Data-driven cities

Connected Smart Cities Conference 2019

Future Track: Next Generation City of Things

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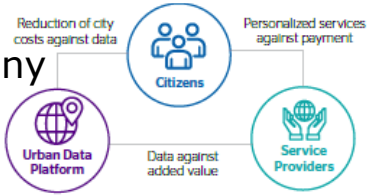
Next Generation City of Things. Some hints

- **Digital Transformation** "movement" also applies to Smart Cities (to remain competitive and give answer to new challenges)
- Not a choice: eg. autonomous vehicles will make any city become a city of (more) things
- The revolution relies in the (**smart) use of (real-time) data** as well as in data monetization (business models/sustainability)
- **Breaking silos** is an evident challenge in cities
- **Multi-sided approach**: the city enables an ecosystem
- I am not in a single city, should services be restricted to a city or move with me? Minimum **Interoperability** Principles and mechanisms needed between cities
- Thinking ahead: **biased** algorithms/AI based on new political ideas?



Thierry Stouffi
Senior Vice President
Public and Healthcare markets
Atos

"I am convinced that digital transformation is not only about making our cities better places to live and work, it is also an economic imperative. Leveraging data and digital technologies, cities can create new economic opportunities and shape a prosperous and innovative future for citizens and businesses."

Building a European Data Economy: regulation accompanying the journey

1. Free Flow of Data
2. Data access and transfer
3. Data portability, interoperability and standards
4. Liability in the context of IoT and autonomous systems
5. Experimentation and testing

MyCity: Strategy

Data – Information – Knowledge - Wisdom

IOT
Cities buy from multiple vendors each with an IOT platfom, federation is the key to allow cities to manage all connected objects from one single platform (AUDP)

Security
Visualisation of connected objects, discovery of unknown or not properly working objects and analyzing device health data for uninterrupted processes. Securing data and data access.

Data
Data is gathered in different cloud based stores, multi cloud management is needed for cities to reduce cost and ensure proper data intake for analytics supporting use cases.

Information
Providing context to gathered data is the key for Urban Data Management. Data Lake to be provided as a Service to transform data into meaningful information.

AI
On top of the context broker, the need to analyze data and run intelligence in the network (edge, fog or core) is a key element for Urban Data Management.

Characteristics of a Smart City

a unified definition

Smart				City	
Structure	**Functions**	**Focus**	**Semiotics**	**Stakeholders**	**Outcomes**
Architecture	Sense	Cultural	Data	Citizens	Sustainability
Infrastructure	Monitor	Economic	Information	Professionals	QoL
Systems	Process	Demographic	Knowledge	Communities	Equity
Services	Translate	Environmental		Institutions	Livability
Policies	Communicate	Political		Businesses	Resilience
Processes		Social		Governments	
Personnel		Technological			
		Infrastructural			

[to] [+] [+] [by/from/to] [for]

Total components: 7*5*8*3*6*5 = 25,200

M2Machine
- Light responding to movement, sound, air quality or combined
- Traffic signal responding to traffic sensor data fixed (radar, camera) or floating (car, bike, pedestrian)

M2Human
- Video analysis triggers safety staff to respond
- Traffic light to share TTG/TTR to indicate optimal speed
- Air quality triggers people through visible/audio cues

Edge-Fog-Core
- Analytic routines to be executed based on cost and response time needed
- From anomaly detection to re-identification

Growth Strategy: work with cities, collaborate with Academia establish position as Trusted Smart City Data Partner. **2019 goal: Establish City Service Contracts**

MyCity: Strategy

Focus Areas / Opportunities for Growth

Collaborate w Academia

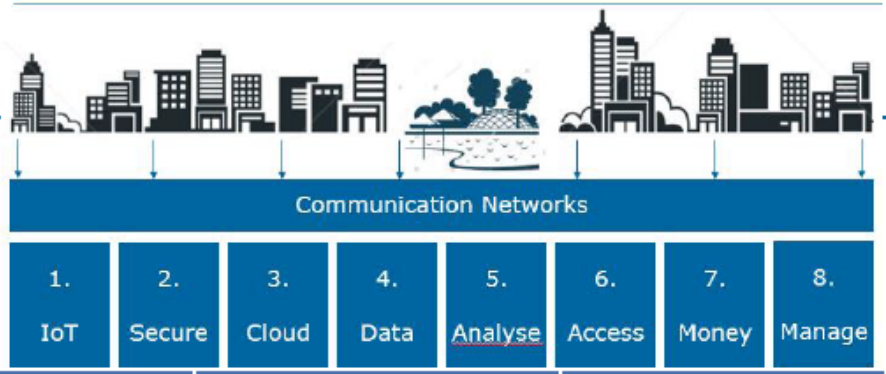
Cities are in the early adoption phase to create Data Driven Operations; Academia to provide proof and develop analytic models

Focus Today

Traffic / Transport
Safety
Environment (Air pollution, Noise)
Next: Circular Economy
Energy

Urban Data Management

8 Pillars for a successful implementation



Domain: Safety

Understand behavior from analyzing video, sound to indicate anomalies (edge). Re-identification of objects or subjects connecting output from multiple sensors (fog). Deploying machine learning on stored data (core)

Domain: Traffic

Connecting traffic signals (Dynniq), monitoring actual flow, combined with historic and expected traffic (TomTom) and add traffic modelling expertise (TNO) to reduce pollution, noise, economic decline and improve traffic safety. Connect vehicle to signal

Domain: Environment

Capture data on noise and air pollution. Cities are promoting healthy lifestyles, this means actively sharing environmental information with citizens. Allowing also cities to improve polices on permits etc.

Sell with Smart Lighting Infrastructure

2019 goal:

- Create global catalogue of use cases available.
- Define: "as a service" business model.
- Define 'bridge view' management layer (pillar 8)
- Agree on: common architecture and technical solution.

Real Madrid. Madrid as of today

NIVELES DE ACTUACIÓN

PREAVISO
Más de **180 µgr/m3**:
- dos horas consecutivas en dos estaciones de la misma zona
- tres horas consecutivas en tres estaciones de cualquier zona

AVISO
Más de **200 µgr/m3**:
- dos horas consecutivas en dos estaciones de la misma zona
- tres horas consecutivas en tres estaciones de cualquier zona

ALERTA
Más de **400 µgr/m3**:
- tres horas consecutivas en tres estaciones de la misma zona
- dos horas consecutivas en la zona 4 (Casa de Campo y El Pardo)

RESTRICCIONES

A partir de los **distintivos de la DGT.** Incluidos ciclomotores y motocicletas

0 azul · Eco · C verde · B amarillo · Sin distinción

	Limitación de velocidad	Aparcamiento [1] en la zona SER	Circulación [2] En M-30 y almendra central	Circulación [2] En toda la ciudad
1	70 km/h	0 ECO C B	0 ECO C B	0 ECO C B
2	70 km/h	0 ECO	0 ECO C B	0 ECO C B
3	70 km/h	0 ECO	0 ECO C B	0 ECO C B
4	70 km/h	0 ECO	0 ECO C	0 ECO C B
5	70 km/h	0	0 ECO	0 ECO

Thank you

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