens.

WHY DO WE CARE WHAT A SMART CITY IS?

- 'Smart City' is not simply a label, it is a policy objective

- Policy objectives need to be defined so that they can be monitored and accounted for

- What is part of the list of relevant objectives and what is not?

DATA IS THE DNA OF A SMART CITY

- Smart and innovative cities generate and depend on massive amounts of data

- Data are produced, analyzed and stored for many applications, including street lighting, air quality, energy monitoring, traffic regulation and smart buildings.

- Problems with the data create significant risks but higher quality data means greater efficiency and relevance in the service.

- The role of data in improving efficiency and increasing the collective and individual relevance of services means that it is a large and fast growing business.

- As data moves from being infrastructure focused to linking consumer data with infrastructure and service delivery, the nature of the risks and the political discourse changes.

DATA SECURITY

- Identification and mapping of threats to:
  - Confidentiality
  - Integrity
  - Availability
- Physical threats
- Reputational threats
- Continuous and full life cycle protection
- Compartmentalisation, particularly between critical and non-critical services
- Security by design
- Disaster recovery plans

- Minimum agreed standards and practices

- Depends, in part, on data privacy and data quality
- In turn, security is an important contributor to data privacy
- Operates at multiple levels
  - Transboundary
  - National
  - Local
  - Individual
- We tend to focus on local and individual levels
- Important distinctions between:
  - Data security
  - Data process security
  - Hardware security

Common base elements of data privacy (ISO 29100):

i)   consent and choice,

ii) purpose,

iii) collection limitation,

iv) data minimization,

v) use limitation,

vi) accuracy and quality,

vii) openness/transparency/notice/,

viii) individual participation and access,

ix) accountability,

x) security

DATA PRIVACY

- Prevailing approach in regulation and policy is user focused and consumer driven
- Need to maintain focus on public policy dimensions of privacy, not just transactional
- An active discourse on balanced approaches to data privacy standards is needed
- Highly fragmented national approaches but an increasing extra territorial influence for major jurisdictions, e.g. EU, USA, China.
- Depends on an effective approach to classifying data sensitivity

- Basic elements:
  - Authenticity
  - Reliability
  - Integrity
  - Usability
- Eliminate 'ROT' (redundant, obsolete, trivial) data where possible
- Poor data quality is contagious

- The degree to which a user or other stakeholder has confidence that a product or system will behave as intended (ISO/IEC)

- Fundamentally related to interdependency and interoperability

Governance: *how power is distributed and shared, how policies are formulated, priorities set and stakeholders made accountable*

- Strategic vs operational governance
- Heterogeneity – of data sources, of stakeholders and of purposes
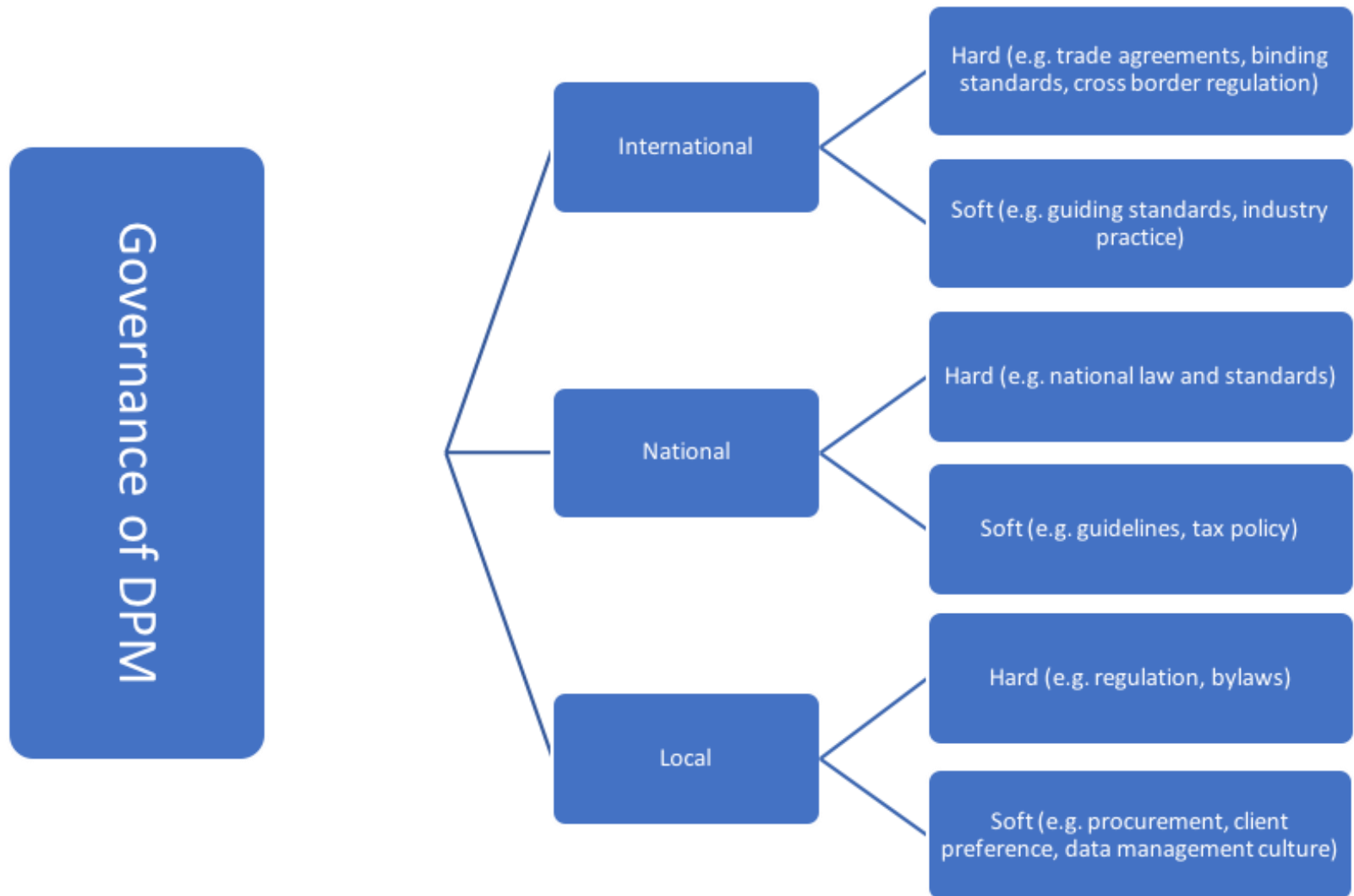- Fluidity – evolution of technology and business models is fast

