MILTON KEYNES: HOW WE MADE OUR CITY SMARTER

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Knowledge Media Institute

The Open University UK

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Where is Milton Keynes?

Milton Keynes is in North Buckinghamshire, an hour by road from London and just a bit longer from Birmingham.
Direct rail services bring you from many major cities like London, Liverpool, Manchester and Coventry, and the M1 and the proposed new motorway links will take you from Milton Keynes to ports and airports all over the country.
Within Milton Keynes a new system of roads has been designed so that you can travel around quickly and comfortably inside the city, too.

Milton Keynes Development Corporation, Wavendon Tower, Wavendon, Milton Keynes, MK17 8LX. Telephone: Bletchley 4000

LOCATION

London: 88 km

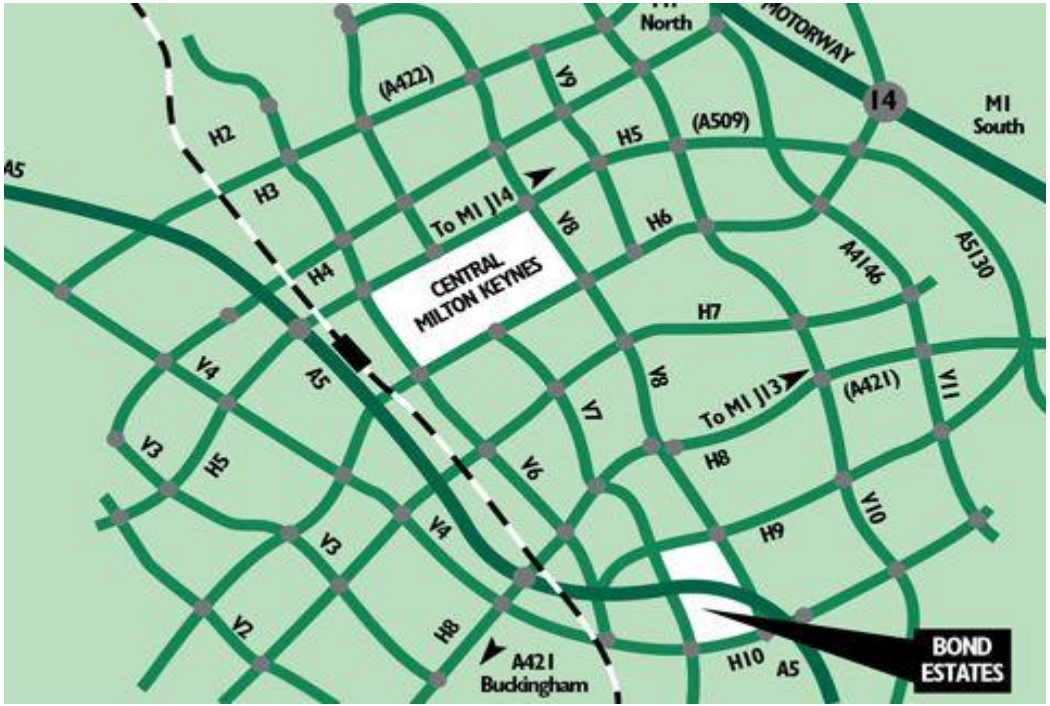
Oxford: 74 km

Cambridge: 77 km

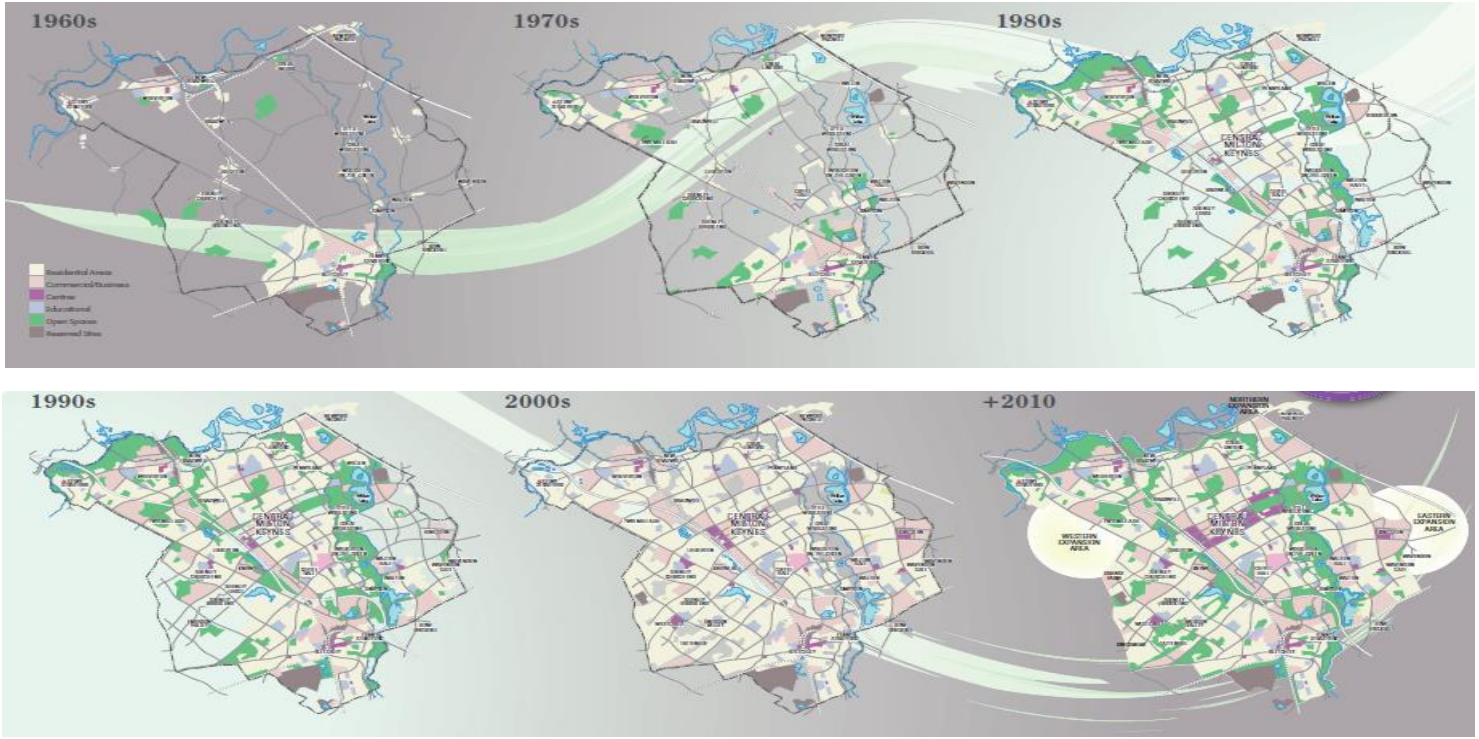
Birmingham: 110 km

90 minutes drive
= 18 million people

DESIGN


North
MOTORWAY
14
M1
South
(A422)
V9
H2
H5
(A509)
A5
H3
To M1 J14
V8
H6
H4
CENTRAL
MILTON KEYNES
A4146
A5130
H7
V4
A5
V8
To M1 J13
(A421)
V11
V7
V3
H5
V6
H8
V10
V4
H9
V3
V2
H8
A421
Buckingham
H10
A5
BOND
ESTATES

