



**37TH INTERNATIONAL
NO - DIG
FLORENCE 2019**

Fortezza da Basso • FLORENCE (Italy)

30th September • 2nd October 2019

From Hades to Heaven? Developments in integrated buried asset information systems in the UK

Jo Parker

The sub surface environment can be crowded



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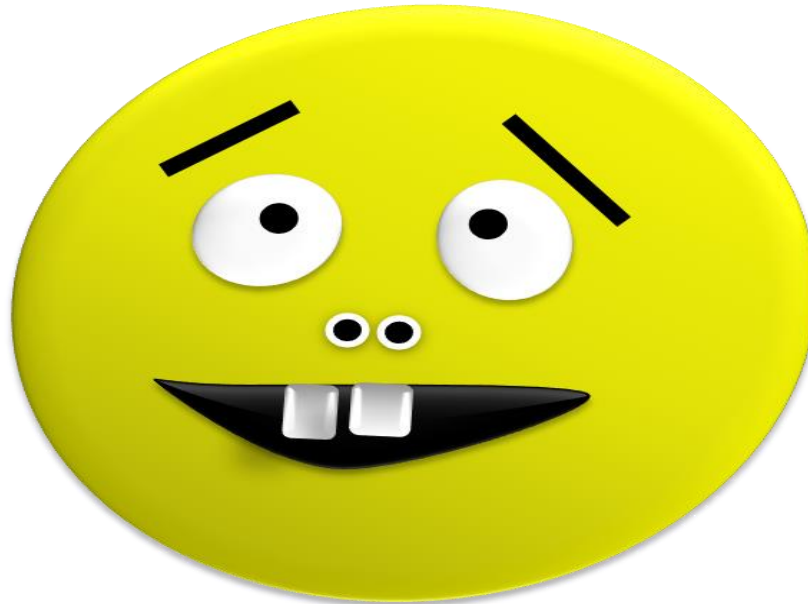
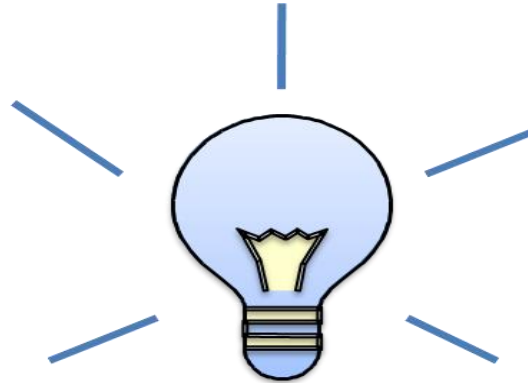


And getting records can
be tedious

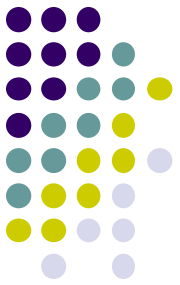
Wouldn't it be good to have a single records system?



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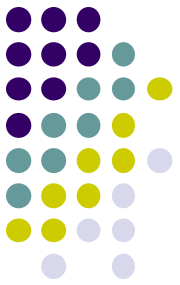


Plenty of Trials in the UK – for the last 30 years!



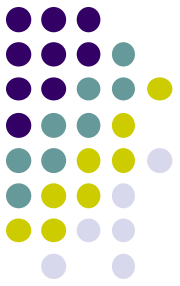
- Microfiche exchange – Bradford – currency an issue
- Digital records trial Dudley – successful but not continued
- PIG ‘1 call’ initiative – failed due to lack of funds
- Cheshire trial – successful but not implemented
- VISTA research project
- NUAG – National Underground Records Group
 - London Trial in 2011 but went no further
- Still nothing for the whole country outside of Scotland

Integration – the VISTA project defined the problem & developed a process



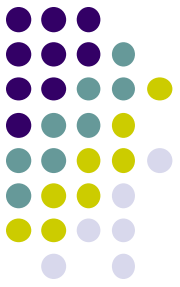
- *Different ways of storing and sharing asset data*
 - Paper – CAD – GIS
 - Raster scanning
- *Different ways of structuring digital asset data*
- *Different ways of describing asset data*
 - HDPE, HPPE, Poly, PE,
 - DBV, Standshut, BV
- *Different ways of representing asset data*
 - Different symbols, colours and conventions
- *Uncertainty – is it really where it says it is?*

What VISTA didn't manage to do

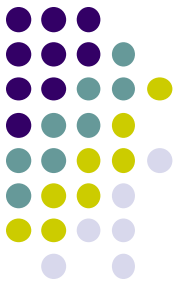


- Develop a practical way to convert raster scanned documents to vector co-ordinates/layers
- Develop a practical way to overcome 'urban canyons'
- Develop a practical way to depict uncertainty on drawings

