

VAULT Scottish Community Apparatus Data



Overview:

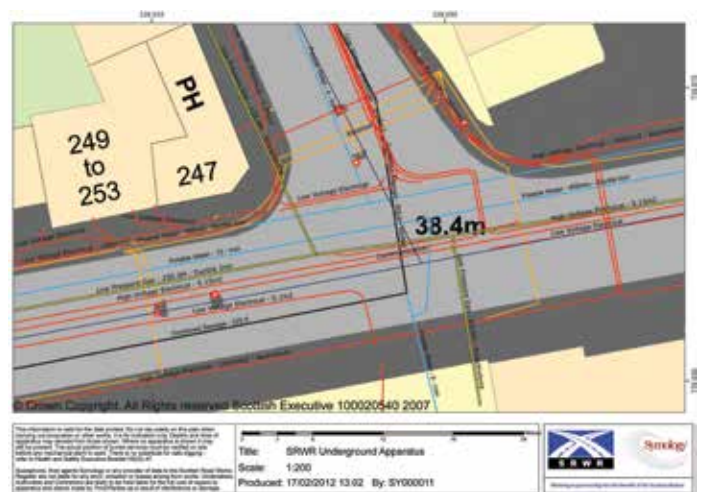
The lack of real-time information about pipes and cables underground has often led to disruption to the UK's roads, and its population. While information is available about where this infrastructure is located underground, a delay in receiving this information can lead to further disruption and costs. Noticing a need for real-time availability, a consortium involving the University of Leeds came to create a new way to share and access information.

The collaboration of two externally funded projects, which first launched commercially in Scotland, became the Scottish Community Apparatus Data Vault (VAULT). Designed to provide users with information about underground pipes and cables from one centralised location, wider benefits include reduced disruption to the public, and significant time and cost savings to utility suppliers, by accessing a comprehensive asset database. Recognised for the valuable contribution it would have socially and economically, as well the potential to be scaled across the UK, VAULT was awarded the Institution of Engineering and Technology's 2012 Innovation Award for Built Environment.

Motivation:

Every year, in excess of four million holes are dug in the nation's roads to repair leaks, provide connecting services to new premises and to lay new cables and pipes. Although recently installed assets may be well mapped, location data on older services can be very poor, in some cases even non-existent.

Built Environment



Professor Anthony Cohn, University of Leeds, IET Fellow and leading project member explains: "Due to outdated information and long waiting times to receive the right infrastructure data, holes can be dug up in the wrong place, causing unnecessary damage. More importantly, there are also considerable indirect costs owing to disruption on the roads caused by works, waste, and pollution."

In 2004, the Engineering and Physical Sciences Research Council (EPSRC) ran an innovation led 'Ideas Factory' programme themed around creating solutions to overcome infrastructure challenges presented by the underground. Entitled "Mapping the Underworld", the University of Leeds subsequently won funding from this initiative to research and develop a prototype system able to deliver integrated utility information that would highlight cables and pipes from different companies.

Coupled with integrating this multitude of data, was the need to ensure the delivery of this information was up to date. This additional challenge secured further funding from the Technology Strategy Board for a project initially entitled "Visualising integrated information on buried



assets to reduce streetworks (VISTA)". The overall aim of the TSB funded VISTA project was to provide a framework for data sharing which enables underground asset knowledge from multiple sources to not only be integrated but reused, updated, and efficiently disseminated. The necessary funding gained for both projects, and the similar objectives underpinning both, led to the collaboration of 22 utility companies and partners to create and trial one combined system, which has been commercially realised as VAULT.

Development:

The system was initially trialled in the East Midlands which saw the creation of a global schema of all partners and stakeholders that agreed the methods of mapping from various partners involved, along with the level of granularity that would be charted. The Scottish Road Works Commissioner heard of the progress of the proposed system and contacted the consortium with a view to undertaking a trial in Scotland.

Professor Cohn explains: "The original consortium did not include any Scottish utility companies as the scope was deliberately kept focussed to England as the first target, but the prospect of expanding our system to a Scottish trial was attractive, and made easier by the web-based system already in existence which allowed Scottish users to easily request information for later offline delivery."

Two trials were undertaken in Scotland which proved successful. As a result, the Scottish Roadworks Register decided to explicitly include the requirement to provide real time access to information when the contract for the web based information request system was put out to tender at the next renewal date. Following the contract renewal, Symology Ltd, the provider, collaborated with the University of Leeds and the Scottish asset holders to build the VAULT system which went live in March 2012.

Results:

"The system builds on the earlier Scottish Road Works Register's one-stop-shop system allowing users to request utility records on-demand that could once only be delivered by post, days or weeks later. This diverse set of data is now available on demand, instantly in an integrated downloadable form," explains Professor Cohn.

An avid member and fellow of the IET, Professor Cohn saw the value of sharing this success particularly within the IET's extensive knowledge sharing network. The first opportunity to do this was the IET's annual Innovation Awards.

"I decided to submit the project for the IET's Innovation Awards in 2012 as I felt it was able to showcase real achievement, benefits and scalability. The combination of the on-demand and real-time delivery of this integrated information from disparate sources, along with the ease of use across multiple devices and savings made in terms of costs and resource, gave this project a real edge that was in my opinion, award winning."

VAULT successfully won the IET Innovation Award for the Built Environment category that year giving it extra credibility to help take the project nationwide.

Next steps:

The system, currently now 'at market', securely delivers integrated information on utility and other underground apparatus to over 300 unique users across 47 different organisations, with an average of 30 unique users daily (as at the time of submission the Award). The next phase for the MTU/VISTA consortium is to see the expansion of the project across the UK. Further in the future, the University of Leeds is part of the Mapping the Underworld 2 and the Assessing the Underworld projects which are developing a "multi-sensor trolley" able to not only map the actual position of underground assets (not always where they are recorded) but also to assess their condition.

"With a far-reaching project like this in our hands, it is essential to make use of all resources available to give the project the accreditation and value it needs to secure more funding that will help develop it even further. The IET, with its award and global intelligence network will be an essential part in making this happen," concludes Professor Cohn.