NUAR:
Data standardisation to support, promote and enable
data quality improvement

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What is NUAR?
The MUDDI Conceptual Model
The Model Hierarchy

- Reference Models (e.g. ISO19100)
- Core OGC MUDDI Model
- Profile: UK Excavation
- NUAR Platform Model
UK Excavation: Room for Specialisation

- Electricity Network
- Gas Network
- Water Network
- Sewer Network
- Telco Network
- Thermal Network
- Fuel & Chemicals
- Transport Network
Why bother with a Data Model?

- **A Common Language**: standard, consistent representation of buried assets and their characteristics across geographies and sectors

- **Scalable**: standardised “joining instructions” for new organisations

- **Sustainable**: data load and transformation needs to be repeatable and frequent – data model provides an enduring, consistent target
Why bother with a Data Model?

- **Data Quality Improvement**: opportunity for data quality improvement – conformance to a standard is one way of communicating data quality

- **Roadmap**: Represent what’s there now, but also headroom to grow as an industry – in particular metadata about data quality

- **Open**: helps to avoid lock-in and contributes to an open eco-system
Growing participation*

- 500+ Asset Owners engaged across England and Wales
- 325 Data Exploration Agreements (DEAs) signed
- 220 organisations’ data uploaded to NUAR
- 183 datasets’ transformations agreed
- 191 Data Distribution Agreements (DDAs) signed

* Data correct as of 01 September 2023
NUAR Meets the Real World

“Everyone has a [Data Model] until they get [Real Data]”
What have we observed?

Based on data published from 146 organisations
Focus on linear assets in electricity, gas, sewer and water networks

<table>
<thead>
<tr>
<th>Total Features</th>
<th>53,421,228</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component Type “Other”</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>(Electricity &amp; Sewer: 30%+)</td>
</tr>
<tr>
<td>Material “Other”</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>(Sewer 46%; Water 28%)</td>
</tr>
<tr>
<td>“Unknown” Depth</td>
<td>86%</td>
</tr>
<tr>
<td></td>
<td>(variation in how recorded)</td>
</tr>
<tr>
<td>Data Quality Metadata provision</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>(Electricity: 12%)</td>
</tr>
<tr>
<td>Invalid Geometries</td>
<td>~0.1%</td>
</tr>
</tbody>
</table>
What’s Next?

- Implementation of the “Observations” feedback loop
- Data Model publication:
  - GML encoding
  - OGC Code Sprint in late 2023
  - Publication as reference model for MUDDI conceptual model
- Independent Validation service:
  - Engine for feedback on compliance and conformance
  - Currency; Completeness; Domain Consistency; Metadata
  - Maturity Model
- Mapping to the UK GEMINI geographic metadata standard
- More formal assessment of conformance performance to date and focused feedback/actions as part of maturity model implementation (including e.g. standardisation of measurements etc)
Promote, Support, Enable

- **Promote:**
  - Metadata relating to Data Quality is captured and exposed
  - Proposed mapping to the UK GEMINI geographic metadata standard

- **Support:**
  - Transformation to a standardised form
  - Validation and Reporting on compliance/conformance
  - Maturity Model

- **Enable:**
  - Observations feedback loop
  - Potential to incorporate other sources (e.g. PAS128 survey data)
You can find out more about NUAR at:

gov.uk/guidance/national-underground-asset-register-nuar

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