Internet of Things – public input to public policy

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High Level Expert Workshop at BCS, 13 June 2017

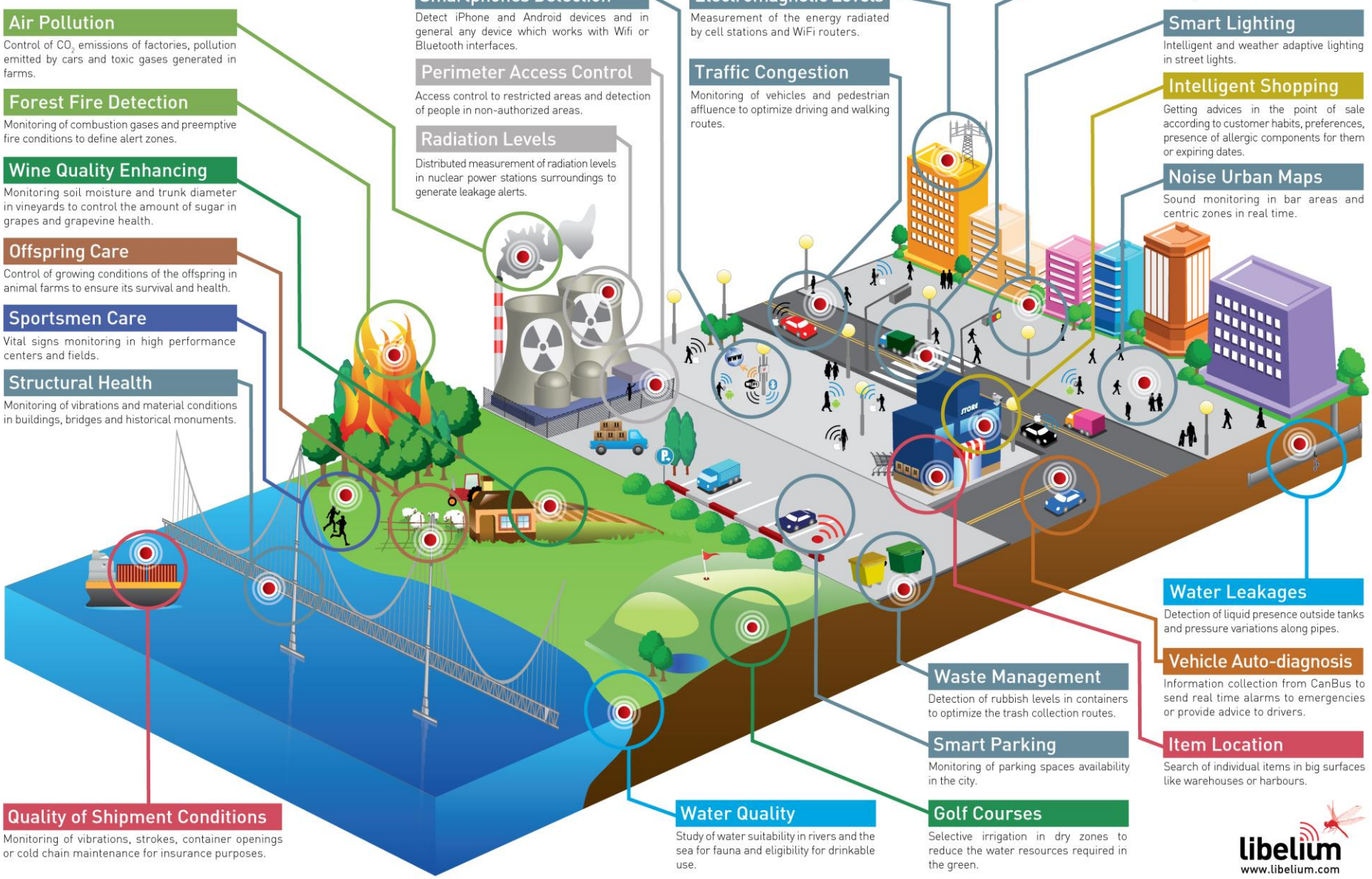
Outline

- Why this workshop
- (Benefits and) problems IoT poses for consumers and citizens
- Need for their input to public policy
- Good practice examples from UK and elsewhere

