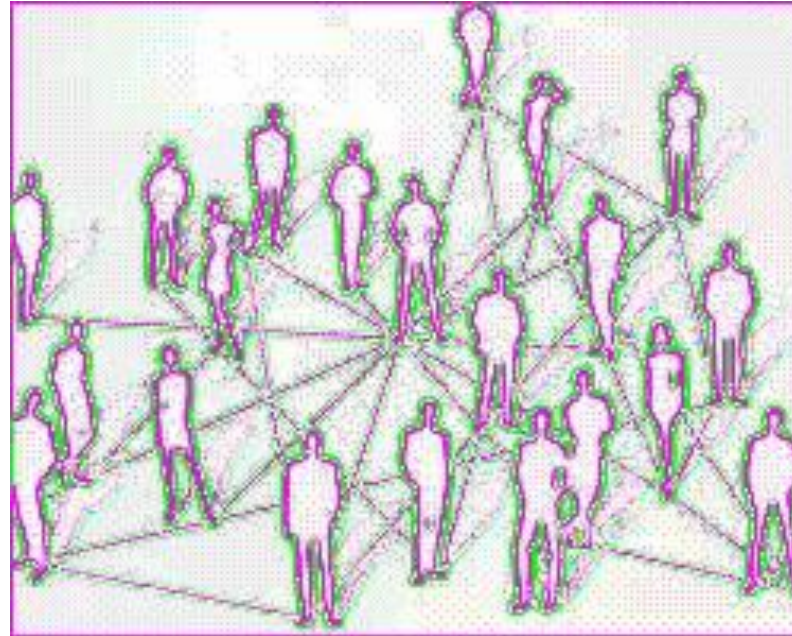


SMART ENERGY

מכללת אפקה להנדסה בת"א | 30.3.15



User Innovation in Smart Cities

Professor Erel Avineri (avineri@afeka.ac.il)

Head of Department, Engineering and Management of Infrastructure Systems
AFEKA, Tel-Aviv Academic College of Engineering

Overview

- What is Smart Infrastructure?
- What is Open Innovation?
- How can they be combined?

Smart Infrastructure - Definition

- “A smart system uses a feedback loop of data, which provides evidence for informed decision-making.
- The system can monitor, measure, analyze, communicate and act, based on information captured from sensors”.

Smart Infrastructure – Some Applications (at the consumer level)

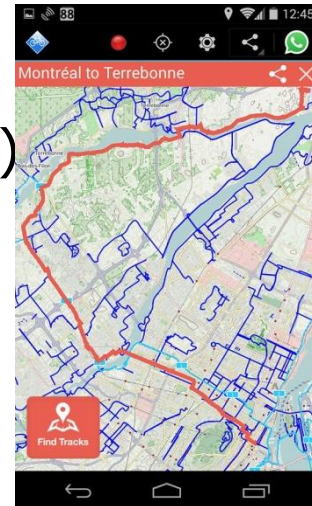
Smart Energy/ Smart Grid

- smart metering
- increasing ability of individual consuming devices to negotiate for power usage)



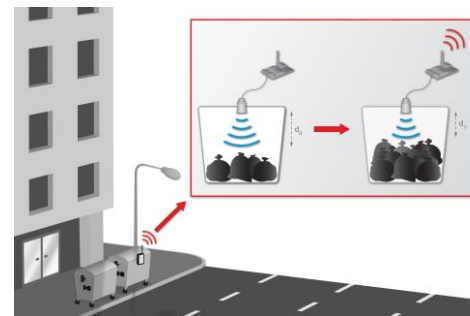
Smart Water

- smart metering
- smartphone 'apps' for water bill monitoring and payments)



Smart Transportation

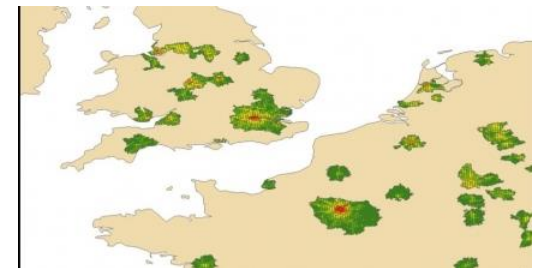
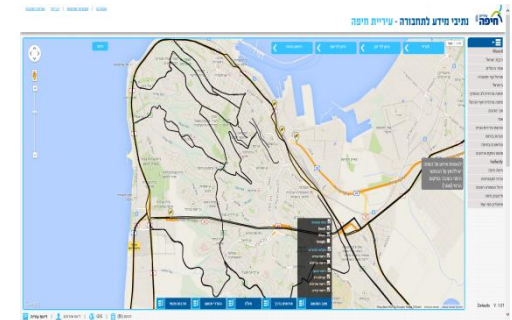
- crowdsourced navigation through social media
- community car sharing programs



Smart Waste Management

Sensorisation of Things

- Multi-Factor sensory-based trackers revolutionize the field of personal devices: temperature, light, humidity, touch, voice, eye, facial, gesture...
- Use of Floating Car Data as sensors in monitoring traffic in real time
- Miniaturisation, wireless-enablement and interoperability of sensors are key industry drivers that have allowed sensors to be key part of smart infrastructure systems.



