MUDDI – perspectives on implementing a utility data model from AS5488

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ARUP
drivers of change

Drivers of Change investigates the key global issues and trends driving change in our societies and markets. It is one of the most well-known and comprehensive publication series of its kind. The cards are an effective way of raising awareness about our environment – both man-made and natural. They help initiate conversations, act as workshop materials, provide a foundation for further study and serve as an input for strategy and innovation processes.

A compilation of seven of the above card sets was published by Prestel in 2009.

Please contact us if you would like to learn more about Drivers of Change or order a set of printed cards. Drivers of Change is also available as a mobile app on iOS and Android.
Challenges
How have we been addressing this?

**REACTIVE INNOVATION**

- Clash detection v1
  - v2
  - v3
- Site Survey and reporting
- Flood modeling and visualization
- Commissioning

*Light rail is a key feature of the Transport for NSW vision for the transport future of Sydney.*
AS5488-2013 (SUI) - Australian Standard: Classification of Subsurface Utility Information.

Australia has an Australian Standard for the classification of subsurface utility information (SUI) (AS 5488-2013). Its purpose is to create a common way of specifying the exact location and nature of a huge range of underground infrastructure, provide guidance on how information on subsurface infrastructure should be collected and how it should be conveyed to those who need it.

The new standard has been prepared by Standards Australia Committee IT-036, Subsurface Utility Engineering Information, made up of several organisations with an interest in the issue. These included Dial Before You Dig and the National Utility Locating Contractors Association (NULCA), who have played a significant role in ensuring that the standard is truly Australian and not simply a replication of the US standard.

The published standard is aims to improve public safety, reduce costly property damage and provide much more accurate information on the location, type and condition of subsurface utility infrastructure than has been available in the past. In addition to setting out a standard way of specifying the location of subsurface infrastructure it also provides guidance on how this information should be collected and how it should be conveyed to those who need to use it.

It contains an extensive list of asset types and a suggested colour code for how different types of asset should be identified. However it does not specify how subsurface assets are identified on maps, plans and electronic records in terms of symbols, line types or colours. It notes that such depiction is the prerogative of the organisation that owns the asset. The published AS 5488 – 2013 is available from SAI Global.

In Accordance with AS 5488, the standards for locating and marking underground services are split up into four classes:

- **QL-(A)** sighted, must be located, then pitholed. Utility must be physically sighted and measured.
- **QL-(B)** traced, laterally, with depth detail, between two known points (i.e. two man holes)
- **QL-(C)** aligned from surface features,
- **QL-(D)** any other method (E.g. DBYD plans only)

This allows all operators on the project to understand the accuracy of the site location and map data when carrying out any kind of planning and excavation works.

It can also reduce costs by pre-planning on projects.

(Further reading)
Underground Utilities Survey

Typical approach
- Siloed project phases
- Non-standardised data models/schemas
- Information collection duplicated
Underground Utilities Survey

**DE approach**
- Information carried through phases
- Standard data models/schemas (AS5488)
- Value of information for each asset increases throughout project
Platform approach

- Interface applications
  - Project Information Model
    - data platform: API access
  - Service (data) providers
Platform evolution

Data platform: API access

Interface applications

Service (data) providers
Information value chain

Data platform: API access

Interface applications

Service (data) providers
Information Value Chain

- 3D Web Viewer
- Multi-Criteria Analysis Tool
- GIS Web Viewer
- Survey Brief & Documentation
- Project Portal Dashboard
- Alignment Optioneering
- Utilities Viewer
- Utilities Clash Detection
- Site Surveys
- Public Consultation
- Strategic Business Case
- Final Business Case
- Design - Scoping
- Design - Definition
- EIS
- Site Investigations
- Procurement
- Early Works
- Main Contract Award
Platform approach: avoiding silos

Interface applications

Project Information Model
data platform: API access

Service (data) providers

Silo

Silo

Silo

Silo
A new Governance model

- Digital Engineering Steering Group
  - Project Digital Engineering (Arup)
  - Project Delivery Office
    - Services Disciplines (Other Consultants)
    - Independent Technical Advisor (Arup)
    - Engineering Disciplines (Other Consultants)
**User Centred Design**

bespoke applications for specific users and functions, not driven by capabilities of software but needs of users
Original brief – a utilities data management platform
Thanks!