Data sharing for Smarter City
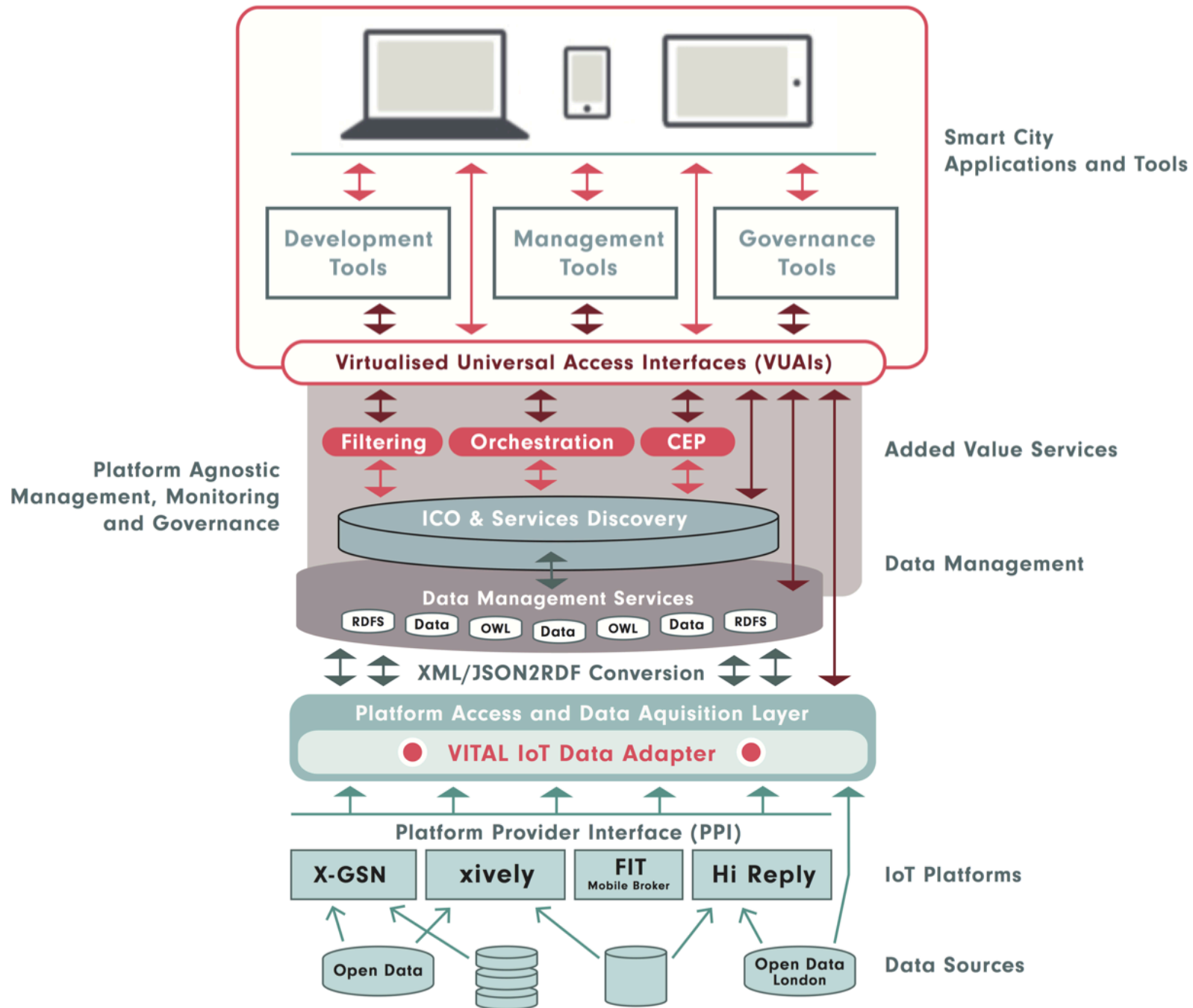
Smart City Applications and Tools

Development Tools

Management Tools

Governance Tools

Virtualised Universal Access Interfaces (VUAIs)

Filtering Orchestration CEP

Added Value Services

Platform Agnostic Management, Monitoring and Governance

ICO & Services Discovery

Data Management

Data Management Services

RDFS Data OWL Data OWL Data RDFS

XML/JSON2RDF Conversion

Platform Access and Data Aquisition Layer

VITAL IoT Data Adapter

Platform Provider Interface (PPI)

X-GSN xively FIT Mobile Broker Hi Reply

IoT Platforms

Open Data Open Data London

Data Sources

https://hal.inria.fr/hal-01116370/document

Table 1. The value chain of Big Data in smart cities.

Activities	1. Data collection	2. Storage	3. Analysis	4. Usage
Technologies (examples)	Social media, IoT, Sensors/cameras, 'Smart devices', Existing data sets (e.g., census)	Distributed databases 'Clouds'	Data mining Machine learning Algorithms Social network analysis Visualization	Business analytical methods Citizen profiling Predictions Open data
Variances	Voluntary, observed, inferred and coercive (legally binding)	Inhouse data storage Outsourced data storage	Data analysis Business analysis	Business analysis Direct use
Smart city examples	CCTV and other cameras, mobile device use, sensors, smart cards in mass transit, etc.	Collected and aggregated raw and unstructured data from many sources	Analytics of data from various sources	Transport management systems, Business predictions, targeting certain groups of citizens
Actors	Public sector agencies, IPs/phone companies, Social networks, Private retailers, Data vendors	Search engine providers, Social networks, Data brokers, 'clouds'	Search engine providers, Analytics companies, Government research agencies	Governments, contractors, Social Networks, Business interests, Service users, Citizens

Source: Adapted from IWGDPT (2014).

Activities	1. Data collection	2. Storage	3. Analysis	4. Usage
Potential issues and concerns	Quality of the data, Recycled data, Incomplete data sets, Reliability of data, Representativeness of data, Repurposed data, Data inequalities, Extent of personal data, Overt or covert collection of data, Over collection of data (mass surveillance), Legality of data	Security, Data breaches, Records management, Data destruction, Storage capacity, Data preservation, Protection of sensitive data, Data anonymization, Data protection requirements, Access and transparency, Standardization	Integrating disparate data sets, Reliability and fairness of algorithms, Acquiring data analysis skills, Interpreting data science, Satisfying commercial and public service values and logics, Integrating data analysis into public service contexts	Ownership and control of data (especially new data), IPR, Informing public policy, Data protection requirements, Informed consent, Implied or explicit anonymity, Mass surveillance, Reusing data, Fairness and transparency