Field trial results – open trench

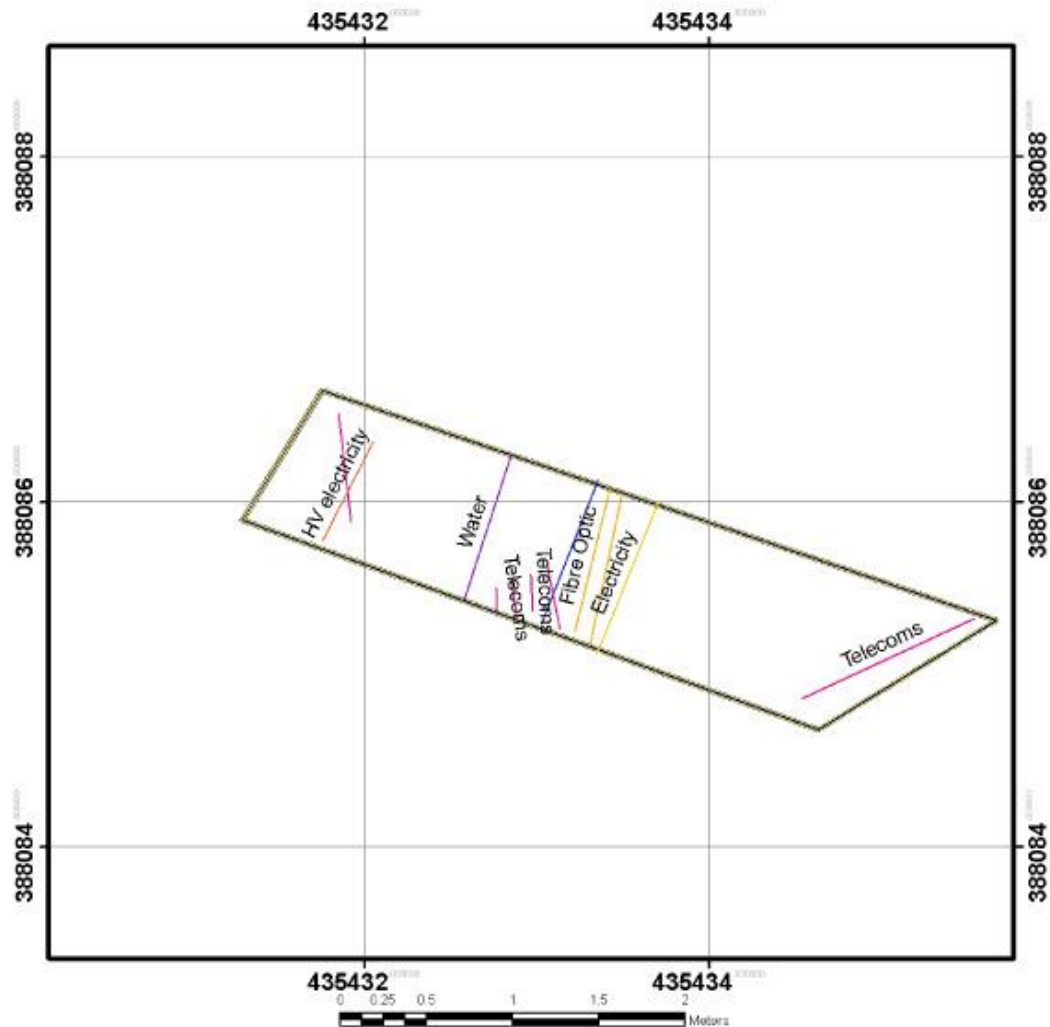


Detailed Survey

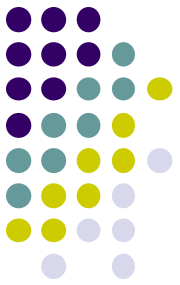


Survey Data

- Legend
- VISTA Survey Type
- Electricity
 - Fibre Optic
 - Gas
 - HV electricity
 - Sewer
 - Street Lighting
 - Surface Sewer
 - Telecoms
 - Unknown
 - Water
 - Water (Abandoned)