TIMELINE



ICONIC

ICONIC

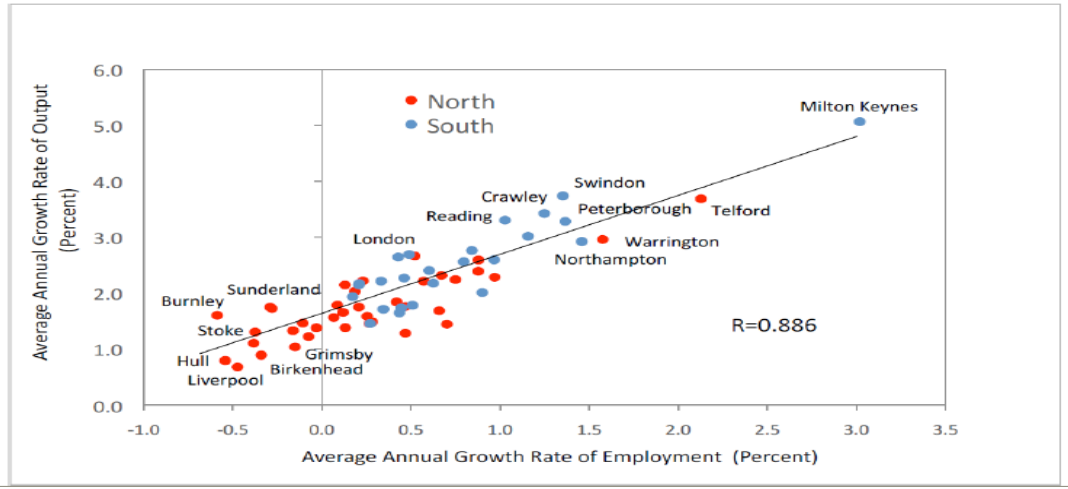
ICONIC


LUTZ Pathfinder
Trial Vehicle
Trial Vehicle
RDM GROUP
CRAPUT
KX65 KSF
Y1

ICONIC

ECONOMIC SUCCESS

Figure 2.3: Relationship between output growth and employment growth across British cities, classified into north and south: (Average Annual Growth Rates for 1981-2011)



The evolving economic performance of UK cities: city growth patterns 1981-2011, Foresight Future of Cities: working paper , August 2014

	City	Change 04-13	% change 04-13
1	Milton Keynes	24,400	18.2%
2	London	769,500	17.1%
3	Cambridge	12,400	15.7%
4	Brighton	15,100	11.1%
5	Bournemouth	15,500	10.0%
6	Portsmouth	18,800	9.2%
7	Coventry	11,800	8.4%
8	Newcastle	29,300	8.0%
9	Aberdeen	13,300	7.9%
10	Nottingham	21,400	7.7%

Growth in Jobs 2004-13

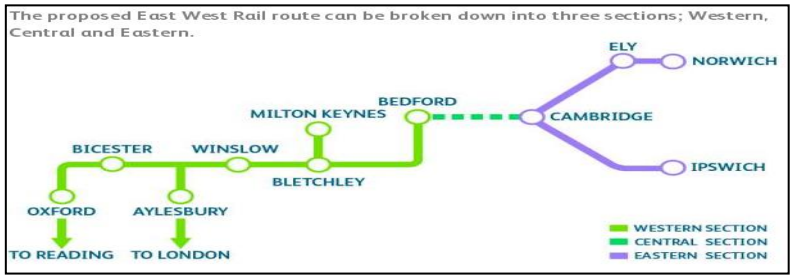
Cities Outlook 2015

Centre for Cities

ECONOMIC GROWTH

SEMLEP Functional Economic Area - inter-related urban economies with their rural hinterlands

Oxford - Cambridge - London Innovation Triangle



East-West Rail corridor

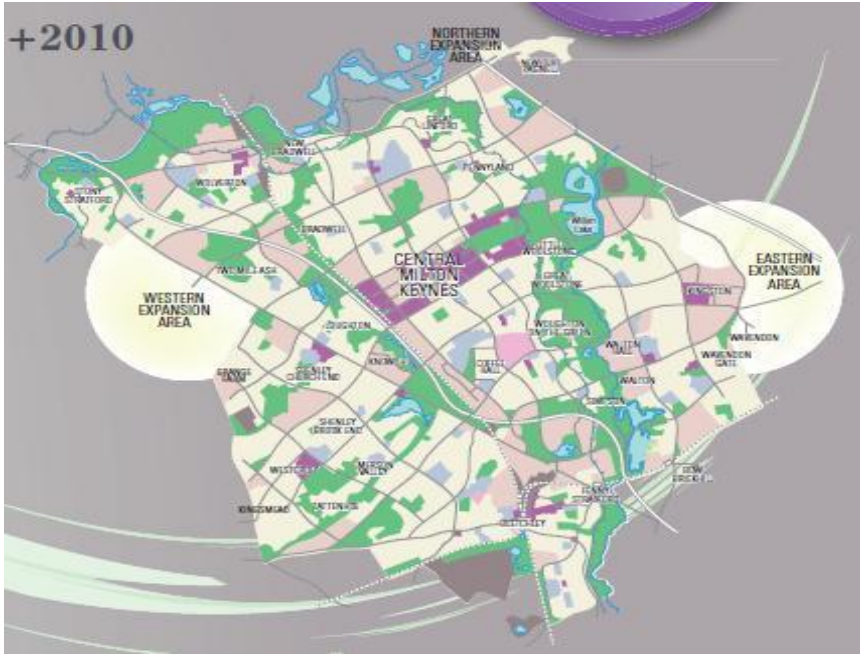
ECONOMIC CHALLENGES

- 28,000 new homes
- 1.5 jobs per home
- Population grows to 300,000+

Travel demand increase of 60%

<u>but</u>

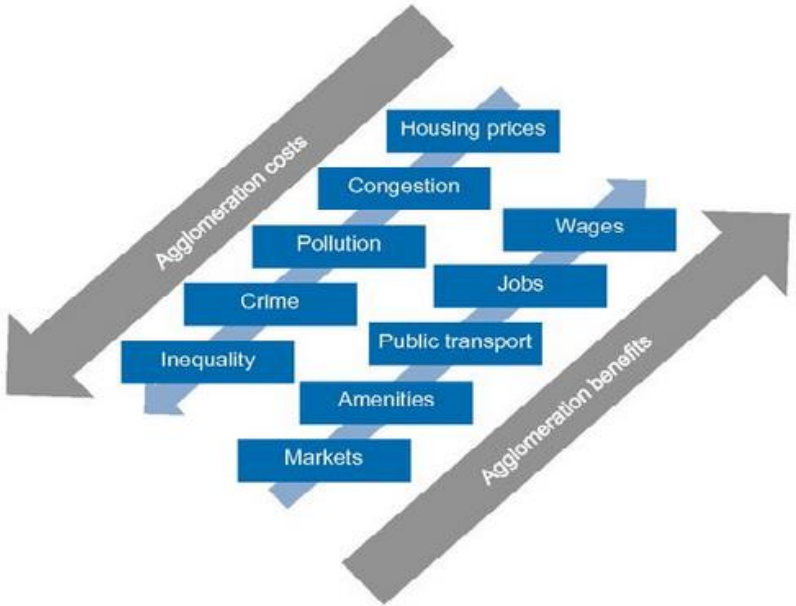
practical capacity improvements address only 25% increase



Reduce carbon emissions per person by 40% (2010 – 2020)