Workshop background

- Me: freelance telecom policy consultant, ex-BT; also LSE VSF, active in consumer and policy circles (CFC, CSISAC, FISP).
  - B2C IoT hit me via OECD, from 2014; identified key issues needing more attention, spoke at 2016 OECD Ministerial on Digital Economy.
- Started virtual group of interested consumer representatives and policy-oriented academics, exchanging news and views. We feel that:
  - Countries and companies, anxious to get in on the action, stress the benefits and often overlook the problems.
  - To approach key issues, we need strong consumer/citizen representation in many areas of IoT development – policies, standards, guidelines, design, and instructions. Despite acceptance that the market is not enough, wider participation is often un- or under-funded.
- This workshop aims to bring us together with industry and government, to identify practical steps to enhance citizen and consumer input to IoT policy and its implementation.
- My remarks owe much to colleagues but are a personal view.

Libelium Smart World



Air Pollution
Control of CO_2 emissions of factories, pollution emitted by cars and toxic gases generated in farms.

Forest Fire Detection
Monitoring of combustion gases and preemptive fire conditions to define alert zones.

Wine Quality Enhancing
Monitoring soil moisture and trunk diameter in vineyards to control the amount of sugar in grapes and grapevine health.

Offspring Care
Control of growing conditions of the offspring in animal farms to ensure its survival and health.

Sportsmen Care
Vital signs monitoring in high performance centers and fields.

Structural Health
Monitoring of vibrations and material conditions in buildings, bridges and historical monuments.

Quality of Shipment Conditions
Monitoring of vibrations, strokes, container openings or cold chain maintenance for insurance purposes.

Smartphones Detection
Detect iPhone and Android devices and in general any device which works with Wifi or Bluetooth interfaces.

Perimeter Access Control
Access control to restricted areas and detection of people in non-authorized areas.

Radiation Levels
Distributed measurement of radiation levels in nuclear power stations surroundings to generate leakage alerts.

Electromagnetic Levels
Measurement of the energy radiated by cell stations and WiFi routers.

Traffic Congestion
Monitoring of vehicles and pedestrian affluence to optimize driving and walking routes.

Water Quality
Study of water suitability in rivers and the sea for fauna and eligibility for drinkable use.

Golf Courses
Selective irrigation in dry zones to reduce the water resources required in the green.

Waste Management
Detection of rubbish levels in containers to optimize the trash collection routes.

Smart Parking
Monitoring of parking spaces availability in the city.

Smart Roads
Warning messages and diversions according to climate conditions and unexpected events like accidents or traffic jams.

Smart Lighting
Intelligent and weather adaptive lighting in street lights.

Intelligent Shopping
Getting advices in the point of sale according to customer habits, preferences, presence of allergic components for them or expiring dates.

Noise Urban Maps
Sound monitoring in bar areas and centric zones in real time.

Water Leakages
Detection of liquid presence outside tanks and pressure variations along pipes.

Vehicle Auto-diagnosis
Information collection from CanBus to send real time alarms to emergencies or provide advice to drivers.

Item Location
Search of individual items in big surfaces like warehouses or harbours.