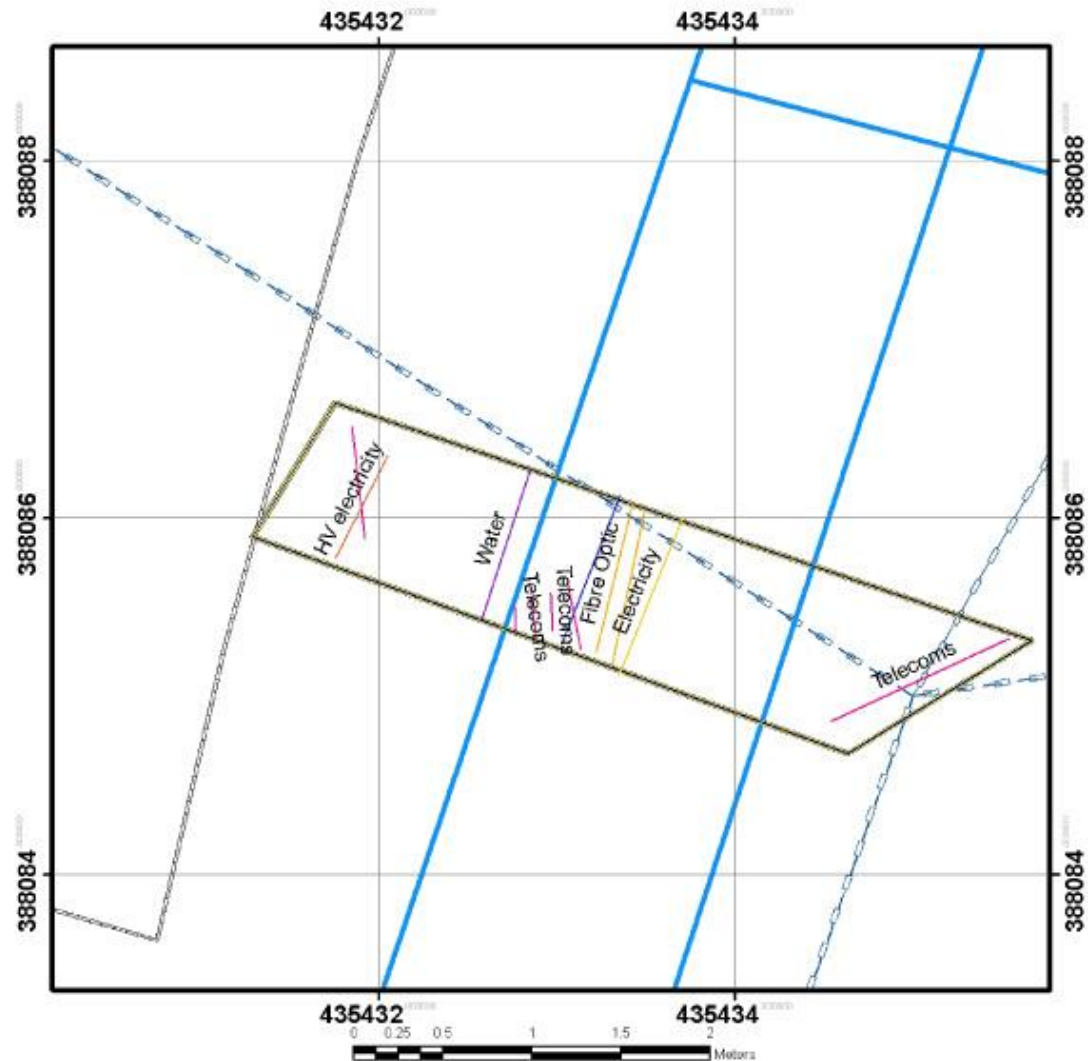


Utility Records



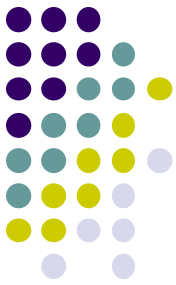
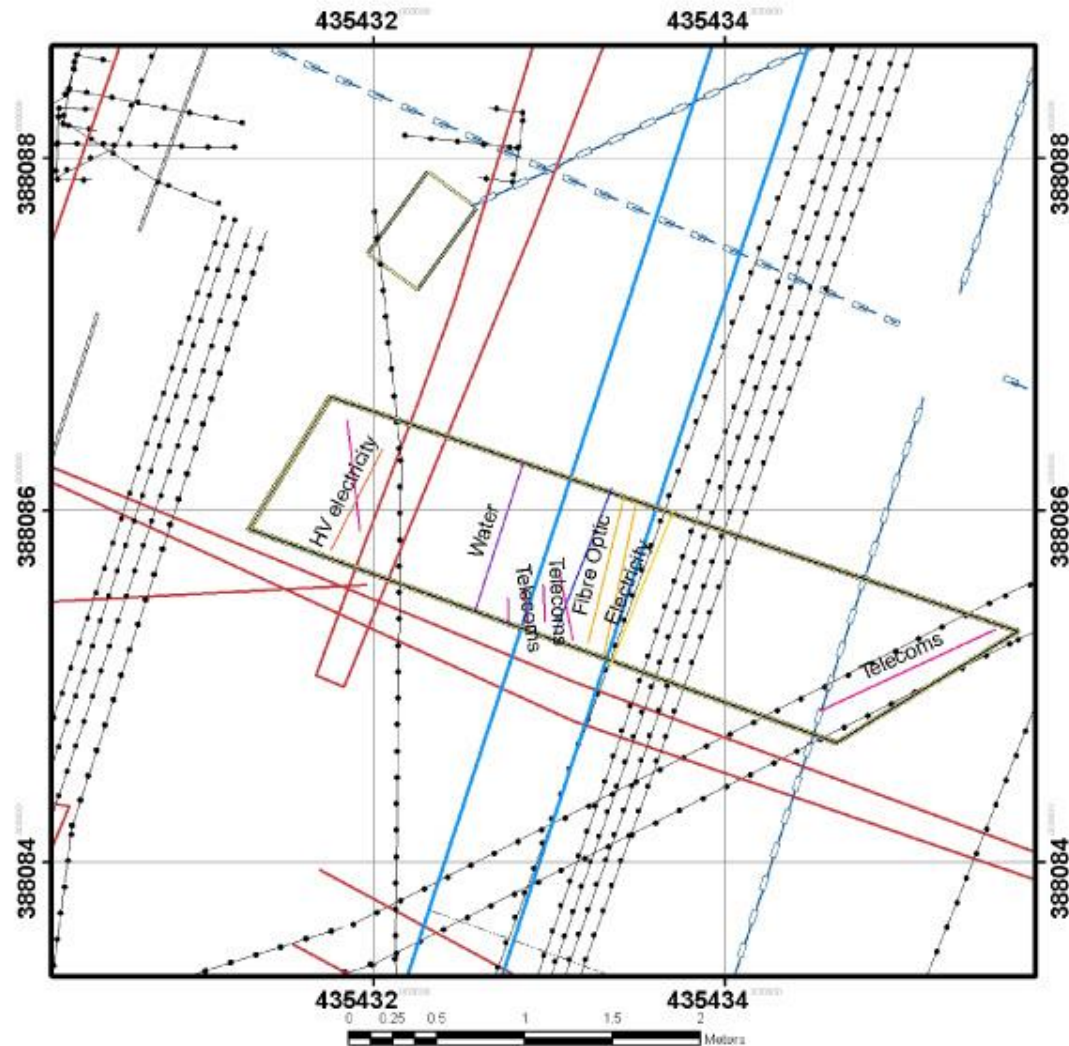
Utility Data

