

ajit.jaokar@futuretext.com
[@AjitJaokar](#)

Smart Cities in 2015 ..

FUTURETEXT



World Economic Forum - future of the Internet UK based - Hands on Publisher (futuretext) - Author (Mobile Web 2.0, Social Media Marketing, Open Mobile) - Chair: Oxford University's Next Gen Mobile Applications panel - PhD student UCL/UK - Consulting - Operators, Governments/EU, Startups -

Recent and forthcoming talks include Mobile world congress (2007,2008,2009, 2011), CEBIT, Stanford University - MIT Sloan - Web 2.0 expo - Ajaxworld Supernova - CNN money - BBC - Oxford University European parliament
Smart cities: Advisory board - World Smart Capital(Amsterdam), Connected Liverpool



Global top 20 wireless blogger
According to fierce wireless
www.opengardensblog.futuretext.com
Phd research on resilience of sensor networks in **White Space spectrum**. Advisory board World Smart Capital

ROADMAP

- Smart cities – A personal perspective
- Telcos and Smart Cities
- The 50 billion devices by 2020





Why Smart cities matter now?

The highways vs.. potholes theory i.e. previously you needed the infrastructure to be complete before you added any intelligence ..

Now you can do a lot (reporting potholes to be fixed through mobile devices).

Hence mobile is at the centre of the Smart cities revolution

Eberhard van der Laan – Mayor of Amsterdam –

Show me a city which does NOT call itself smart?





Internet + Internet of things = Wisdom of the earth - Wen Jiabo –
Why not – M2M + M2M of things = Wisdom of the earth?

These 12 Hellholes Are Examples Of What The Rest Of America Will Look Like Soon.

#1 Gary, Indiana #2 Chicago, Illinois #3 Detroit, Michigan #4 Stockton, California #5 Flint, Michigan #6 West Philly #7 Cleveland, Ohio #8 Camden, New Jersey #9 St. Louis #10 New Orleans, Louisiana #11 Oakland, California #12 Baltimore, Maryland



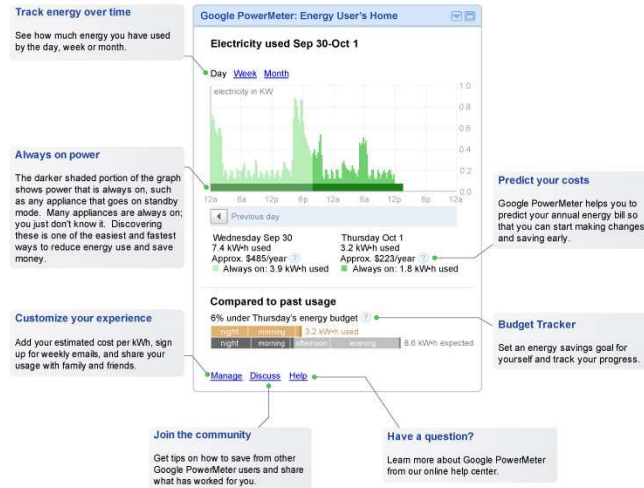


“If all you have is a hammer, everything looks like a nail.” (Maslow)

For example:

For Microsoft, convergence is a software problem: to be solved using an upgrade of the windows operating system (Microsoft’s strength). Intel sees convergence as a ‘microprocessor problem’, - Intel inside everything! Cisco sees convergence as a home networking problem, to be solved with .. guess what .. networking! Translated to video conferences Yahoo and Google see convergence as an online services problem. To them, the solution lies through the web browser – a common element in all devices. Sony sees convergence as a consumer hardware problem, to be solved with consumer devices, new standards built around its own strengths like the playstation Handset vendors: Nokia, Google, Samsung etc all look at the device as the on ramp to convergence ..