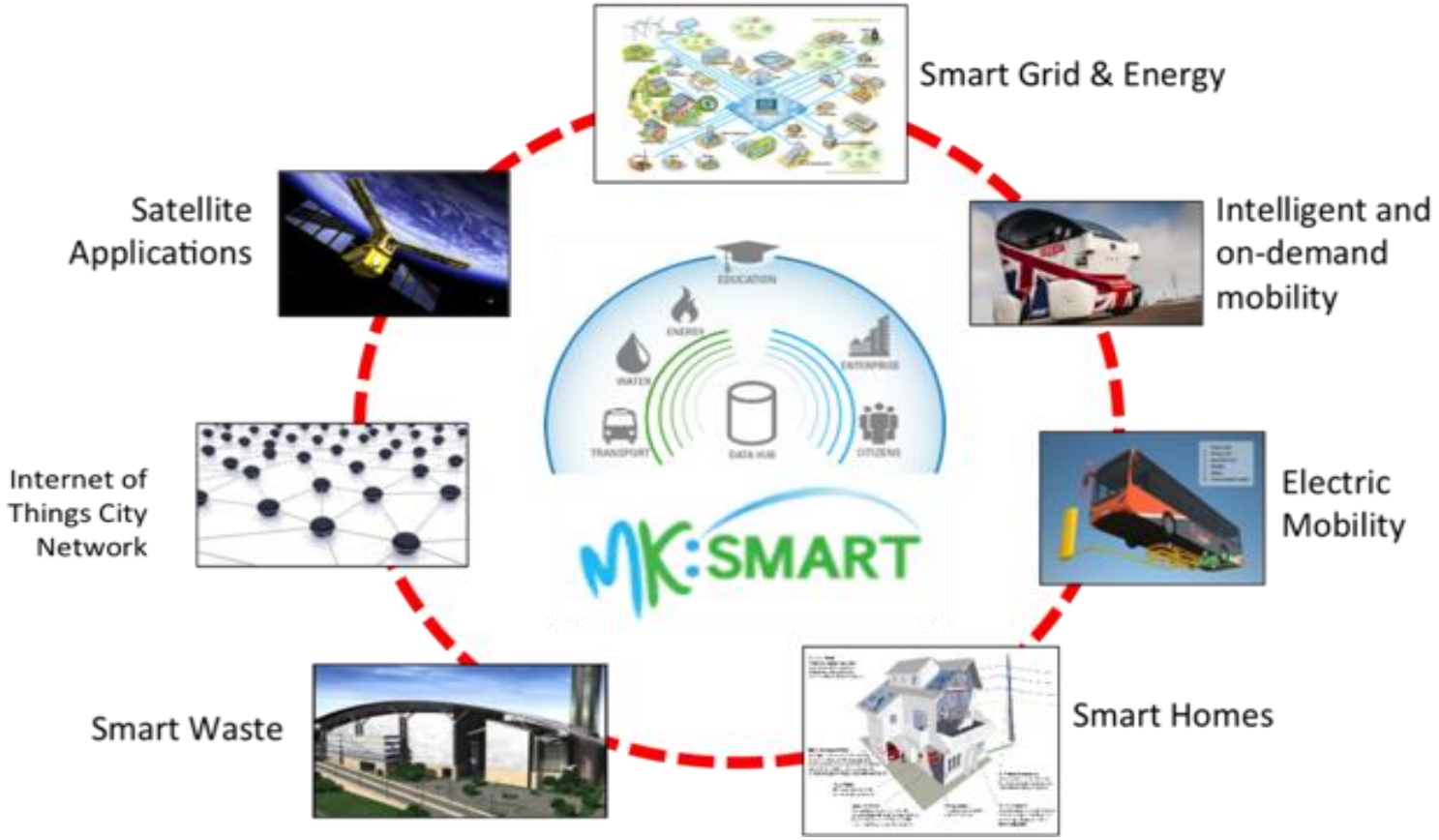
MK FUTURE CITY PROGRAMME: OBJECTIVES

- Address barriers to sustainable housing and jobs growth
  - manage infrastructure pressures
  - create new service models
  - reduce carbon emissions
- Improve the lives of citizens
  - responsive/bespoke services
  - engaged citizens
  - education and skills
- Build leadership in urban innovation
  - foster innovation & business growth
  - attract investment
  - enhance reputation

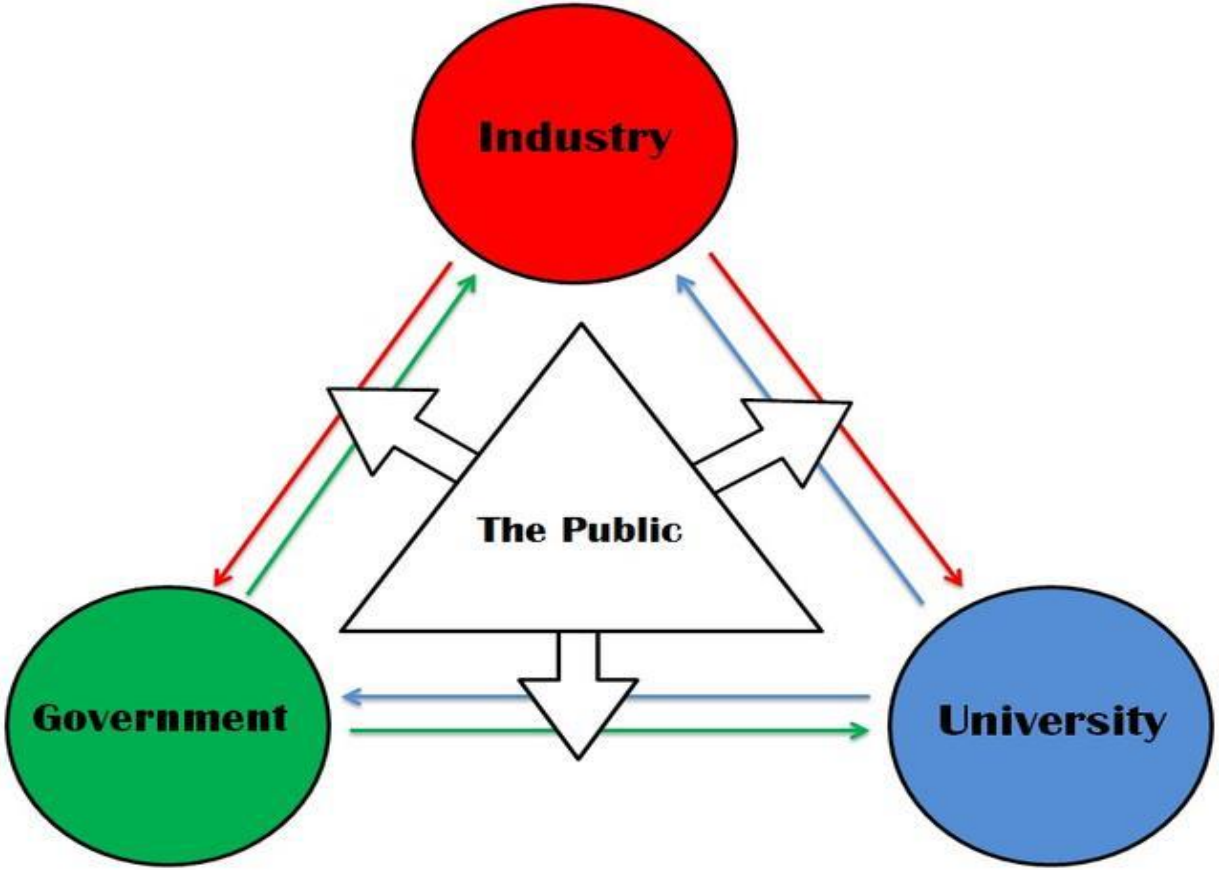


The Metropolitan Century , OECD, February 2015

Milton Keynes Future City Innovation Cluster



Milton Keynes Future City Innovation Cluster



MK:SMART

Helping to secure the future economic growth of Milton Keynes

- £16m project, funded jointly by HEFCE and project partners
- Integrated innovation and support programme to ensure that the capability for growth of Milton Keynes is not compromised