User Innovation and the Smart City

- “The **Smart City** engages effectively with local people by use of open innovation processes and e-participation.”
- Distinction between **users** and **producers**

User Innovation and the Smart City

- **User Innovation:**

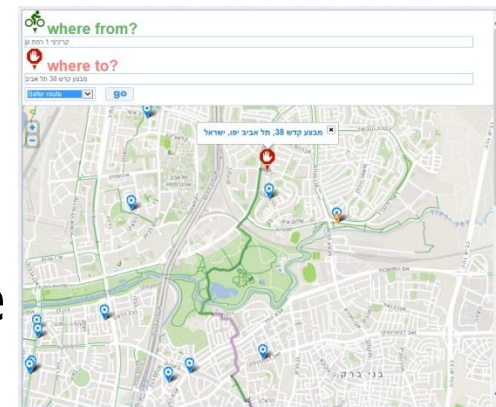
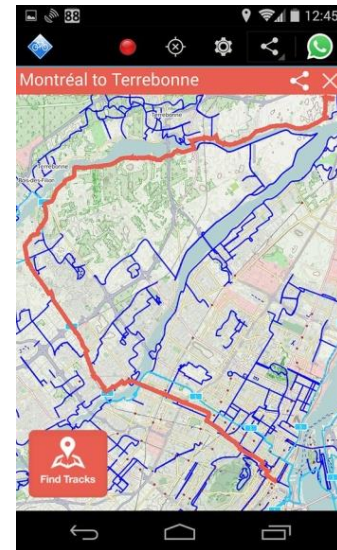
“the creation and application of an invention initiated by affected individuals that stems from user need or curiosity to address a problem or challenge within social practice” (Lyons et al., 2012)

Why User Innovation?

- Users expect to **benefit from using** the product rather than benefit from selling the product
- Users innovations focus on **functional novelty** and are associated with rich understanding of **user needs.**

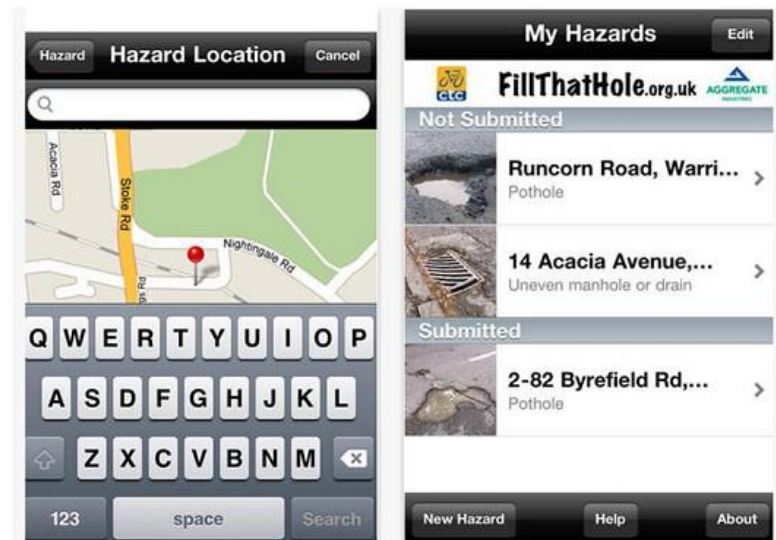
Example 1: CycleStreets

- A journey planner system designed by cyclists, for cyclists, and caters for the needs of both confident and less confident cyclists.
- The UK national government version
£2.4M; 24,000 requests
- CycleStreets
£12,000; 76,107 journeys
- Israel:
Applying US-base “ride the city” interface



Example 2: Fill that Hole

- £20m was paid in compensation by local authorities across England due to the poor condition of their roads
- 'Fill that Hole' sends local authorities up-to-the-minute information about potholes which the council may not otherwise have known about, allowing them to identify trouble spots needing action fast.
- Over 91,000 pothole reports filed by cyclists and other road users.
- DfT has pledged £30,000 to enable CTC to develop a new app compatible with Android.



The Power of Hackathons

- an opportunity to achieve innovation-oriented goals with limited resources.
- Part of a broader open data and innovation centric strategy

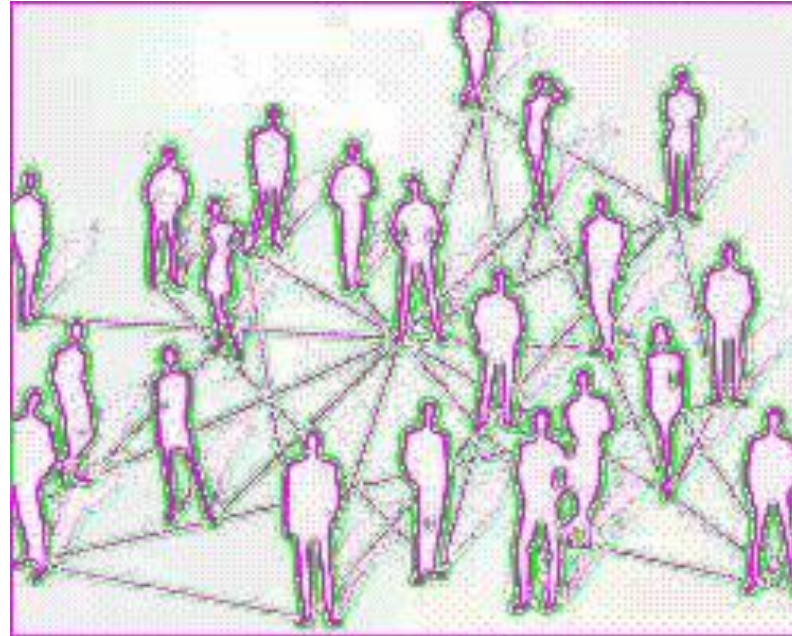


User Innovation and the Smart City

- A top-down approach - Central/ Local Government, established industry.
- A supplementary/alternative path:
- Residents/ local companies take the challenges and turn them into innovations that solve their problems.

SMART ENERGY

מכללת אפקה להנדסה בת"א | 30.3.15



User Innovation in Smart Cities

Professor Erel Avineri (avineri@afeka.ac.il)

Head of Department, Engineering and Management of Infrastructure Systems
AFEKA, Tel-Aviv Academic College of Engineering