Data.gov – Google powermeter – MSFT hohm **FUTURETEXT**

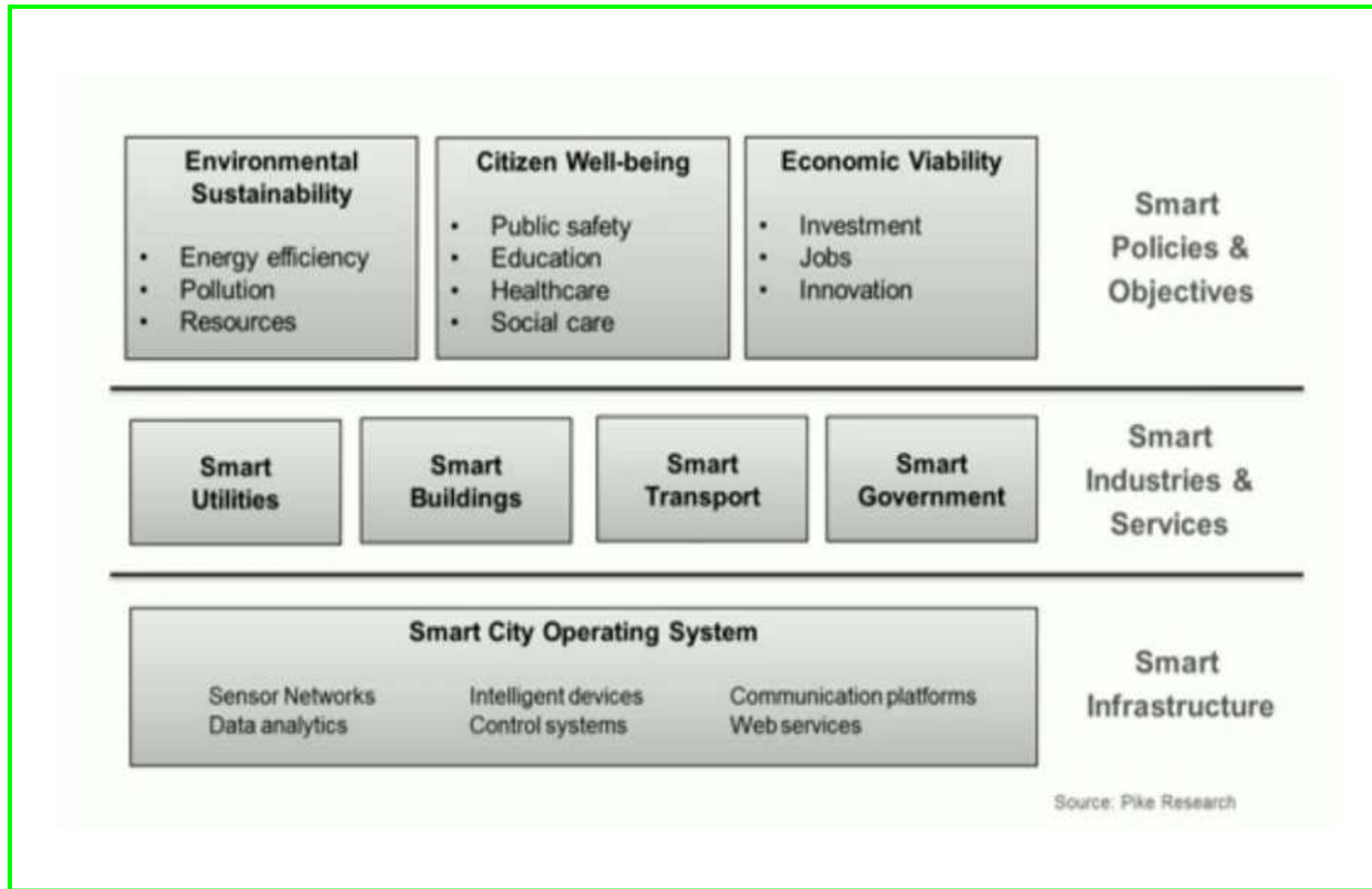


Data.gov 35m to 8m Vivek Kundra, Google powermeter, MSFT hohm

Telcos and Smart Cities







Demographics: In 2008, 50% of the world's population lived in cities. By 2050, that number is expected to be 70% of all humanity. Thus Smart cities/future cities have become a lever of change for countries, economies and citizens

Role for Telco : Access, Enabler, full service delivery

Typically expressed as a Telco-Utility partnership : Water, Smart metering etc

Different regional focus: EU funding, federal funding, Asia Pac (new buildings), LATAM(transport)