Management: *how to deploy what is determined by governance*
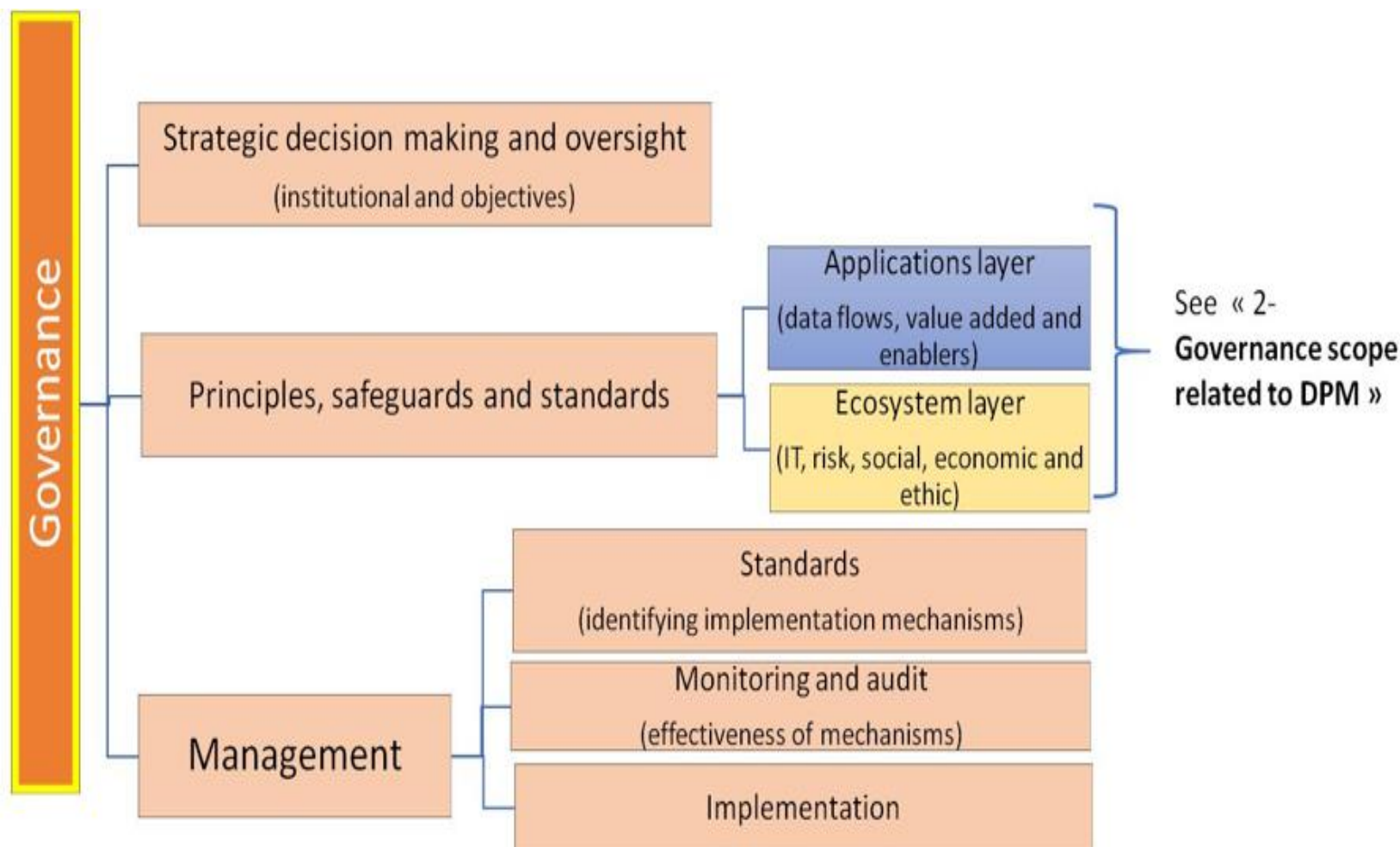
Source: Robert Lewis- Lettington & Nathalie Feingold

SMART CITY GOVERNANCE: JURISDICTIONAL FRAMEWORK

Exclusively private solutions to governance are sub-optimal for a variety of reasons, including

- o The essence of the technology and systems are that they benefit from having some core common standards that support interoperability

- o Technology providers, service providers and users are frequently in very different places and contexts and there is a need for a common forum or forums to interact

- o There is a complex interaction between public and private concerns

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