- Legend**
- VISTA Survey Type**
- Electricity
 - Fibre Optic
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 - HV electricity
 - Sewer
 - Street Lighting
 - Surface Sewer
 - Telecoms
 - Unknown
 - Water
 - Water (Abandoned)
 - YW Water Main
 - YW Sewer
 - Gas Transmission Pipe
 - Gas Pipe



Surface Survey

Adien Data



Uncertainty about survey results



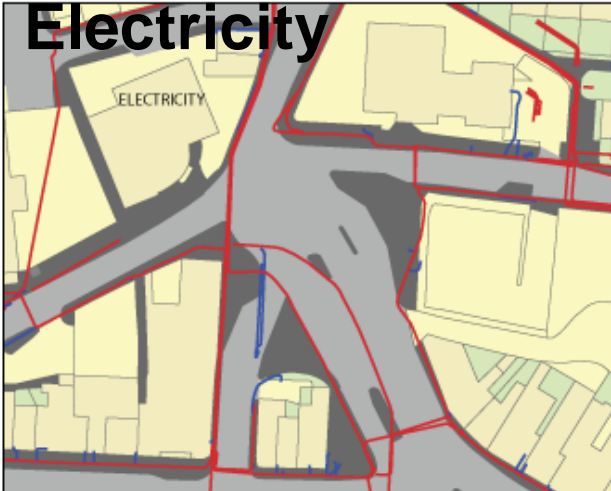
Which representation is correct?

Water



- **Water:**
 - Omissions
 - Inconsistencies
 - Spatial inaccuracies

Electricity



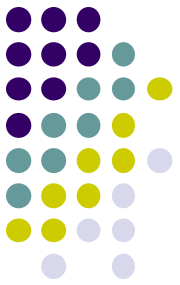
- **Electricity:**
 - Omissions
 - Inconsistencies
 - Spatial inaccuracies