Innovation: Bridging the silos, Social factors(crowd enabling), Open data, sensors, Mobile, Infrastructure, Recession

Pros: Infrastructure exists, mobile devices are ubiquitous, Sensors increasingly proliferate in devices and in the community

Cons: Trust/transparency – predictability, SIM, Business model, No trust with utilities, Regulation hampers

- **Traditional City services:** Public sector, Tourism & hospitality, Mobility and transport, Utilities, Logistics, Education, Healthcare, Financial services, Retail, Creative industries
- **Smart city services:** In vehicle services, Smart id, Public safety/ Public infrastructure management, Electric vehicle charging, Traffic info, Renewables, Smart grid, Public security, Smart Living (health, education), Smart Governance
- **But M2M is a subset of IOT(Internet of things).** M2M implies a 'machine + radio' at least at one end with a cellular modem. IOT has a wider goal of making intelligent devices using radio technologies (but not necessarily cellular). For example healthcare has the following wireless technologies - Bluetooth, MICS, 802.11, IEEE 802.15.4, 802.11e, Zigbee, Whitehart, Wibree, ISA100.11a, 6LoWPAN , 6lowpan



**The 50 billion devices connected devices by 2020
(Data in this section courtesy blog from David wood**

<http://dw2blog.com/2010/01/25/towards-50-billion-connected-mobile-devices/>

Towards 50 billion connected mobile devices? What's the breakdown of the numbers?

- Numbers come mostly from vendors and from analysts
- **Ericsson:** 50 billion connected devices by 2020
- **Amdocs: one trillion devices will be connected to the network**, an industry phenomenon the company calls “Tera-play.”
- **IBM** regularly reference a prediction by IDC: - By 2011, IDC estimates, there will be **one trillion Internet-connected devices**, up from 500 million in 2006.
- **Juniper research:** The number of Mobile Connected M2M and Embedded Devices will rise to almost **412 million globally by 2014**

To put in context:

- The first commercial citywide cellular network was launched in Japan by NTT in 1979

The milestone of **1 billion** mobile phone connections was reached in 2002

The **2 billion** mobile phone connections milestone was reached in 2005

The **3 billion** mobile phone connections milestone was reached in 2007

The **4 billion** mobile phone connections milestone was reached in February 2009.

- The usual suspects: Cars; Energy meters (such as electricity meters); Units used in HVAC (Heat, Ventilating, and Air Conditioning); Mobile point-of-sales terminals; Vending machines; Security alarms; Data storage devices (including electronic book readers); Devices used in navigation; Devices used in healthcare.

However, there are different types of connectivity .. (source David Wood)

Level 1 is the rich and varied connectivity of a regular mobile phone, driven by a human user.

Level 2 machine to machine (ex smart metering)

Level 3: *Devices whose individual wireless connectivity is more complicated than an individual RFID tag (Level 4), but is simpler (and less expensive) than cellular modems (Level 2).*

Level 4 A very large number of devices that contain RFID type connectivity (i.e. no cellular modem) and will *not* involve any cellular network.

Level 5 connectivity and meta data i.e. true interoperable Internet of things.



