



Mapping the Underworld 3rd Workshop

KNOWLEDGE INTEGRATION

How can legacy asset information be enhanced and new location information integrated?

Anthony Cohn



Introduction

09:30 Registration and Coffee

10:00 Introduction

10:10 Session 1: Data Acquisition

11:10 Break

11:30 Session 2: Data Integration

12:45 Lunch

13:45 Session 3: Data Presentation

15:00 Group Discussion

15:45 Break

16:05 Panel Discussion, Final Remarks

17:00 Close

Everything takes place here in this room.

Floor microphones for questions



Utility infrastructure has been part of the urban fabric for millenia

Modern utility services established in the 19th Century

- Most assets laid in the street
 - Which has become increasingly congested
- Organisation\legislative structures have changed dramatically
 - Private – public – private companies
- Asset recording systems have developed autonomously
 - Until mid 80s based on hand drawn engineering plans
 - Since 80s many companies have migrated to GIS based asset records



The Problem



- Massive network of buried services: gas, water, electricity, telephone, cable, sewage, drains ...
- Need to know asset location for planning and maintenance

- street work
 - ~4M street openings p.a.
 - Direct costs of £1B p.a.
 - Indirect costs of £3B-£5B p.a.
 - Safety!



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Can utility data improve street works?



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utility data can help street works, but

- utility data is created/maintained independently by individual utilities
- utility data is encoded in an uncoordinated way, i.e. without consideration of compatibility and interoperability with other utility data
- this results in the existence of a large volume of data diversity
 - data models
 - structures
 - naming conventions
 - units
 - reference systems etc
- overcoming data diversity is an essential step to improve usefulness of utility data in street work



Mapping the Underworld: EPSRC “Ideas Factory” project (£1M)

- Knowledge and Data Integration (Leeds)
- GPS Based Positioning System (Nottingham)
- Enhanced Methods for the Detection of Buried Assets (Oxford)
- Buried Asset Location, Identification and Condition Assessment using a Multi-Sensor Approach (Birmingham, Sheffield, Bath, Southampton)
- 2005-2008



VISTA Project

4 Year project funded by the DTI.

Joint project between Leeds and Nottingham universities.

In collaboration with 20+ utility and other partners.

Goal: to reduce the direct and indirect costs of utility maintenance associated with the highways.

Challenge: More effective integration, representation and use of existing digital assets.

Problem: Each utility organisation maintains their data in different database environments with different logical and physical models.

Solution: To find mechanisms to integrate heterogeneous data to generate a seamless and consistent integrated virtual data model.

Integration Work in MTU and VISTA



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Aims: provide a framework which will enable underground asset knowledge from multiple sources to be integrated

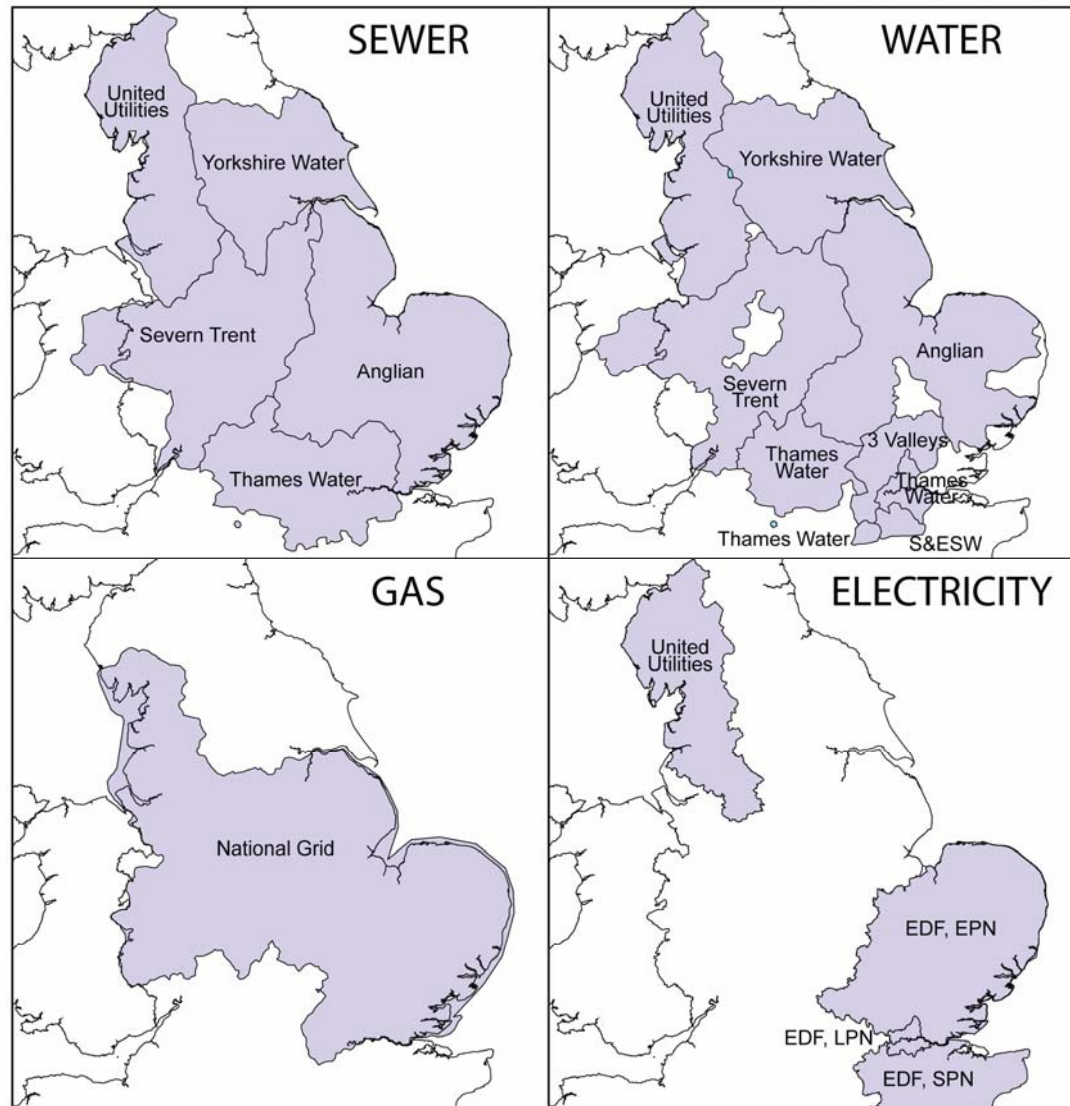
Objectives:

- identify and agree a core set of location and attribute data for underground assets
- to provide a framework to enable this underground asset data from multiple information sources to be represented in a common format
- to construct and evaluate a prototype system using data from some utility companies

Utility Partners (not including telecoms)



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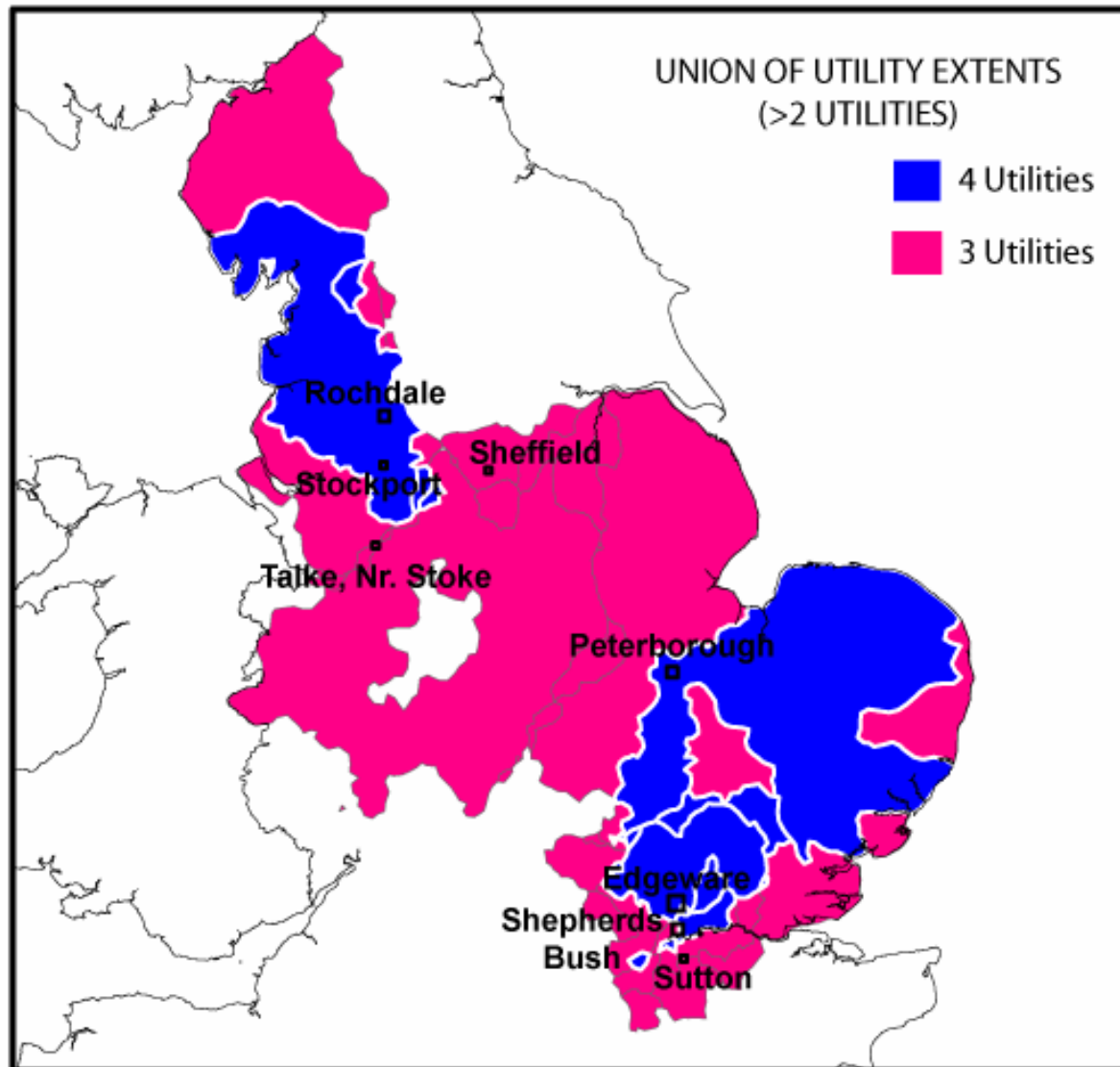
Utility Partners:

- United Utilities
- Yorkshire Water
- National Grid
- Anglian Water
- Severn Trent
- EDF
- Thames Water
- 3 Valleys
- Sutton and East Surrey Water

Study areas



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#utility types

Survey data available

Urban/rural

Sector/company coverage

...