IoT and Smart Cities – some roadblocks

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The Promise of the Internet of Things

“Everything becomes ‘smart’: cities, farming, healthcare, industry, living, energy...”

“Computers and robots become even smarter than people”

“The IoT will solve societal challenges”

• Growth opportunities for components, IT and communications industries
• New business opportunities based on applications and data
• Interesting R&D topics for academia
• Happy society

So, why isn’t it taking up rapidly in the Smart City domain?
The promises of IoT - The Gartner Hype Curve * July 2017, are things moving?

Some key inhibitors:
- Cities and city departments are working in silos
- Insufficient attention for non-functional aspects
- IoT Platforms are underdeveloped while they are essential to carry smart city use cases

*Source: Gartner July 2017
Cities and city departments working in silos

• Dedicated aldermen, departments, scopes and budgets
• IoT enabling integral use cases across. Who takes care?
• Insufficient education in opportunities and limitations
• Ecosystems building required: local and between cities (OASC)
• Political leadership in managing uncertainty
Cities and city departments working in silos
redistribution of value and budget across city departments

• Redistribution of value is a concern for city departments
• City governments usually budget on yearly cycles
• Longer term return on investment, but not necessarily with the investing department
• Political leadership required (over generations of politicians, elections)
  to create new value
• Teaming up of cities in EU (OASC)
  • Establishing critical mass
  • Learning
  • Communication to stakeholders, educating them
Insufficient attention for non-functional aspects

- Reliability, safety, privacy, security, flexibility, portability…
- Highly underestimated and undervalued
- Functionalities easy to copy, non-functionalities as differentiator?
- Time to value. Not (yet) a purchase decision, but just wait…
- Trust is strongly linked to non-functional aspects, but not entirely
- Upfront involvement of end-users
IoT platforms are underdeveloped

- A smart city needs fixed infrastructure platforms
- Too many IoT applications cannot be rapidly/economically tested
- Too many IoT applications do not scale, by lack of a platform
- Platforms beyond technology:
  - Multi-stakeholder involvement
  - Common policies and procedures
  - Use cases including non-functional aspects
  - Learning and sharing
- Professionally managed 24/7/365
IoT Platforms are underdeveloped
Platforms are essential for Smart Cities – mutual interests

- SME’s and most cities cannot economically create and maintain platforms, cities lack competency
- Only large companies/organisations leveraging across many (or very large) cities can
- Platforms need economical justification by applications
- Large companies often lack the agility and all the domain knowledge to develop them
- but SME’s and digital start-ups often can
- … if they only had a platform!
IoT Platforms are underdeveloped
What is keeping the platform development?

• Cities afraid of vendor lock-in
• Open software suggested as alternative… but this is unrelated!
• No single, central platform will serve all. Ecosystems of distributed will
• A bag of software components does not make a platform
• No/little competencies with city governments
• No one wants to own it, everyone wants to enjoy it: teaming up!
• Can we establish a ‘Linux model’ for FiWare? Biz opportunities!
• Can we establish a full open API multi vendor platform?
Some positive examples
Netherlands (and likely more from other countries)

• Eindhoven and Amsterdam digital city principles have become recommended reference across all cities (VNG)
• From software to platform initiative Eindhoven
  • Contains many policy instruments
  • Based on 5 years experience, platformised FiWare
  • Available for free www.smartcitystarterkit.com
  • Professional maintenance by ATOS
  • Fits EU reference architectures