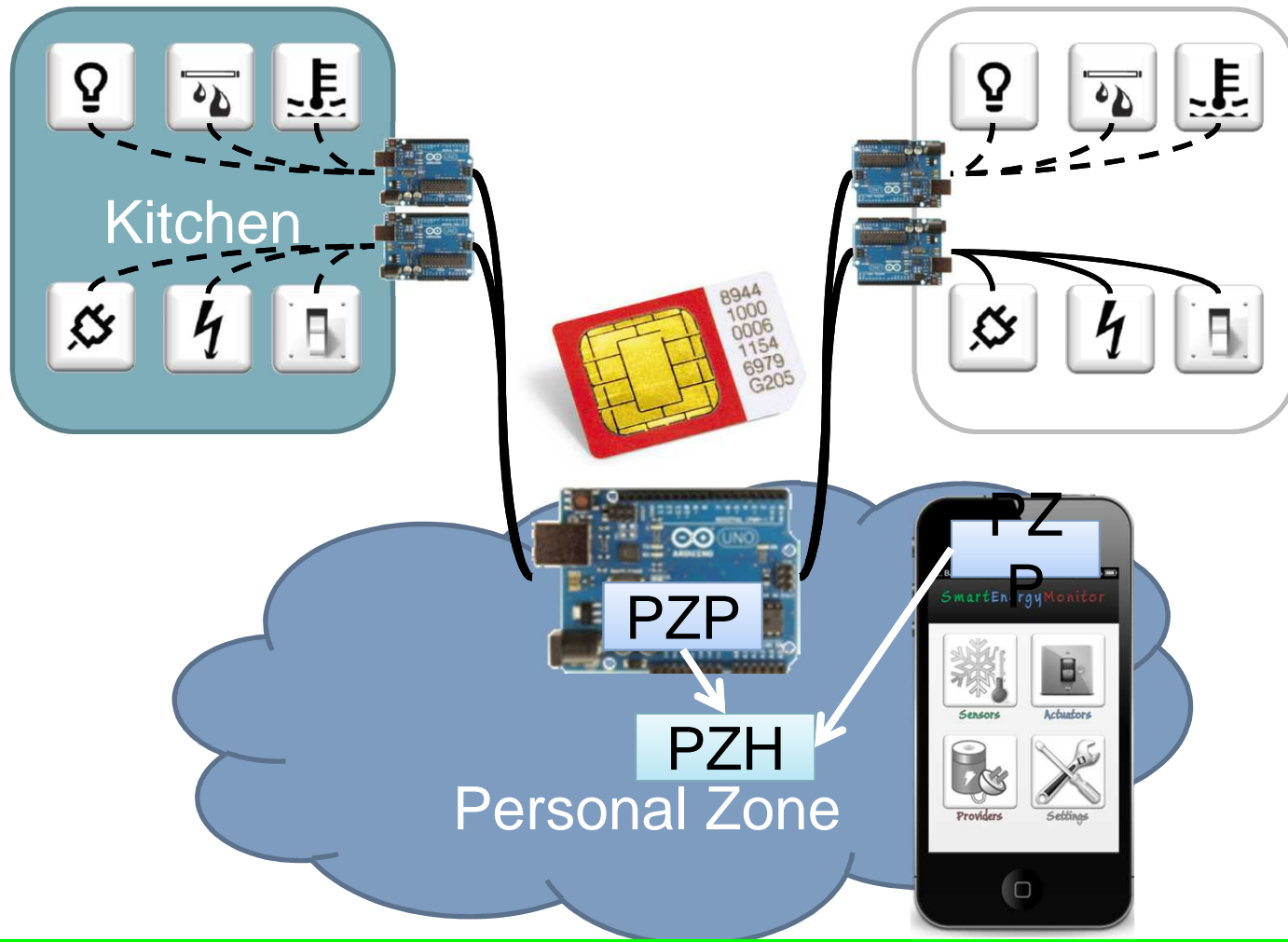
Is the 50 Billion devices a mirage for Telecoms? With current strategy of partnering with Utility trials or larger trials – sadly yes ..

So where does the idea of 50 billion connected devices fit in?

