Smart cities, smart communities

CSCW
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Outline

- What is a Smart City?
- Smart Cities vs Smart Citizens, Smart Communities
- Urban Technologies in use in Limerick
- The future?
What is a “Smart City”?

- How a city performs depends not only on the city's physical infrastructure but also on the availability and quality of knowledge communication and social infrastructure.
- The “Smart City" concept - an attempt to bring together modern urban production factors in a common framework and to emphasize the growing importance of ICTs, social and environmental capital in assessing the competitiveness of cities.
- Previously –digital cities, intelligent cities.
A smart city is an urban area that uses different types of electronic Internet of Things (IoT) sensors to collect data and then use insights gained from that data to manage assets, resources and services efficiently. This includes data collected from citizens, devices, and assets that is processed and analyzed to monitor and manage traffic and transportation systems, power plants, utilities, water supply networks, waste management, crime detection, information systems, schools, libraries, hospitals, and other community services.

(McLaren and Agyeman 2015)
What is a Smart City?

- Top-down
- Two different perspectives:
  - technology-centric (IBM, Cisco, Siemens)
  - government-led and motivated by an ambition to build green, sustainable cities
- Big Data – generating data at every step
- Data Analytics – mining the data to learn to prepare for the future
- Who uses it? Who has access to it?
Smarter citizens, smarter communities

- Bottom up DIY urbanism
- open code, do-it-yourself philosophy and citizen participation
- User-centric interfaces and controls

OpenStreetMap.org
Smarter citizens projects- examples

- Smart Citizen (a kit containing sensors for measuring environmental indicators and connecting via the online platform Cosm) –FabLab Barcelona
- DataCitizenDrivenCity- MediaLab Prado
- After the Fukushima disaster- the Tokyo hackerspace built cheap geiger counters
- SafeCast give away DIY Geiger Counters to people to travel with all over the world, which automatically upload all the data collected to an online database, open and free for anyone to use.
  Source: TEDx Brussels talk – Mitch Altman -The hackerspace movement -http://www.youtube.com/embed/WkiX7R1-kaY
An animated explanation

[Video]
https://youtu.be/Br5aJa6MkBc
What makes a city smart?

- Smart energy
- Smart Data
- Smart Environment
- Smart Communities
- Smart mobility
What are the services you would want to see available in a Smart City?
Smart Dublin

- Smart Dublin is an initiative of the four Dublin Local Authorities to engage with smart technology providers, researchers and citizens to solve challenges and improve city life.
Objectives

Provide Better Services
To develop, drive and facilitate public services which are better, easier, more efficient and accessible for citizens.

Promote Innovative Solutions
To provide new, innovative and better solutions to existing and future challenges which impact our citizens, businesses and visitors.

Improve Economic Activity
To support regional economic development by helping to create an ecosystem that attracts and provides opportunities for entrepreneurs, investors and businesses, and communicates this to the wider world.

Increase Collaboration & Engagement
To create effective internal and external collaborations and partnerships with local authorities, other public sector organisations, academia, external agencies, businesses, citizens and international partners.
Smart Limerick

INFORMED / ENGAGED / TRANSFORMED
Smart Limerick Roadmap

Limerick 2030 Economic & Spatial Plan

1. Engagement & Participation
   Consultation & Collaboration

2. Information & Marketing
   limerick.ie

3. Service Integration
   My Limerick

4. Digital Infrastructure
   NBP, WiFi, Fibre, IoT, CCTV, MDN

5. Data & Analytics
   Insight Limerick Platform

6. Digital Transformation
   Council Transformation

7. Service Innovation
   Cross Agency Services

8. Governance Strategy & Policy

9. Leadership & Supporting Structures

10. Digital Edge - Research & Development
What is CSCW research focusing on?

- Coordination
- Collaboration
- Crowdsourcing
- Awareness
- Common information spaces
- Decision making
- Surveillance
Algorithms

- how algorithms facilitate, regulate, and require human labor, as well as how humans make sense of and react to them (Wagenknecht et al. 2016)
Data and the City

- how data is produced and used in cities
- collaborations around open and crowdsourced data, issues with the politicisation of data, and problems in innovating within the highly regulated public sphere

Suspicious boxes and friendly aliens

- how the physical design of urban sensors (i.e. shape, appearance) can change city dwellers' attitudes and perceptions towards being sensed (Jetter et al. 2014)
What types of data collection make you feel uncomfortable?
Cycle Atlanta

Project of the Participatory Publics Lab at Georgia Tech
“How do people perceive the impacts on their lives should the Internet go out for an extended period of time? Would it be a minor inconvenience or Armageddon? We took a Futures Studies approach to conduct a conceptualized future, scenario-based study with 754 responses to a survey.” (Grandhi, Plotnik, Hiltz, 2020)
Alternative Housing Models
Cohousing is an intentional community of private homes clustered around shared space. Each attached or single family home has traditional amenities, including a private kitchen. Shared spaces typically feature a common house, which may include a large kitchen and dining area, laundry, and recreational spaces. Shared outdoor space may include parking, walkways, open space, and gardens.

**Characteristics:**

- Community
- Affordability
- Sustainable / ecological design principles
- Shared values
- Independence - decision-making / control
Collaborative housing

Lilac, Leeds

Hoogvliet Rotterdam

Hearthstone, Denver

Earthsong, New Zealand
Research trips to:

Aarhus in Denmark: multigenerational, cohousing community on outskirts of Aarhus city
Cloughjordan, Co Tipperary
1. Housing affordability and crisis

- In Ireland and UK (and elsewhere), the housing market is in crisis mode re affordability and supply.
- Rents and purchase prices past their boom-time peaks
- Young people struggle to own their own homes - ‘generation rent’
- Homelessness at record levels
2. The Issue of Sustainability

- Challenges in all three dimensions of sustainable development — economic, social and environmental
- Unsustainable consumption and production patterns have resulted in:
  - Poverty, and income inequality (local / global)
  - Unprecedented energy challenges in relation to affordable, reliable, sustainable and modern energy for all
  - Rapid urbanization
  - Huge economic and social costs
  - Planetary life critically endangered for present and future generations
3. Climate Change

Closely tied to sustainable development, the increasing urgency of addressing climate change requires that developments take account of:

- **Energy consumption** (heat, transport, food production, clothing etc.)
- **Emissions reduction** (reduction in the use of fossil fuels)

  In Sweden, a report has said that 39% of all domestic CO$_2$ emissions come from real estate.

  In USA, buildings (76 million residential and 5 million commercial) account for:
  - 36% of the total energy use
  - 30% of the greenhouse gas emissions
  - 30% of the raw materials use
  - 30% of the waste output
  - 12% of the potable water use (Natural Step (USA))
4. Urbanisation – Associated Challenges

- Cities are incubators of innovation and help foster increased employment and economic growth. However, rapid urbanization has brought with it enormous challenges, including:
  - Inadequate housing
  - Increased air pollution
  - Lack of access to basic services and infrastructure
  - Rising costs
  - Community fragmentation, isolation, and other well-being challenges
  - Increased demand on resources such as energy, water, and sanitation, as well as for public services, education and health care
5. Social Isolation/intergenerational drifts

- Social isolation is recognised as epidemic
- Loneliness is one of the greatest public health risks today. One in every ten older people suffer from chronic loneliness, and the problem is now also prevalent in young people’ (Alone CEO Sean Moynihan, 2018)
A new area of research for CSCW

- Mutual awareness
- Coordination of activities
- Collaborative decision making
- Controlling IoT devices
What next?

- Our role - citizens as designers
- The city as an interface
- Communities and local government working together
- Open Government partnership