Learning points from VISTA Field Study



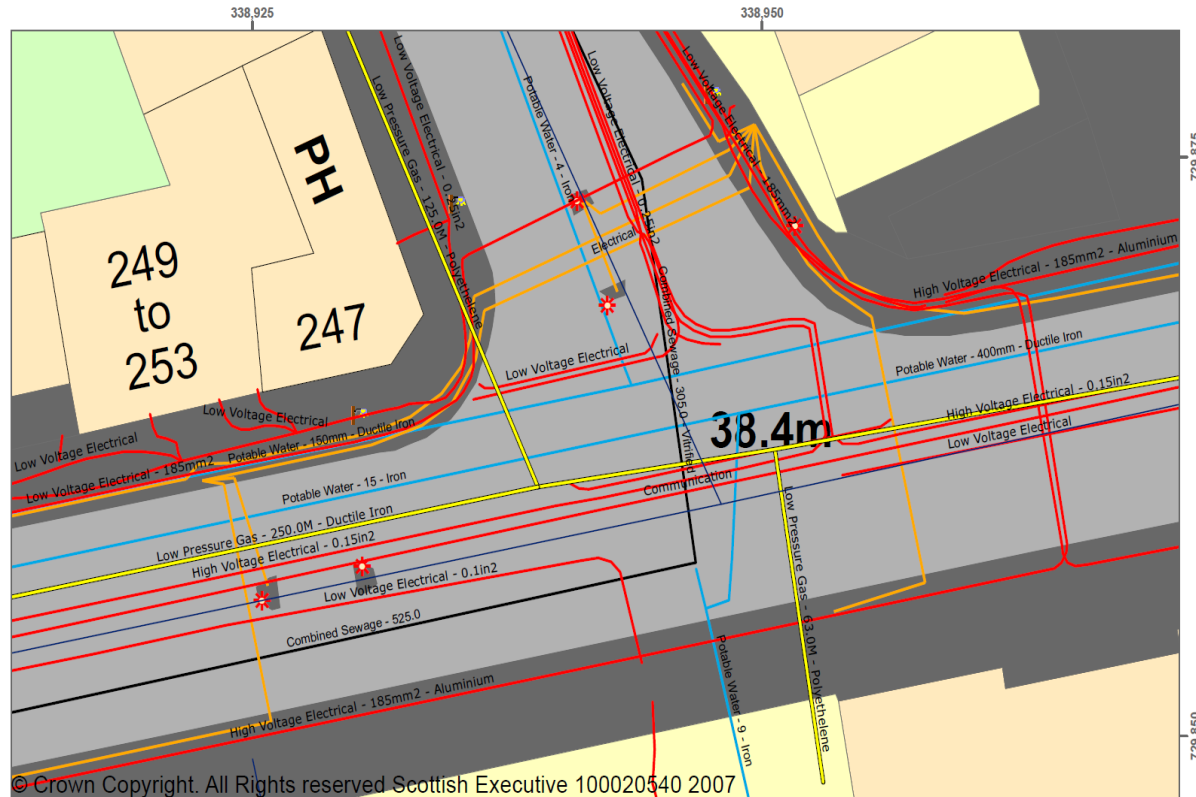
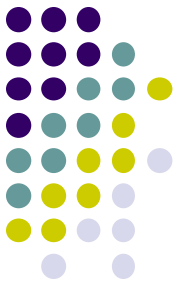
- Depth essential
- Records are out of date very quickly
- Surface surveys help but aren't the total solution
- If you have a surface survey done, how do you know whether to believe that or the drawing?
- Even excavations may not show everything
 - How low do you go?
- High percentage of services belong to cable companies

Scottish Vault



- Implemented 2011
- Allow improvements and adaptations
- Facilitates rapid updating
- Improves data quality
- Reduces risk to both people and infrastructure
- Allows maintenance of infrastructure using the most cost effective approaches
- Improves Health & Safety
- Can link to Field Information Systems and BIM

Screen Shot of the Scottish Vault



This information is valid for the date printed. Do not rely solely on this plan when carrying out excavation or other works, it is for indication only. Depths and lines of apparatus may deviate from those shown. Where no apparatus is shown it may still be present. The actual position of buried services must be verified on site before any mechanical plant is used. There is no substitute for safe digging - refer to Health and Safety Executive Booklet HSG 47.

Susiephone, their agents Symology or any provider of data to the Scottish Road Works Register are not liable for any error, omission or losses arising from works. Undertakers, Authorities and Contractors are likely to be held liable for the full cost of repairs to apparatus and claims made by Third Parties as a result of interference or damage.

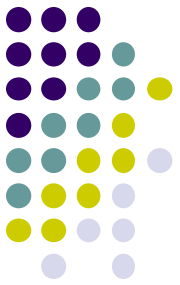
0 3 6 12 18 24 Metres

Title: SRWR Underground Apparatus
Scale: 1:200
Produced: 17/02/2012 13:02 By: SY000011



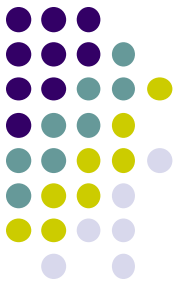
Reproduced with permission of the Scottish Road Works Commissioner

National Underground Assets Group (NUAG) trial

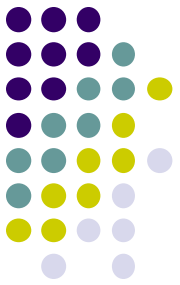


- Funded by DfT (Department for Transport)
- Similar partners to VISTA
- Greater highways participation
- 3 reports developing recommendations
 - Standards for records
 - Mandatory
 - Clear procedures
 - Specification for a web based service
- Identified a 3 stage approach
- Trial carried out in London – Envista