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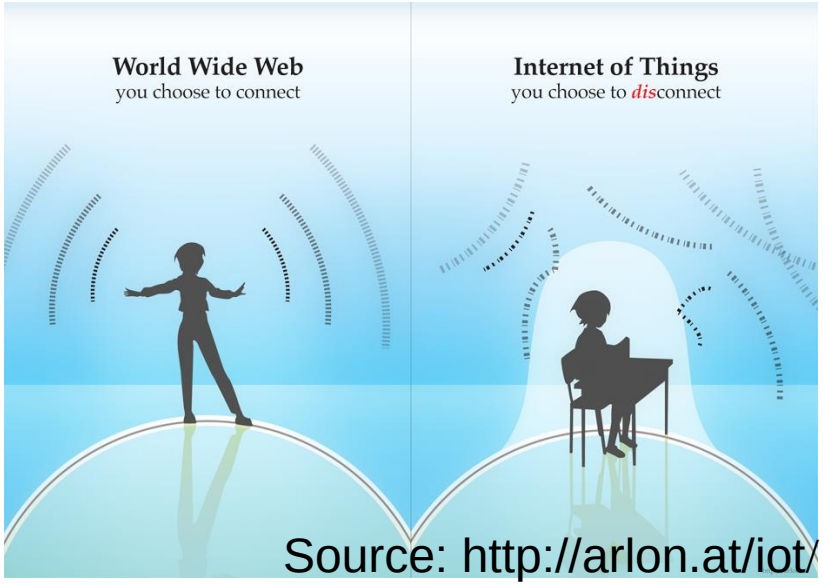
www.libelium.com

Which aspects of IoT concern us?

- Top of mind today are:
  - B2C e.g. wearables, smart homes, retail, automobile
  - G2C e.g. healthcare, smart cities, energy efficiency
- Environmental monitoring, agriculture, industrial internet etc are also of interest, but less for today.
- A fundamental issue is unawareness. B2C IoT operations often include:
  - receiving and/or sending data related to individual consumers
  - without the active involvement of the individual in question,
  - together with the communications, processing and applications of this data.

Unawareness is of the essence of IoT…



Where is IoT going? Somewhere that you won't see
"Successful IoT projects... become essentially invisible," according to IDC associate vice-president for IoT Asia Pacific, Hugh Ujhazy. "If they're really working well, you never really see them.“

Source: CommsWire 3 March 2017

Some potential consumer problems

From consumer research, people don't buy because of:

- Lack of awareness of B2C IoT products or their benefits.
- Insufficient perceived value.
- User-unfriendliness – hard to set up or run.
- Lack of confidence in security or correct working.
- Risks to privacy.

From experts, barriers to adoption and problems include:

- Risks to privacy, often via poor security (need Privacy By Design – ideas exist but implementation at early stage).
- Inadequate pre-purchase information and post-purchase rights – these are experience products.
- Accessibility for disabled people and potential exclusion of non-users.
- Interoperability and updatability of devices.
- Complex value chain – making it hard to pin down responsibility for problems and for consumers to get redress (cf product liability issues).
- Serious malfunction (danger to individuals or groups).
- Product ownership versus rental – alternatives to subscription model?

See Consumers International report ***Connection and Protection in the Digital Age***

IoT (in)security has been in the news

Hard-coded password exposes up to 46,000 video surveillance DVRs to hacking

MORE LIKE THIS

Antivirus software

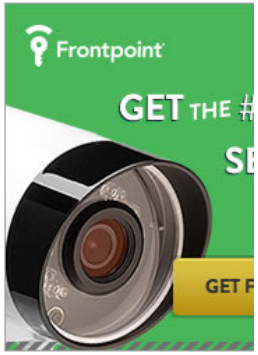
Samsung Fails To Secure Thousands Of SmartThings Homes From Thieves

Thomas Fox-Brewster, FORBES STAFF

I cover crime, privacy and security in digital and physical forms.

FOLLOW ON FORBES (170)

FULL BIO



MIT Technology Review

Internet of Things (IoT) startup
nillion in 2014, it wanted to
hub into its growing "smart home"
inherited all the good and bad in

NSA Hacking Chief: Internet of Things Security Keeps Me Up at Night

The leader of the National Security Agency's hackers says that p
industrial control systems online has made America less secure.