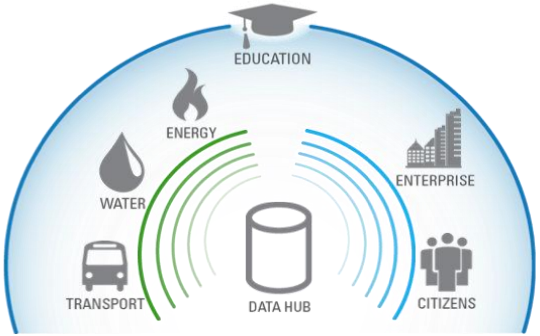
The Open University
Milton Keynes Council
BT
Higher Education Funding Council for England hefce
University of Bedfordshire UCMK University Campus Milton Keynes
graymatter brand. digital. data. marketing.
playground energy
University of Cambridge
Fronesys
Tech Mahindra
Catapult Satellite Applications
HR Wallingford Working with water
love every drop anglianwater
community action:mk promote support engage involve
Samsung
e.on
ThingWorx A PTC Business
Privitar

Project Structure

Milton Keynes is one of the fastest growing cities in the UK and a great economic success story.

However, the challenge of supporting sustainable growth without exceeding the capacity of the infrastructure, and whilst meeting key carbon reduction targets, is a major one.

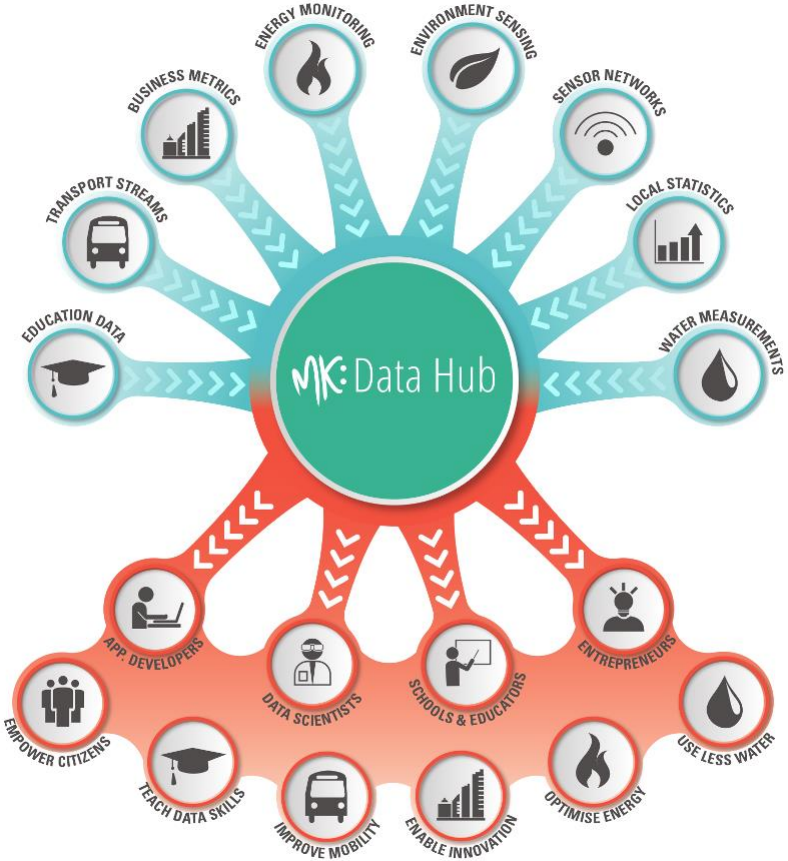
MK:Smart is a large collaborative initiative, partly funded by HEFCE (the Higher Education Funding Council for England) and led by The Open University, which will develop innovative solutions to support economic growth in Milton Keynes.

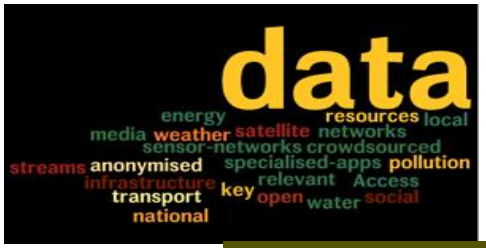


Central to the project is the creation of a state-of-the-art 'MK Data Hub' which will support the acquisition and management of vast amounts of data relevant to city systems from a variety of data sources. These will include data about energy and water consumption, transport data, data acquired through satellite technology, social and economic datasets, and crowdsourced data from social media or specialised apps.

Building on the capability provided by the MK Data Hub, the project will innovate in the areas of transport, energy and water management, tackling key demand issues.

The MK Data Hub

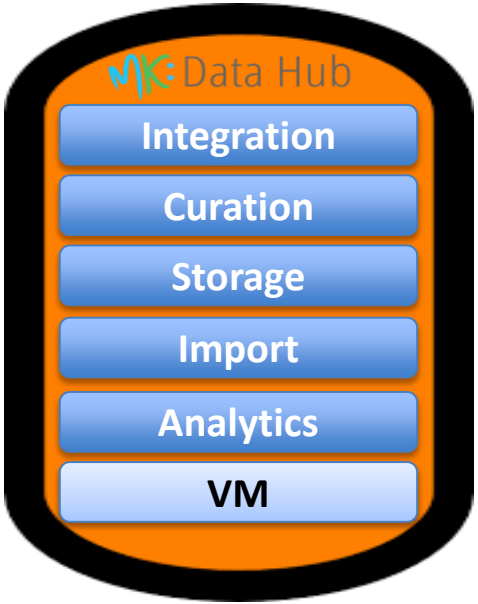




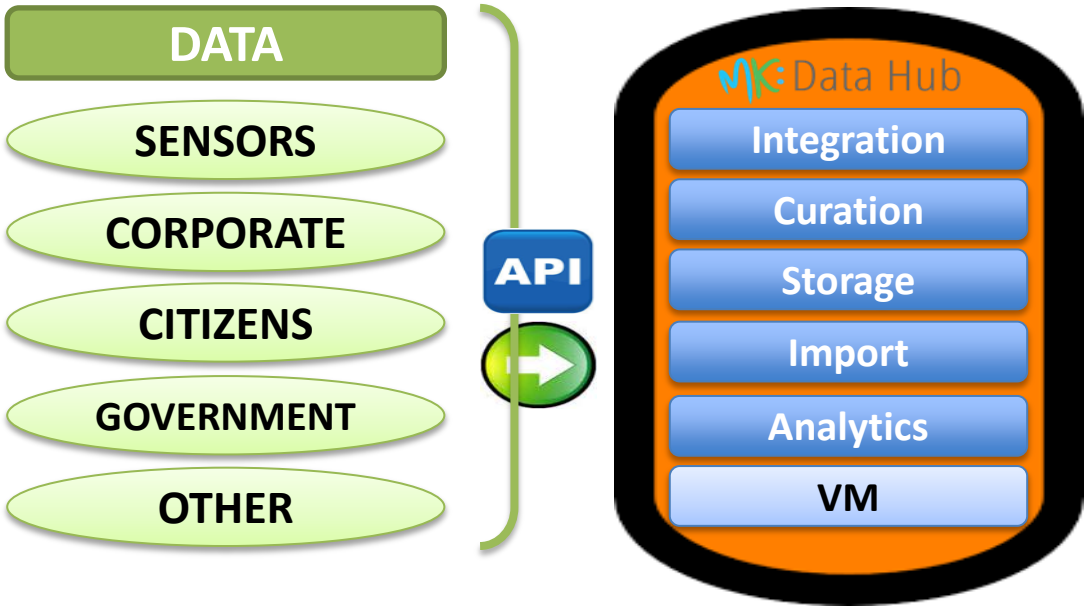
Data will drive analytics at different levels of granularity to support intelligent planning and usage of resources across city systems