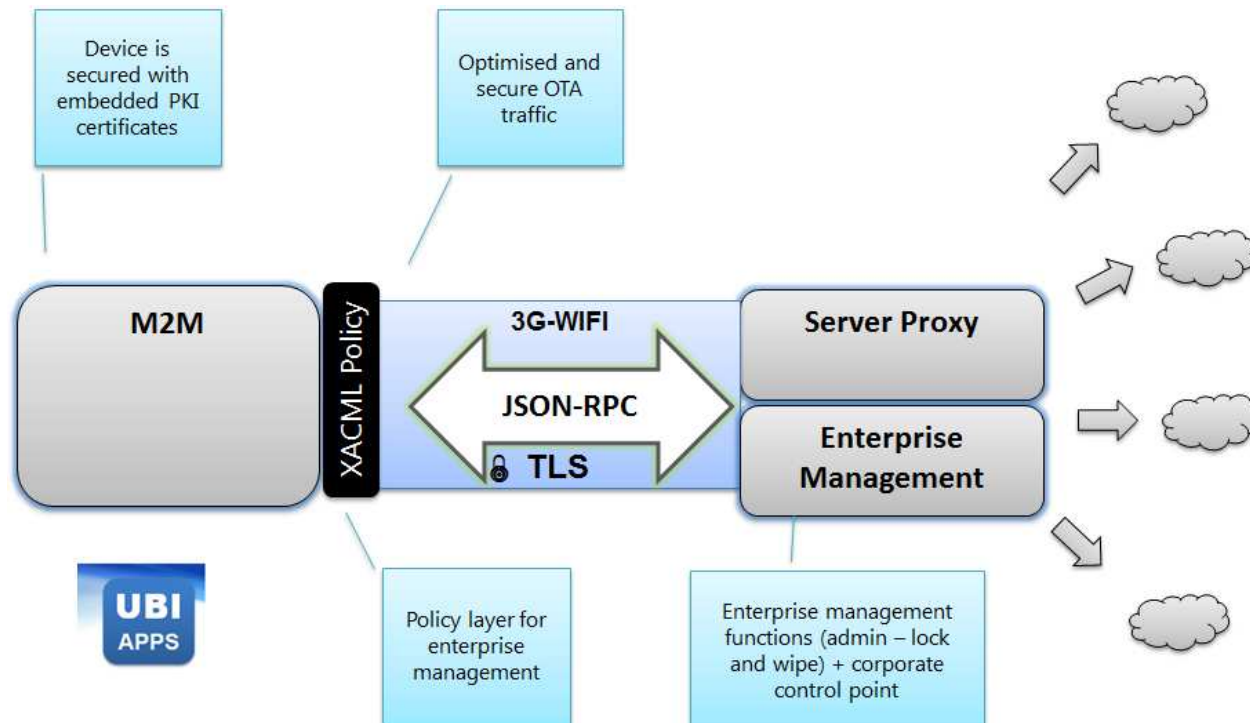
A likely scenario would be a 'gateway/aggregator/concentrator' scenario where not every device would have full radio connectivity but rather devices would aggregate data to a central point.

- What is the 'SIM' – primarily Identity, Security, Authentication
- Where should the secure element live? (SIM, secure memory, chipset)
- Highly successful but not changed too much.
- Functions of the SIM could be done at other layers of the Stack
- But the SIM itself could perform many more functions
- The Soft-SIM discussion driven by Apple has now gone quiet .. ('In standardization')





Is there a role for the SIM at the gateway?