By Tom Simonite on January 27, 2016

The trend to connect devices such as air conditioners and door locks to the Internet is
for the National Security Agency's hackers – but also keeping their boss awake at nigh

RISK ASSESSMENT / SECURITY & HACKTIVISM

"Internet of Things" security is hilariously broken and getting worse

Shodan search engine is only the latest reminder of why we need to fix IoT security.

by J.M. Porup (UK) - Jan 23, 2016 3:30pm GMT

Share Tweet Email 135

Shodan, a search engine for the Internet of Things (IoT), recently launched a new section that lets users easily browse vulnerable webcams.

Some key issues affecting policy

1. The awareness dilemma – people want routine operations to be automated, yet still in accordance with their wishes.
2. How much choice? – people need to retain autonomy but not be overwhelmed by options. Defaults will play a vital role.
3. Who has control? – consumers (and which consumers?), their machines, or the firms behind the machines?
4. How do people know that vendor claims are true? – "Lifting the bonnet" will mean little to most of us.
5. Social and private interests may well diverge – my freedom to drive unsurveilled puts you at risk of a traffic accident.

How can we bring individuals' preferences to bear on such issues?

How can we resolve tensions like #5 in the overall public interest?

What has been done: some UK examples

- Consumer Focus (now Citizens Advice) worked closely with government on the smart metering framework – building in respect for individual choice and privacy.
- BSI's Consumer and Public Interest Network, input to standards for consumer-focused Privacy by Design (Pete Eisenegger).
- NESTA report ***Rethinking Smart cities from the Ground Up***: what matters most is smart citizens.
- Parliamentary Science and Technology Committee report Big Data Dilemma – in April 2016, government accepted recommendation for a *Council for Data Science Ethics.*
- Public involvement in some local government IoT projects: examples from RAND Europe speakers and report.
- Many good examples of private user-centric design, including some PETRAShub projects.

What has been done: some non-UK examples

- USA:
  - 2013: FTC IoT workshop (privacy focused)
  - 2016/7: DoC/NTIA request for public comment on government role in IoT (and subsequent report); NTIA-led stakeholder working groups on IoT security
  - 2017: Californian Bill to strengthen IoT security
  - Today! Congressional hearing on IoT opportunities and challenges
- Australia:
  - 2016 ACCAN report *"Home, Tweet Home": Implications of the Connected Home, Human and Habitat on Australian Consumers"*
  - Continuing ACCAN engagement with IoT public policy
- France: 10.01.2017 Assembly report with 20 policy recommendations, includes some especially relevant ones:
  - Revise Consumer Code to cover IoT products
  - Smart cities to provide open data and involve citizens
  - Agile regulation through ad hoc regulatory teams of experts
  - Combat potential new social divides by ensuring affordability and usability of connected objects, and providing necessary training to all for maintaining pubic service access, especially where e-health is concerned.
- South Korea: well-established industry IoT Association and Master Plan, problems addressed "by social consensus".

And in Europe…

"The Committee backs the Commission's plan for a proactive approach to ensuring that Europe plays leading role in shaping IoT so that the Internet of Things becomes an Internet of Things for People…. *Organised civil society has a key role to play in that regard, and its representatives must be consulted on all aspects affecting society and the private lives of individuals, including the safeguarding of public and private freedoms."*

Source: EESC 2009 TEN/407 Internet of Things - An action plan for Europe

Summing up

- IoT is a global phenomenon, and global solutions are needed (e.g. for interoperability and security) – but social norms vary, and countries are competing for leadership.
- User concern about privacy and security has registered, and efforts are being made to improve both – but this is very challenging.
- Little attention seems to be paid to consumer options and default settings, and less to the private/social balance for these.
- The government- and industry-funded £23m PETRAS project (Privacy, Ethics, Trust, Reliability, Acceptability, Security for IoT) could break new ground.
- The UK could lead the world in consumer/citizen involvement in IoT development. This would not just show principled leadership but also be of commercial advantage.
- Royal Society: "The UK's experience with other emerging technologies is that we can create arrangements that enable a robust public consensus on the safe and valuable use of even the most potentially contentious technologies".