Innovative solutions will be realised to reduce the cost of data-driven application development

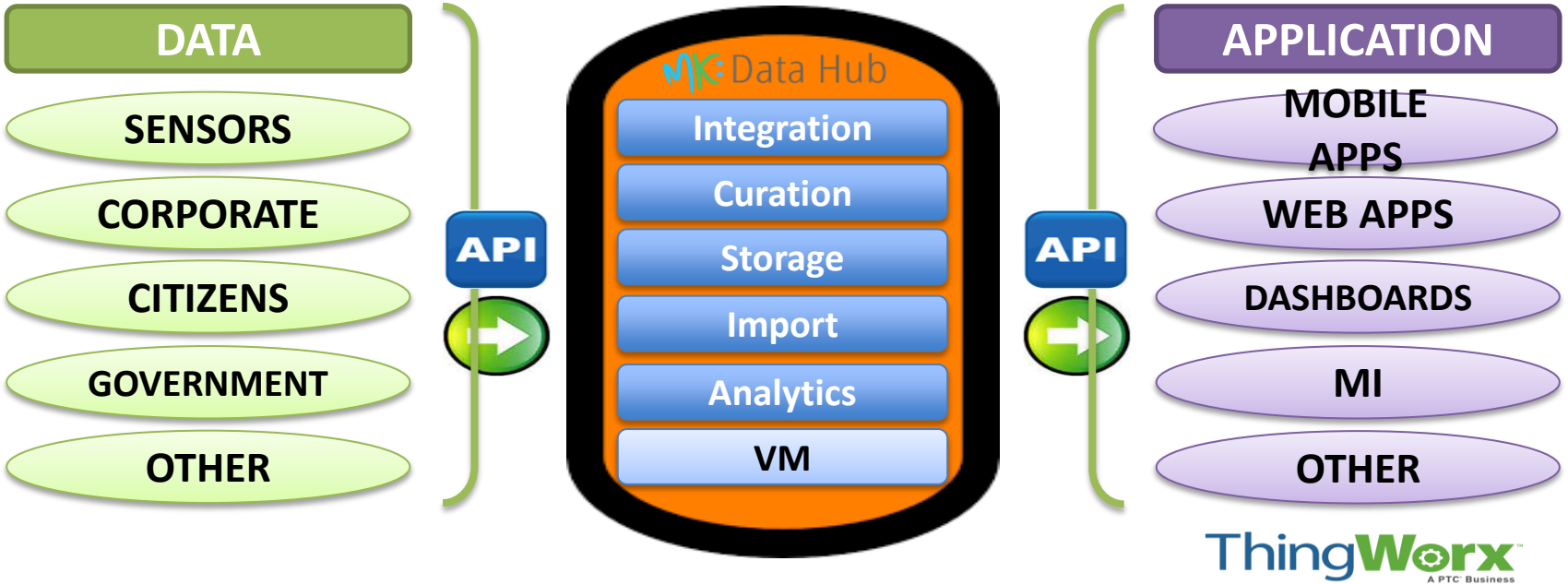
The MK Data Hub



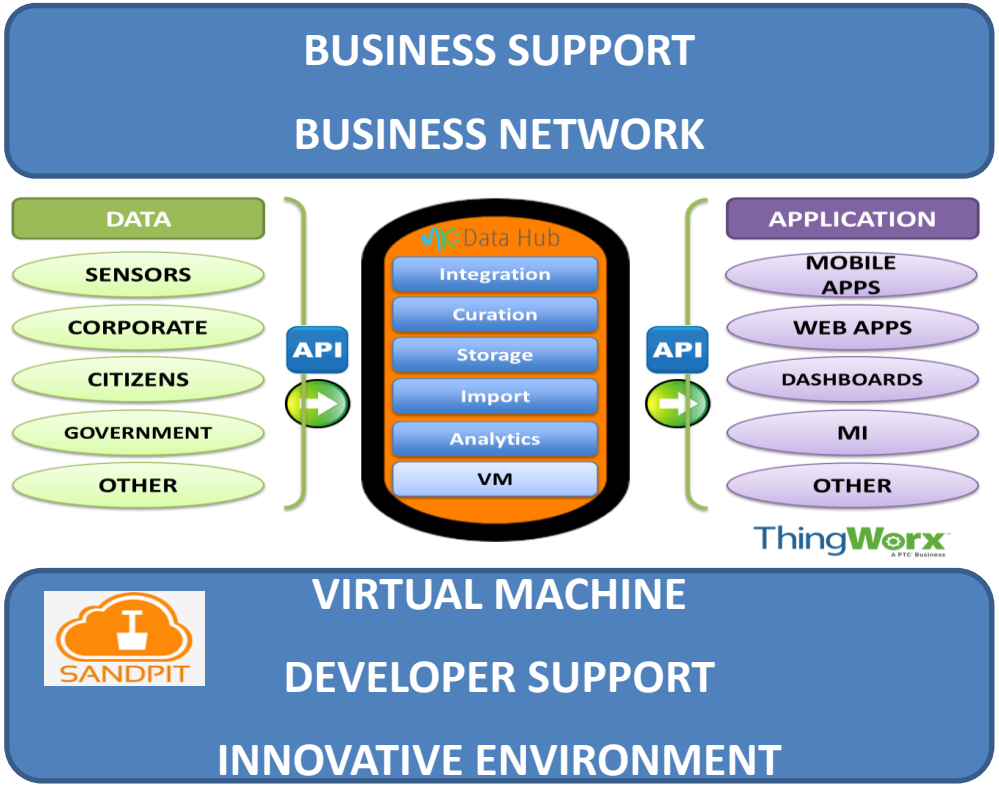
The MK Data Hub



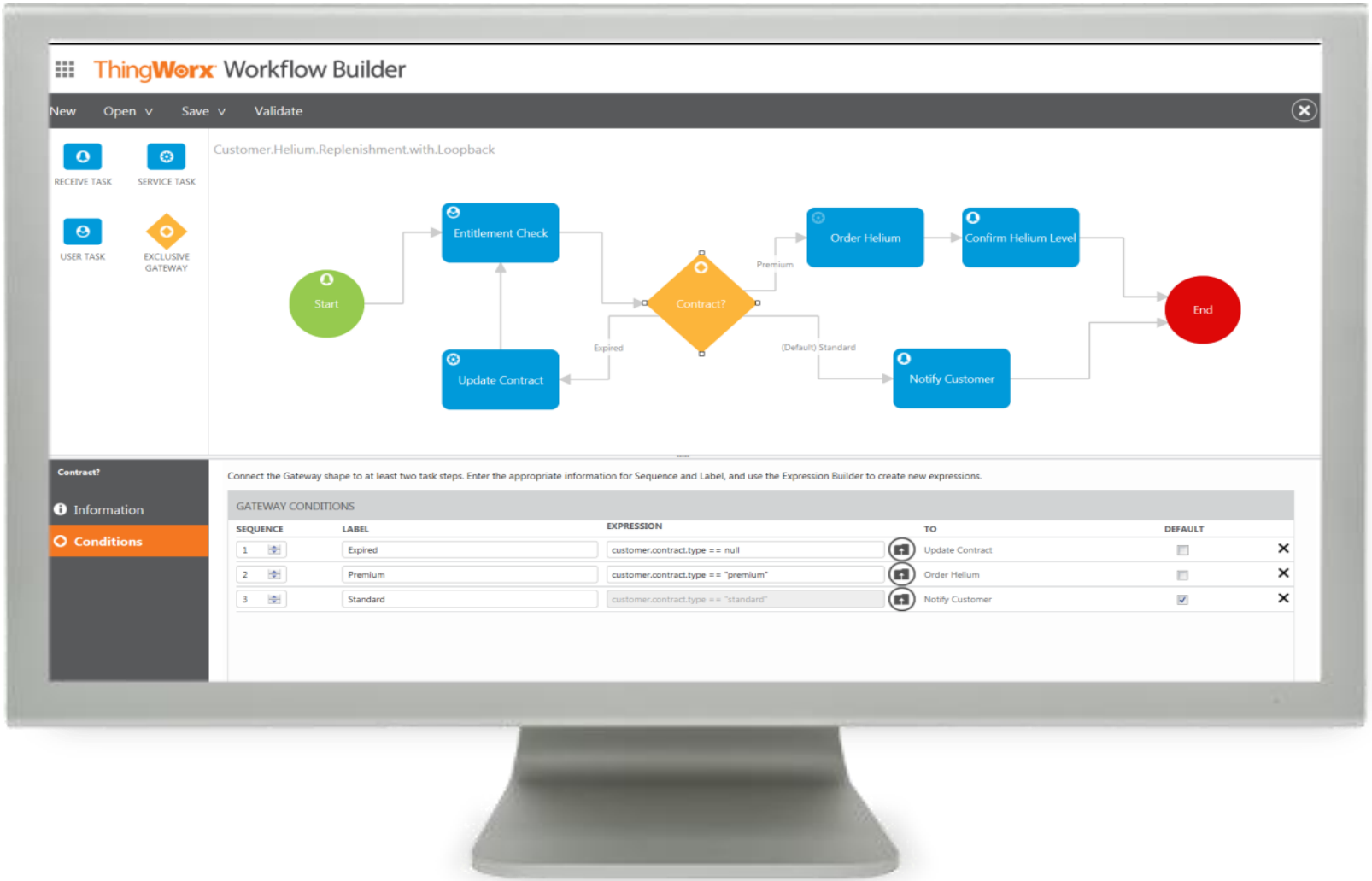
The MK Data Hub



The MK Data Hub



The MK Data Hub


ThingWorx Workflow Builder
New
Open
Save
Validate
RECEIVE TASK
SERVICE TASK
USER TASK
EXCLUSIVE GATEWAY
Customer.Helium.Replenishment.with.Loopback
Start
Entitlement Check
Contract?
Premium
Order Helium
Confirm Helium Level
End
Expired
Update Contract
(Default) Standard
Notify Customer
Contract?
Information
Conditions
Connect the Gateway shape to at least two task steps. Enter the appropriate information for Sequence and Label, and use the Expression Builder to create new expressions.
GATEWAY CONDITIONS
SEQUENCE
LABEL
EXPRESSION
TO
DEFAULT
1
Expired
customer.contract.type == null
Update Contract
2
Premium