The evolution of the SIM could be along three directions in an M2M world

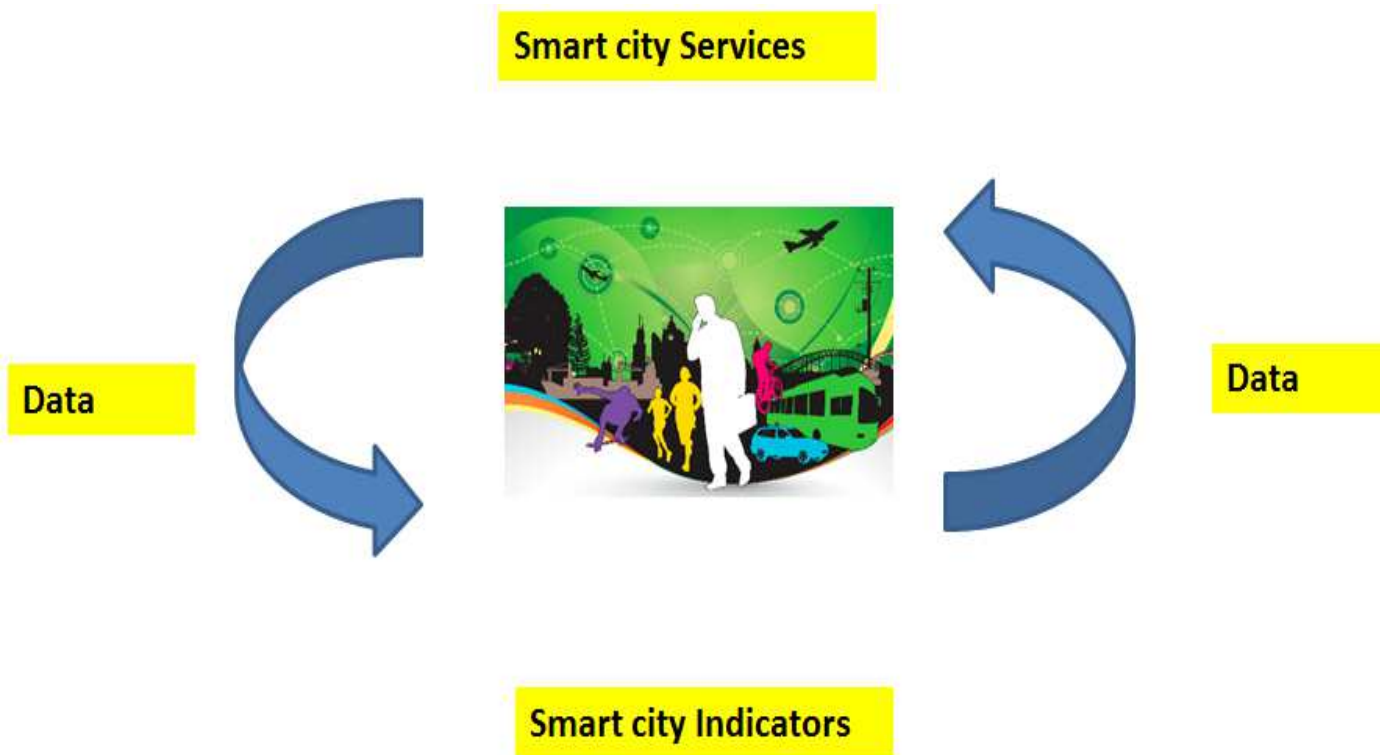
- Identity server
- A policy control point
- Trusted storage.

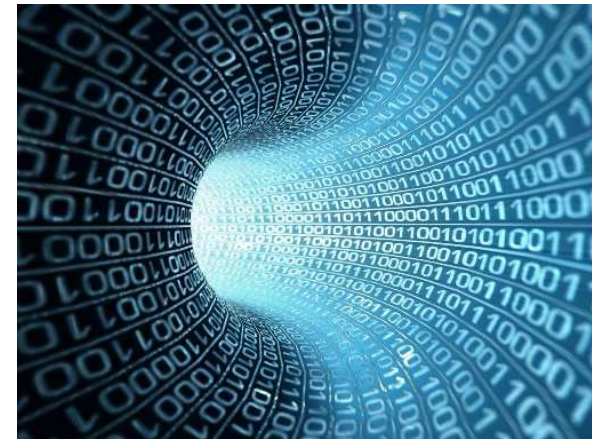
Each of these elements is being developed as part of chrome, tizen, firefox architectures etc.

Elements in most cases of smart city **Source: Xi She (adapted from)**

- 1) **sensible** - sensor sensing the environment
- 2) **connectable** - a networking devices bring the sensing information to the web
- 3) **accessible** - the broader information of our environment is published on the web, and accessible to the user in web, (web)
- 4) **ubiquitous** - the user can get access to the information thought web, but more importantly in mobile any time, any place (mobile)
- 5) **sociable** - the user acquired with the information, and publish it though his social network (social network)
- 6) **sharable** - shared are not limited to data, but also to the physical object, when some object are in free status, the people can get the notification and use them. (web, mobile)
- 7) **Visible/augmented** - to retrofit the physical environment, make the hidden information seen not only through mobile device by individual but seen in naked eyes in more border range of the physical places like street signs
- 8) **Actuated (not just sensed but triggered)**
- 9) **Continuous (session)**

the city is now seen as a vibrant ecosystem. We see Smart city services as a feedback loop based on Smart city indicators, Big Data and the idea of the city as a platform





Big Data for Smart Cities .. Connected Liverpool

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