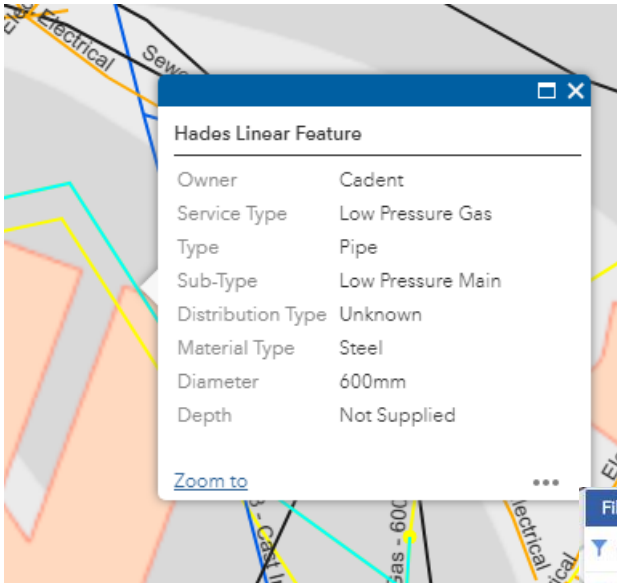
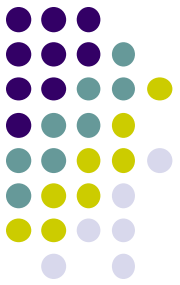
- **H**ighways
- **A**sset
- **D**ata
- **E**xchange
- **S**ystem



Hades

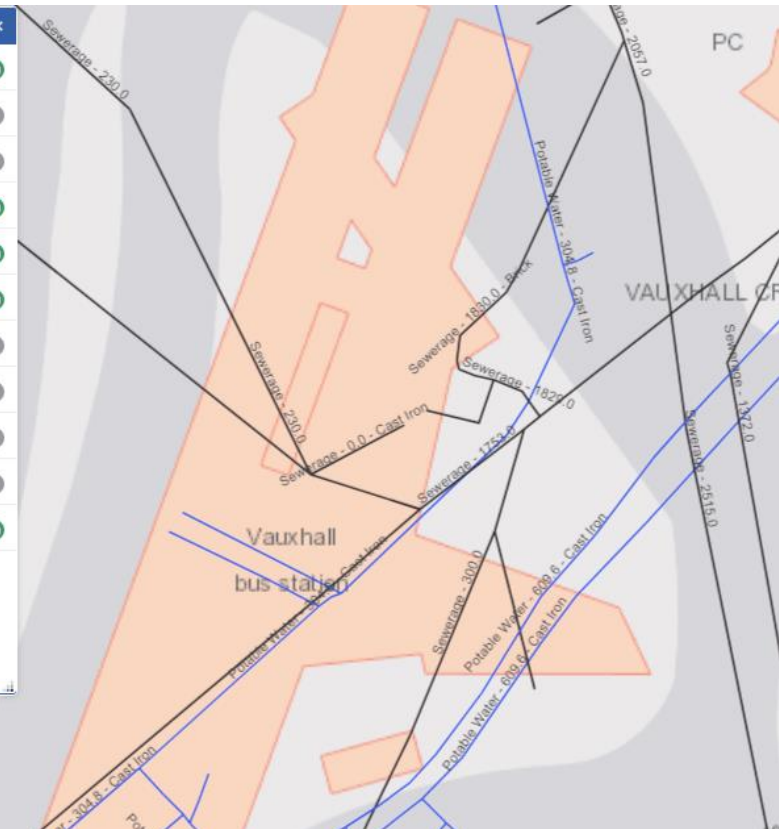
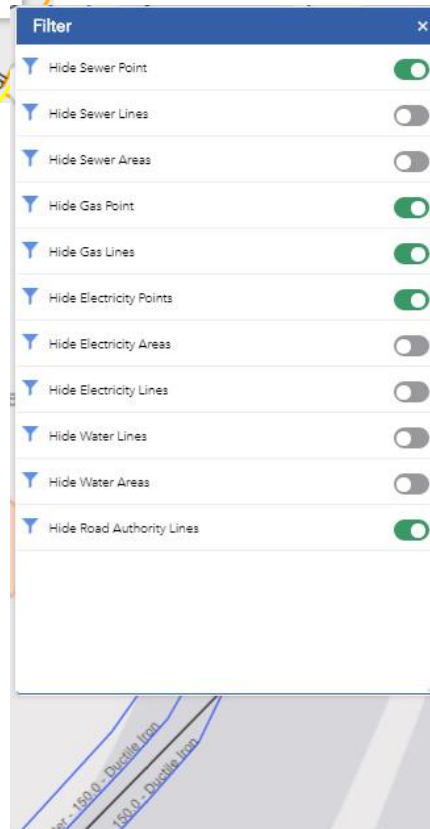
- Pilot trial in London
- Lead by Thames Water
- Funded by TfL's Lane Rental Fund
- Working group included
 - Cadent, UK Power Networks, Openreach, GLA, OS, Utility Survey Exchange, TfL, University of Leeds
- Successfully developed 3 trial sites with integrated data