customer.contract.type == "premium"
Order Helium
3
Standard
customer.contract.type == "standard"
Notify Customer

Home Develop Learn Contact Us Register Log In

MK: Data Hub FIND DATA PROVIDE DATA APPLICATIONS

Applications

Top MK

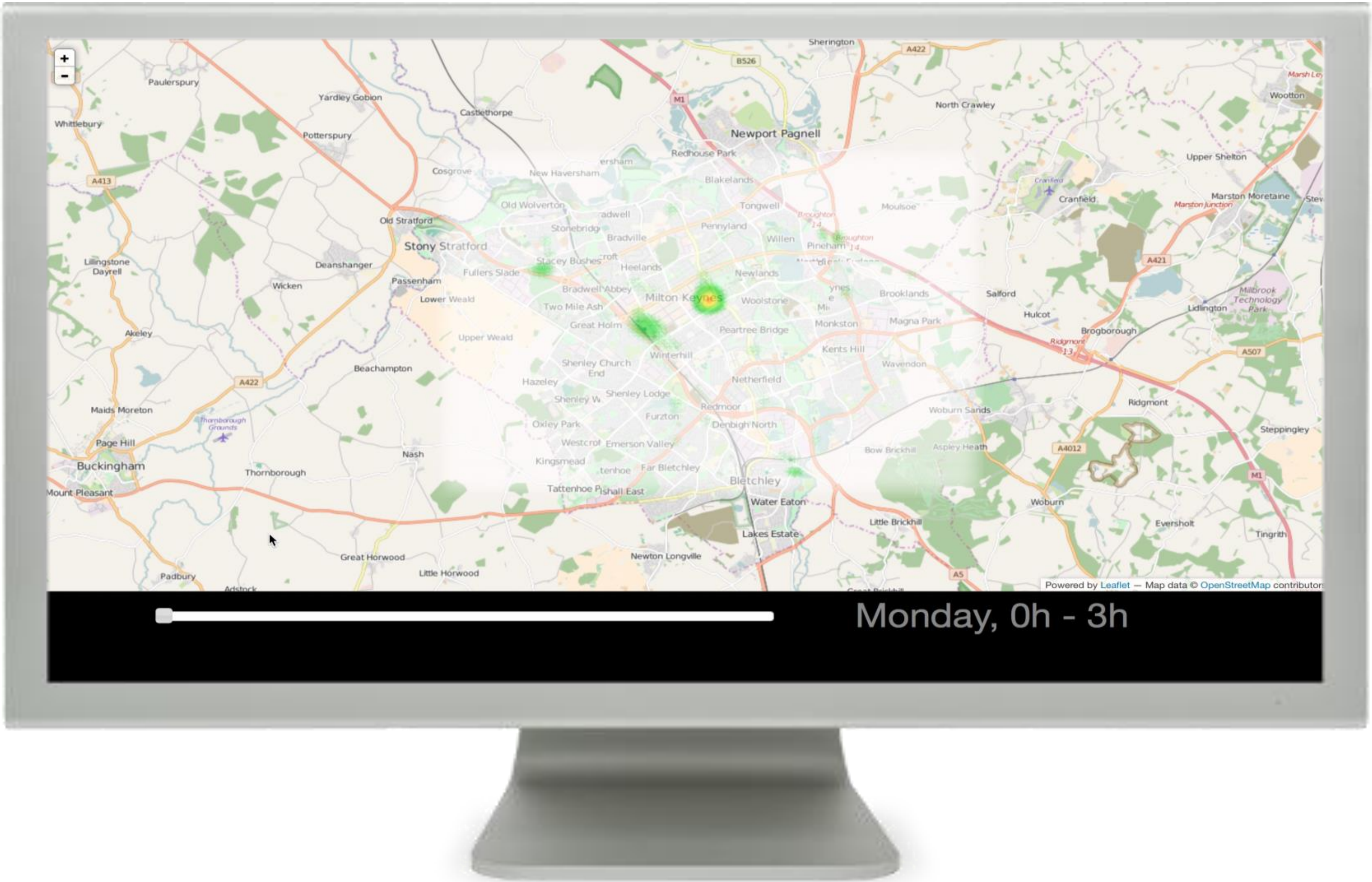
Top MK is a virtual card playing game where each card represents a ward in Milton Keynes, with characteristics such as area, population, level of qualifications, etc. Two players, one human and the other automatic, try to win the other's cards by choosing the characteristic that has the best chance to win against the other card. Besides being fun, Top MK is a way to introduce elements of manipulating city data in a playful way: Understanding the different areas, thinking about the distribution of values for the different characteristics, etc. It also demonstrates how the MK Data Hub helps in building interesting applications with very little resource.

