Delivering Future Cities: Urban FM!

Anglia Ruskin University

Keith Jones
Professor of Facilities Management
Head of Department of Engineering and the Built Environment
• The City of the Future
• Smart Cities (UK Perspective)
  ➢ PAS 181 – Smart City Framework
• Future Cities Accelerator Hub at ARU
  ➢ Smart City Project
• Challenges for the future
  ➢ Role of FM
• Questions
• Cities are complex arrangements of social, economic and technological systems that combine to deliver economic prosperity and enhanced quality of life with minimum adverse impact on the environment.

• Almost half of the world's population currently live in cities and by 2050 this is projected to increase to 75%.

• But…
  
  ➢ What will a Future City look like?
  ➢ What are the challenges to Industry, Policy Makers and Society in delivering a Future City vision?

• These are the questions that the Future City Accelerator Hub at Anglia Ruskin University are looking to answer.
Smart Cities Framework (PAS181: 2014)

A. Guiding principles
- Visionary
- Citizen-centric
- Digital
- Open and collaborative

B. Key cross-city governance and delivery processes

Business management
- [B1] City vision
- [B2] Transforming the city’s operating model
- [B3] Leadership and governance
- [B4] Stakeholder collaboration
- [B5] Procurement and supplier management
- [B6] Mapping the city’s interoperability needs
- [B7] Common terminology & reference model

Citizen-centric service management
- [B9] Empowering stakeholder-led service transformation
- [B10] Delivering city-led transformation
- [B11] Identity and privacy management
- [B12] Digital inclusion and channel management

Technology and digital asset management
- [B13] Resources mapping and management
- [B14] Open, service-oriented, city-wide IT architecture

C. Benefit realization strategy

D. Critical success factors
- Strategic clarity
- Leadership
- Skills
- Stakeholder engagement
- User focus
- Supplier partnership
- Achievable delivery
- Future proofing
- Benefit realization
Smart City Vision

Common city challenges

Socio-economic
- Growing population
- Aging population
- Economic prosperity
- Health and Inequality
- Skills and market access
- Job creation and retention
- Infrastructure stress

Political
- Public sector budget
- Changing service needs

Environmental
- Climate change
- Resource scarcity
- Energy resilience

Common elements of city visions

COMMUNITIES
QUALITY
PEOPLE
SUSTAINABLE
BUSINESS
ENVIRONMENT
REDUCE
CITIZENS
LIVING

“The overwhelming core focus of the visions is an Improvement of local quality of life.

Following on from this, and linked to it, are Improvements in economic opportunity, community engagement and Integration; and a reduction in environmental footprint.”

Source: Solutions for cities: An analysis of the feasibility studies from the Future Cities Demonstrator Programme (2013) [3]. This report draws out the common trends and themes that emerged from city responses to the Technology Strategy Board’s Future City Demonstrator competition.
The Shape of Future Cities

New cities to sustain an ever-growing population
Retro-fits to existing cities are needed to make them fit for purpose.
Understand how each driver affects each system. Don’t understand are the interconnectivities between systems.
View cities as complex systems
Re-engineer cities to be fit for future purpose.
Envisioning the Future City

• Series of projects currently under development at ARU as part of the new Future Cities Accelerator Hub.
• The hub brings together
  ➢ academics
  ➢ policy makers, businesses (large and small)
  ➢ public sector organisations
  ➢ 3rd sector organisations
  ➢ community stakeholders and citizens
• To understand the problems and design solutions for the city of the future.
• Two examples of the work we are doing
  ➢ Defining the problem space
  ➢ The internet of things city solution
• Wicked Problems
  ➢ Uncomfortable knowledge (contradictions)
  ➢ Clumsy solutions (non-convergence)
  ➢ Undefined actors (emergence)

• Clumsy Solutions
  ➢ Involve multiple actors with differing perceptions on the problem and solution.
  ➢ No single actor dominates the problem space.
  ➢ As such no single solution exists but a numerous solutions are possible.
  ➢ Existing (reductionist) theories are unable to determine the required solution.

• Two examples from ARU
  ➢ Disaster Resilience to Climate Change
  ➢ The Internet of Things (IoT)
City Resilience

Key Questions…
1. What affects vulnerability and resilience of each stake-holder?
2. What influences the relationships between stake-holders?
3. How do these relationships support or undermine community resilience?
City Resilience Solution Space

No single position can design a solution in isolation to the others.

Whilst each group may agree on the issues to be addressed they have different views and perceptions of the values attached to the issues.

Misunderstanding or ignoring a view or perspective is likely to produce a flawed solution.

Other problem spaces interact with and influence your problem space (hinterland, neighbours).

Multiple solutions exist

Problem for those who are trying to develop generic solutions to these issues are the limitation placed on potential solutions by traditional reductionist thinking.
Integrated Future City

The City Authority

Traditional view of data integration
Integrated Future City

The City Authority

LA Intranet

Shared view of data integration
Integrated Future City

The City Authority

LA Intranet

Citizen pull view of data integration
IoT Concept Model

The Problem/Solution Space

- City Intranet
- Social Media
- Businesses
- Amazon Marketplace
- Utilities

Internet of Things view of data integration
Challenges for Research

• **Technology**
  - Enabler of better citizen decisions
  - More efficient management of city facilities
  - Using new data sources to add value to the citizen experience
    - Big Data including data from space (Quality of Life)
    - Smart technology that removes uncertainty (modelling)

• **Mitigation and Adaptation Technology**

• But these are wicked problems that require clumsy solution so technology alone isn’t enough.

• **Need to consider**
  - Process and Governance
  - People’s desires and behaviours
City Innovation Model

Smart City Environment

Existing City Environment

Drivers: Demographics; Climate Change; Globalisation; Sustainability

Baseline Performance

Innovative Solutions

Tranformation

Product

Product / People

Product / People

Product / People

People / Product / Process

Process / People

Process / People

Process / People

Process

Process

Process
Thank you Questions.
References


Useful Links


