Sustaining the digital economy with reliable, timely and quality natural and built environment information

John Kedar
Director International Engagement
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Why does Ordnance Survey exist? To underpin Britain

Better decision making | Value to the economy | Better government services
How Ordnance Survey does it?

New techniques and increasing automation ensure accuracy, timeliness, currency, quality and trust.
Time and Place – the 4\textsuperscript{th} dimension is critical
Address, a powerful integrator

But there is a problem……

- Planning Dept = Flat 1, 21 Ash Grove London NW2 3LN
- Utility = 21A Ash Grove London NW2
- Land tax = Flat 1, 21 Ash Gr. London NW2 3LM
- Fire = 21A Ash Grove, Cricklewood
- Local Municipality = Flat 1 21 Ash Grove

Solution:
- Unique property identifier used by all agencies

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Apartment 1st floor right  UPRN1000045233

Apartment 1st floor left  UPRN1000045231

Multi-family residential building  UPRN1000045234
United Nations Fundamental Geospatial Data Themes

- Global Geodetic Reference Frame
- Geographical Names
- Addresses
- Functional Areas
- Buildings and Settlements
- Land Parcels
- Transport Networks
- Elevation and Depth
- Population Distribution
- Land Cover and Land Use
- Geology and Soils
- Physical Infrastructure
- Water
- Orthoimagery
Evidence that good data creates wealth

UK: potential $8-14 billion per annum economic value from private sector adoption of geospatial data. Particularly: Retail and logistics, Property and land, Infrastructure and construction, Mobility, Natural resources

According to the McKinsey Global Institute, cross-border flows of data grew 45 times from 2005 to 2014, and accounted for $2.8 trillion (approx. 3.3%) of global GDP in 2014.

European Commission calculating that “even limited use of big data analytics solutions by the top 100 EU manufacturers could boost EU economic growth by an additional 1.9% by 2020.”
UK Government has identified the key geospatial areas where UK can unlock economic value

- Analysis has identified a potential $8-14 billion per annum economic value from better use and adoption of geospatial data.
- This identified five key sectors where the highest latent value was:
  - Retail and logistics
  - Property and land
  - Infrastructure and construction
  - Mobility
  - Natural resources
- Establishment of a Geospatial Commission to unlock this value.
Business expectation

Efficiency       Profit      Answers      Competitive advantage
Citizens expectation

Esperance, 39, a mother of four used to be in constant dispute with her neighbours over ownership of the land she lived on. Through a DFID-funded land registration programme, the dispute is now settled and she is a proud landowner.

Maslow’s hierarchy of needs
Government expectation

Data for the public good

Integrated data

Revenue

Services

Respect/votes

Public services, eg:

- Environmental management
- Emergency services
- Transport networks
- Housing and planning
- Citizen centric services

World Bank Land and Property Conference 2017. The role of ICT in delivering efficient revenue collection in developing countries: The Tanzanian experience. Prof William McCluskey, African Tax Institute, University of Pretoria, Chyi-Hun Huang, World Bank, Patrick Doherty, Consultant, Prof Riel Franzsen, African Tax Institute, University of Pretoria
Digital Economy

Economy that is based on digital computing technologies, increasingly perceived as conducting business through markets based on the internet.

The Digital Economy is worth three trillion dollars today.

This is more than the GDP of the United Kingdom.
Digital economy is more than e-commerce
4th Industrial Revolution: automation and IoT

UK national digital twin:
• A detailed 4-D digital version of the real world: indoors, outdoors, above and below ground.
• Machine readable.
• Modelling, simulation and analytics.
• New industries and high value jobs
Urban Navigation
<table>
<thead>
<tr>
<th>Cartography</th>
<th>Data</th>
</tr>
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<tbody>
<tr>
<td>Years</td>
<td>Data Currency</td>
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<td>Weeks</td>
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<td>Seconds</td>
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[Map image with data currency comparison]
Data:

More –
• Uses
• Currency
• Accuracy
• Features
• Attribution
• Useable
• Answers

Less –
• Cost
Changing UK Policy – Open Data

Soon to Include: Unique Property Reference Number (UPRN)

Planning Dept = Flat 1, 21 Ash Grove London NW2 3LN
Police = Ground Floor Flat, 21 Ash Grove London
Utility = 21A Ash Grove London NW2
Land tax = Flat 1, 21 Ash Gr. London NW2 3LM
Fire = 21A Ash Grove, Cricklewood
Local Municipality = Flat 1 21 Ash Grove
Employment Dept = Ground Floor Flat, Elm Grove & Ash Grove

Apartment 1st floor right UPRN1000045233
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Use data science to gain more value from existing geospatial data assets

........Customer access to ‘core data’?
Automation brings real-time data

- Deep Learning Techniques
- Object classification
- Image compression algorithms
- Static data to cross correlate with sensors
Cartography

Data

Years

Data Currency

Weeks

Seconds
Cartography

Data

Connectivity

Data Currency

Years

Weeks

Seconds
Astigan – data collection to new heights
https://www.youtube.com/watch?v=z7ij4QBfPG4
Using other’s sensors

Utility vehicles with sensors routinely collecting features into Ordnance Survey Mastermap database. A partnership with Intel
Cloud Services: Built-in *evolution* as technology leaps forward

<table>
<thead>
<tr>
<th>3D/4D representation</th>
<th>Automated change detection</th>
<th>UVS</th>
<th>Blockchain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated feature extraction</td>
<td>AI/AR</td>
<td>Big Data</td>
<td>Automated generalization</td>
</tr>
</tbody>
</table>
Integration of third party data for city and region planning and development
Enabling new business

Geovation helps Britain’s location and property startups address social, economic and environmental challenges using open innovation methodologies

> 1050 Hub community members
> £23 Million raised in seed funding
> 200 new jobs created
Sixth High Level Forum on UN Global Geospatial Information Management

Changing the World - Geospatially

20-22 April 2020
Royal Holloway College, University of London, Windsor, United Kingdom
Thank you

Everything happens somewhere

John Kedar
Director International Engagement
John.kedar@os.uk
+44 7825 113550