Water Monitor

Water Monitor is a website (currently in development) that helps Milton Keynes citizens to understand their domestic water usage and provides advice on how to reduce water consumption. By registering to use Water Monitor, MK citizens will be able to log on and view their household's water use data. It is run from a the MK Data Hub to provide consumers with information on their water use. Milton Keynes is in one of the driest regions of the UK, which makes it all the more important to manage its water resources sustainably.

Garden Monitor

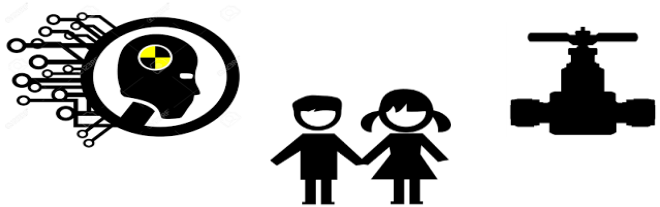

Top MK
Data Hub
??
Top MK
Data Hub
??



Monday, 0h - 3h
Powered by Leaflet — Map data © OpenStreetMap contributors
Newport Pagnell
Milton Keynes
Stony Stratford
Bletchley
Buckingham
Sherington
North Crawley
Wootton
Upper Shelton
Cranfield
Marston Moretaine
Paulerspury
Yardley Gobion
Castlethorpe
Whittlebury
Potterspury
Cosgrove
New Haversham
Redhouse Park
Blakelands
Old Wolverton
Old Stratford
Tongwell
Pennyland
Willen
Moulsoe
Deanshanger
Lillingstone Dayrell
Passenham
Wicken
Lower Weald
Fullers Slade
Stacey Bushes
Heelands
Newlands
Bradwell Abbey
Two Mile Ash
Woolstone
Brooklands
Salford
Hulcot
Brogborough
Lidlington
Great Holm
Peartree Bridge
Monkston
Magna Park
Kents Hill
Upper Weald
Akeley
Beachampton
Winterhill
Shenley Church End
Hazeley
Netherfield
Wavendon
Ridgmont
Shenley Lodge
Redmoor
Woburn Sands
Maids Moreton
Oxley Park
Furzton
Denbigh North
Steppingley
Page Hill
Emerson Valley
Bow Brickhill
Aspley Heath
Nash
Kingsmead
Far Bletchley
Thornborough
Mount Pleasant
Tattenhoe Park
Water Eaton
Woburn
Eversholt
Little Brickhill
Tingrith
Lakes Estate
Great Horwood
Newton Longville
Padbury
Little Horwood

