Complexity of utility infrastructure from an interest, governance, regulation and policy perspective

7 December 2017 – Carsten Rönsdorf, Spatial Data Infrastructure Lead, Ordnance Survey
Agenda

1. Infrastructure – pushing against limits
2. OGC Underground CDS
3. NYC use case
4. Digital Twin
5. Governance
6. Summary

Return on Investment
Of Accurately Mapping the Underground Infrastructure

<table>
<thead>
<tr>
<th>Project</th>
<th>ROI</th>
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<tbody>
<tr>
<td>PennDOT 2007</td>
<td>21X</td>
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<tr>
<td>Milan Expo 2015</td>
<td>16X</td>
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<tr>
<td>U.S. DOT 1999</td>
<td>4.6X</td>
</tr>
<tr>
<td>Toronto 2010</td>
<td>4.3X</td>
</tr>
<tr>
<td>Toronto 2004</td>
<td>3.4X</td>
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</tbody>
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The rate of return for underground mapping projects ranges from 3.4X to 21X

From Accenture, OGC Underground CDS ER
Infrastructure: pushing against limits
Optimal utilisation of infrastructure?
Satellite dishes are scaleable, other infrastructure isn’t

All infrastructure has a geographic dimension:

Wherever you live/work – you have an expectation of infrastructure being provided
Future direction

Evolving need for location data

Scenario planning
(example policy modelling using big data)

Simulation
(example 5G planning and asset utilisation)

Supply-Demand optimisation
(example: reduce congestion)
Open Geospatial Consortium
Geospatial innovation

- Standards
- Best practice
- Innovation community
- Dialogue between vendors, academia and government
- Testbeds and pilots

OS is one of the five strategic OGC members
Infrastructure and the Evolution of GIS in NYC

OGC Location Powers: Underground - keynote

“Nobody Knows What Lies Beneath New York City” by Greg Milner for Bloomberg Businessweek Magazine, 8.10.17
NYC: Oblique Imagery from 2012: Showing apparent vulnerabilities to surge waters
Hurricane Sandy; predicted flooding (left)

Images from Alan Leitner, FCNY
Midtown to Downtown Manhattan Blackout: Oct 29th 8:50PM
Six major categories of use cases for better underground survey data identified:

1. Routine street excavations;
2. Emergency response;
3. Utility maintenance programs;
4. Large scale construction projects;
5. Disaster planning and response; and
6. Smart cities programs.
Shared understanding: Relevance beyond the owner of infrastructure

A Vertical Obstruction

An Observation Post

A Navigation Beacon

What is this?

Kindly offered by Mark McInerney
Assistant Director, Defence Spatial Standards Office, DIGO, Australia
Use geospatial foundation data for multiple purposes

- Architect. + Urban planning
- Environmental Protection
- Real Estate Management
- Urban FM
- Navigation
- Training simulators
- Cadastre & Mapping
- Tourism
Digital Twin Concept: a model of an infrastructure asset or system of assets which simulates optimised use and maintenance of that asset.

From Sarah Hayes, UK National Infrastructure Commission
Or, provide the best possible information
Video
Trusted and shared infrastructure data—where are the gaps?

There are many:

• …
• …
• …
• …
• Inconsistent surveys, data management, access
Governance

- Regulatory power / legal mandate
- Policy setting
- Data custodianship
- Standards setting
- Process definition
- KPIs
- Centralised QA function
Underground utilities as an

• Interoperability problem
• Policy problem
• Liability problem
• Accuracy problem
It doesn’t matter where your assets are until you need to do something to them

Is this always right?
What does this mean for your risk management approach?
The organisations who need to make data interoperable are not necessarily the organisations benefitting from this data
Split proposition

Government sector

Utility sector (private, semi-private)
Summary

Governance and policy: who’s responsible?

Standards and Specifications: common way of working

Quality management: rely on other’s data

Data sharing: accessibility and trust