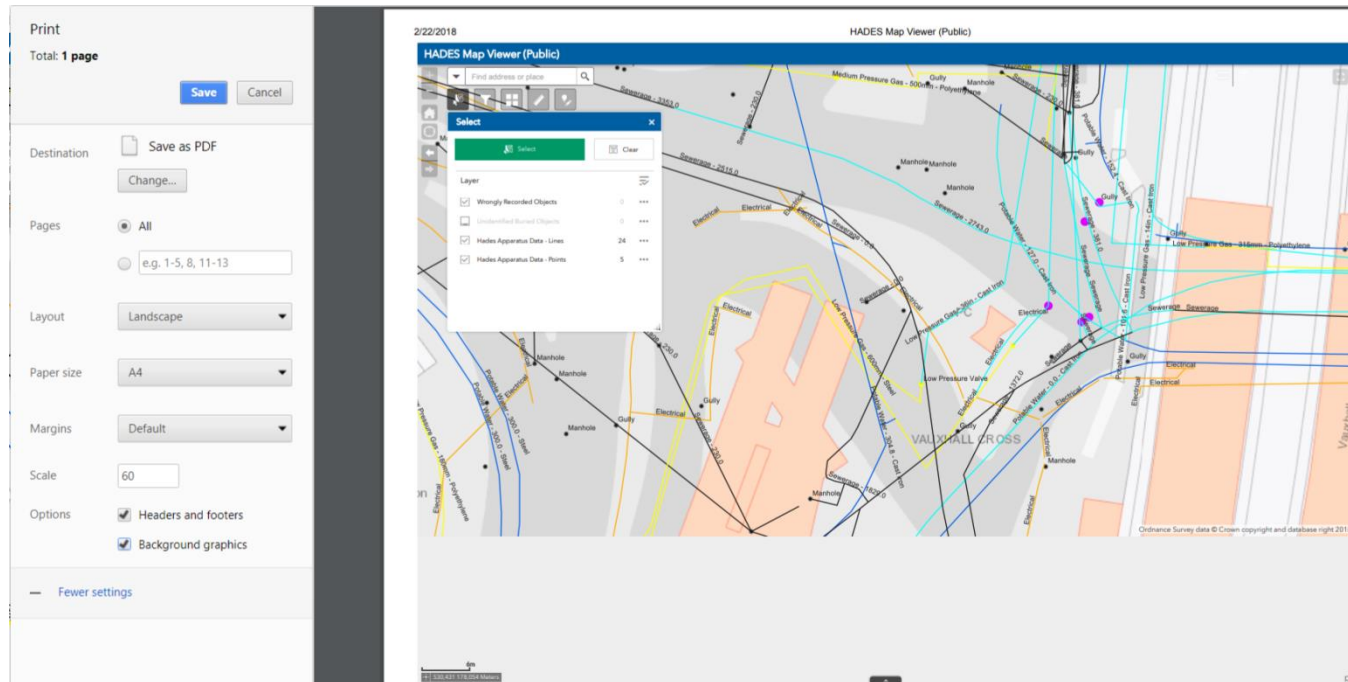
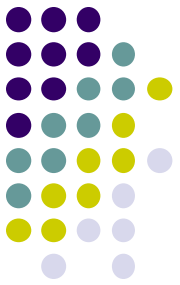




Possible to select features to view

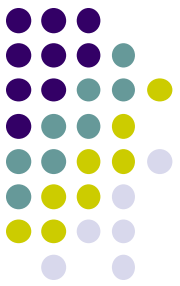
Details of linear features available when you click on feature





Data can be printed – view of print screen

Disclaimer



HADES Map Viewer (Public)

Find address or place

HADES TRIAL - PROJECT TEAM MEMBERS ONLY - NOT FOR USE IN PLANT PROTECTION

HADES Map Viewer Disclaimer

The data comprised in, or derived from, the Datasets and displayed in HADES has been provided, or derived from data provided, by the Suppliers for the purpose of assisting End Users in viewing the location of the Suppliers' networks, plant and apparatus. The Suppliers and the Service Provider, have tried to make this data as accurate as possible but they cannot warrant that it is accurate, complete and up-to-date. In particular (but without prejudice to the foregoing generality), You should note that:

- Depths and lines of apparatus may deviate from those shown.
- Where no apparatus is shown, it may still be present

Accordingly, You must not rely solely on data viewed, extracted or printed from HADES when You are carrying out any excavation or other works in the vicinity of cable networks, plant or apparatus belonging to any of the Suppliers. The actual position of any underground service, cable network, plant or apparatus must be verified by cable detection or other suitable equipment and established on site before any mechanical plant is used. Accordingly, unless it is due to the negligence of the Service Provider and/or a Supplier, or their respective employees, sub-contractors or agents, none of the Service Provider or the relevant Supplier will have any liability for any errors, omissions or inaccuracies in the data or for any loss or damage caused or arising directly or indirectly from the use of and/or any reliance on this data.