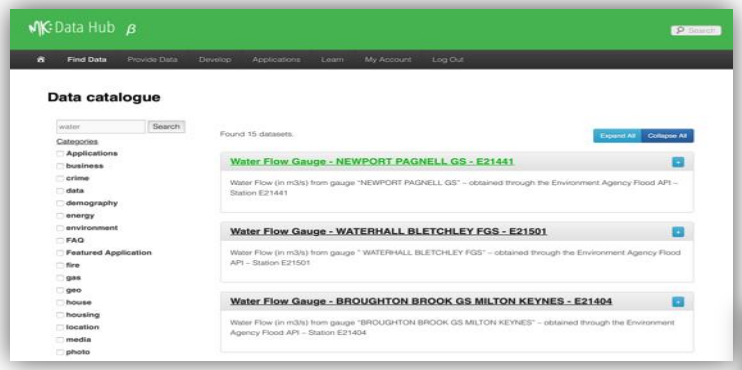
Developer Support

ThingWorx
A PTC Business

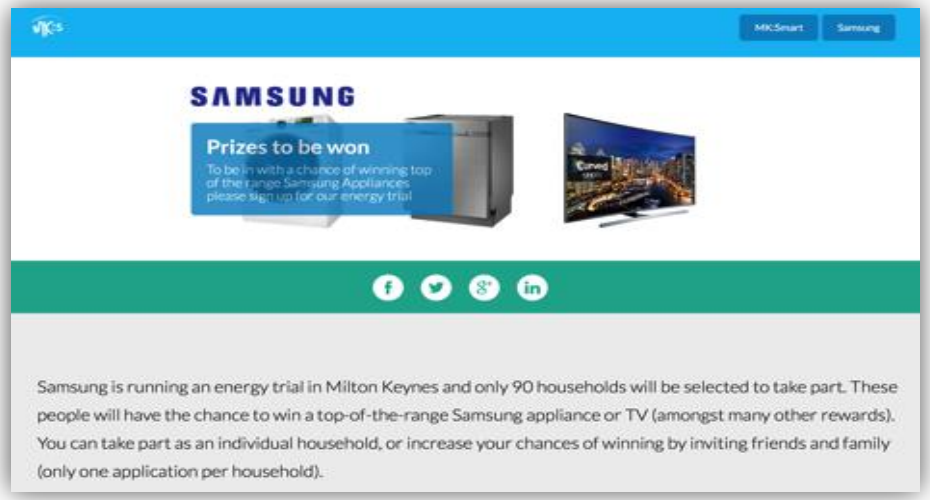


Transport

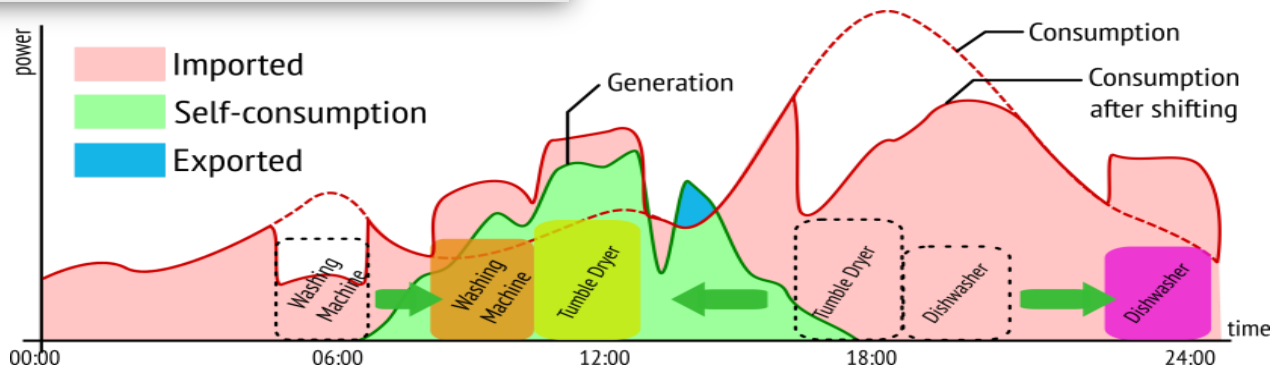
Motion Map



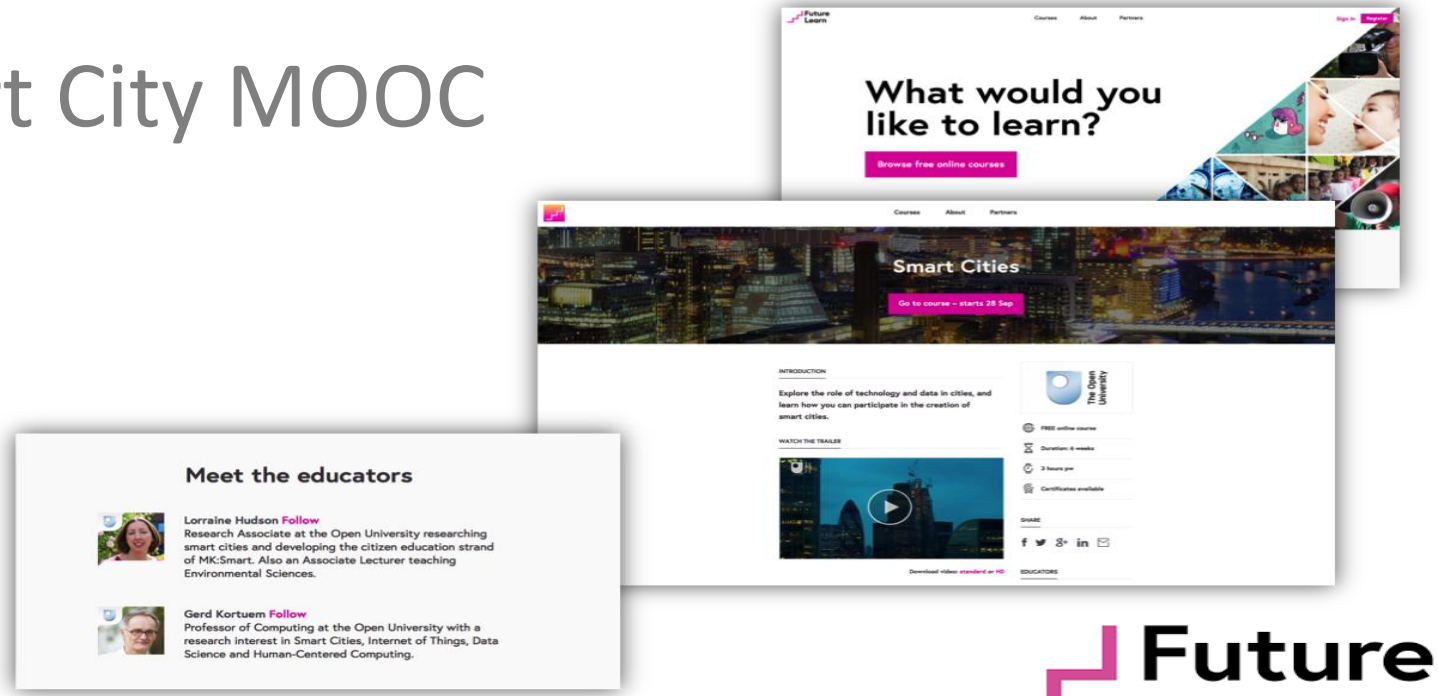
Water Monitoring



Energy Use Load Balance

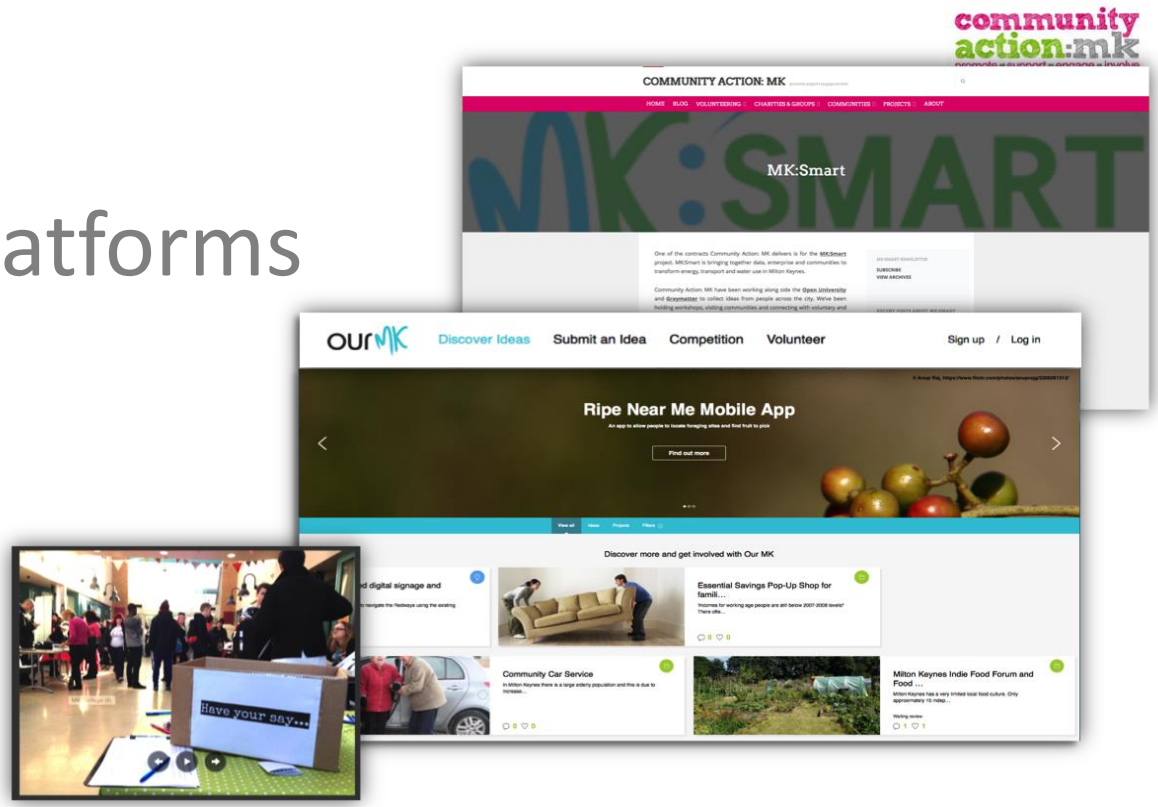


Smart City MOOC



Future Learn

Citizen Platforms



University of Bedfordshire UCMK

UNIVERSITY CAMPUS MILTON KEYNES

Physical space

CPD events

New Enterprise Creation PGCert

Connecting Local Tech Enterprises

BIZTECH

BUSINESS AND TECHNOLOGY FORUM

liveworx.com

alan.fletcher@open.ac.uk

Publications

- Daga E., Adamou A., d'Aquin M. and Motta M. (2016). Towards high quality data catalogues: addressing exploitability. Submitted to the Semantic Web Journal
- d'Aquin, M., Davies, J. and Motta, E. (2015) Smart Cities' Data: Challenges and Opportunities for Semantic Technologies, IEEE Internet Computing, November/December 2015
- Daga, E., d'Aquin, M., Gangemi, A. and Motta, E. (2015) Propagation of Policies in Rich Data Flows, 8th International Conference on Knowledge Capture (K-CAP 2015), Palisades, NY, USA
- Daga, E., d'Aquin, M., Motta, E. and Gangemi, A. (2015) A Bottom-Up Approach for Licences Classification and Selection, International Workshop on Legal Domain And Semantic Web Applications (LeDA-SWAn 2015) at 12th Extended Semantic Web Conference (ESWC 2015)
- Adamou, A. and d'Aquin, M. (2015) On Requirements for Federated Data Integration as a Compilation Process, 2nd International Workshop on Dataset PROFIling and fEderated Search for Linked Data (PROFILES '15) at 12th European Semantic Web Conference (ESWC 2015)
- d'Aquin, M., Adamou, A., Daga, E., Liu, S., Thomas, K. and Motta, E. (2014) Dealing with Diversity in a Smart-City Datahub, 5th Workshop on Semantics for Smarter Cities at the International Semantic Web Conference (ISWC 2014)