☐ I agree to the above terms and conditions

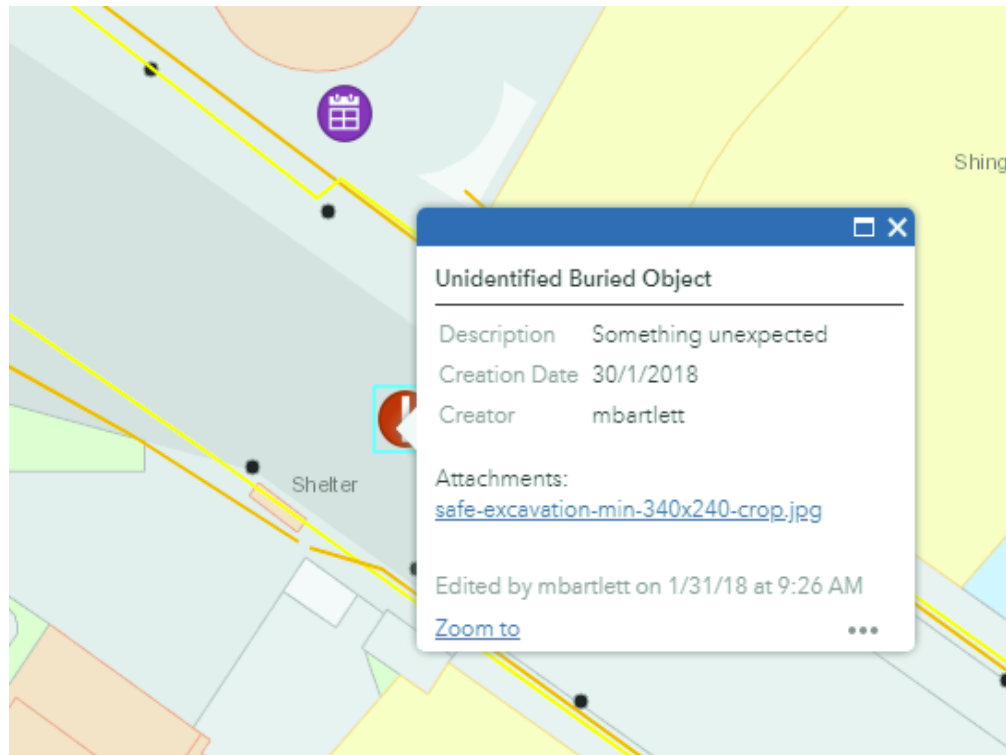
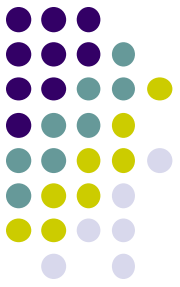
OK

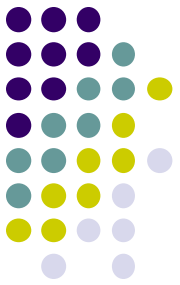
Move mouse to get coordinates

Ordnance Survey data © Crown copyright and database right 2018. OS 100035994

The image is a screenshot of a web application titled "HADES Map Viewer (Public)". It features a map of London with various districts like Paddington, Bayswater, Kensington, Chelsea, and Battersea visible. A large, semi-transparent grey disclaimer box is centered over the map. The box contains the text "HADES TRIAL - PROJECT TEAM MEMBERS ONLY - NOT FOR USE IN PLANT PROTECTION" in bold, followed by "HADES Map Viewer Disclaimer". Below this, a paragraph explains that the data is provided by suppliers for assisting end users and that the suppliers do not warrant its accuracy. A bulleted list states that depths and lines of apparatus may deviate from what is shown and that apparatus may be present even if not shown. Another paragraph states that users must not rely solely on the data for excavation work and that the service provider and suppliers are not liable for errors or damage. At the bottom of the box, there is a checkbox labeled "I agree to the above terms and conditions" and an "OK" button. The map interface includes a search bar at the top left, map navigation controls on the left, and a scale bar at the bottom left. The bottom right corner shows copyright information for Ordnance Survey data.

Unidentified Buried Objects and Wrongly Recorded Buried Objects can be included

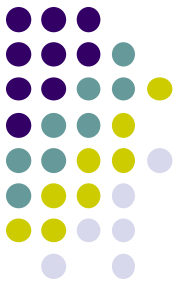




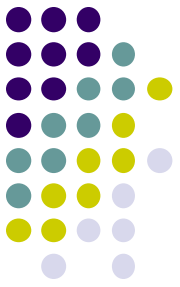
Further developments

- The system was reviewed at the Northumbrian Water Innovation Festival
- Using a similar approach a system has been developed for Sunderland
- Now the UK Geospatial Commission has started an extended trial in London and Sunderland costing £3.9 million
- The intention is to develop a national records system – watch this space!

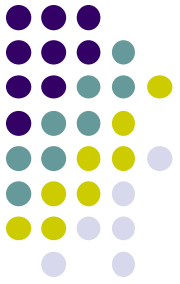
Will Hades deliver trenchless heaven?



Will Hades deliver streetworks heaven?



- Do the organisations involved this time have the clout to delivery?
- Will it continue to develop and improve?
- What do we do about raster scanned drawings?
- How do we deal with ‘the 3rd dimension’?
- Will users take the information as ‘gospel’ when we know it’s not accurate?
- Will record drawings continue with sub-optimal accuracy?



THANK YOU

Any questions?

j.parker101@btinternet.com

WATERSHED ASSOCIATES
TECHNICAL AND MANAGEMENT CONSULTANTS