

CaseStudy

Ordnance Survey & Mobileye Create a New Type of Data Collection



Creating accurate, updated roadside asset maps using existing vehicles

In May 2019, Mobileye, an Intel company, leader in collision avoidance systems, and Ordnance Survey, Great Britain's national mapping agency, began a joint project called RIACT – Roadside Infrastructure Asset Capture Trial. It was developed in response to an articulated need by highways and street asset owners to have current, consistent, reliable mapping of all features of the road infrastructure. Utility companies, in particular, face the dilemma of needing to amalgamate data collected over the course of decades, leaving them with outdated, inaccurate information – especially regarding transferred and above-ground assets. Sometimes the type or status of an asset is missing.

RIACT uses the data collection capabilities of the Mobileye 8 Connect collision avoidance system, along with Ordnance Survey's advanced mapping technology, to create an infrastructure asset data service for Great Britain.

Ordnance Survey has been around since the mid-18th century and was tasked in 1747 with creating the "Great Map" of Britain. Since then, it has continued developing and refining mapping techniques. This project is an opportunity for the company to explore the exciting possibilities of using vehicle-based cameras to create the first detailed roadside infrastructure dataset of Great Britain for a new location information service. This project was made possible with the development of the Mobileye 8 Connect, a collision avoidance system with cloud capability. Participating fleet vehicles are equipped with Mobileye 8 Connect and, as they travel, scanning ahead, uploading information about the road and roadside – the roadscape – to the Mobileye cloud. Ordnance



Client

Ordnance Survey, National Mapping Agency for Great Britain

Industry

Mapping

Challenge

To create accurate, high-quality roadside asset maps using existing utility fleets, equipped with the Mobileye 8 Connect collision avoidance system

Outcome

Almost 5,000 km of roads surveyed, over one million unique roadside asset features identified, shortlisted for a Government in Geography award



” We have 15,000 miles [24,000 kms] of water mains and 18,000 miles [28,000 kms] of sewers; it's incredibly time-consuming and costly to maintain maps of our assets as they grow and change. The Mobileye technology really changes the game [...] and this is helping us manage our networks and keep our customers' water flowing.”



Clive Surman-Wells
Operational Solutions Manager
at Northumbrian Water Group

Survey takes this information and, using proprietary algorithms, links it to accurate map data to identify landmarks. This landmark data is used to create up-to date, highly detailed maps of Great Britain. At the same time, these vehicles also benefit from the Mobileye collision avoidance system, making their trips safer as well.

It is important to note this information is being gathered from vehicles as they are conducting their normal, everyday tasks – this project obviates the need for specialized (and expensive) survey vehicles sent out specifically to gather this information. This not only lowers costs but means that information is automatically and organically updated by vehicles conducting day-to-day tasks. As a side-benefit, fleet vehicles, drivers and the general public are protected by a collision avoidance system that can help avoid or mitigate crashes.

The first stage of RIACT was focused on the Manchester area and then moved on to northeastern England, in cooperation with Northumbrian Water. The trial now extends to East of England, in conjunction with Anglian Water and Essex & Suffolk Water, and expansion is planned for London.

Northumbrian Water, a company providing water and sewage needs of nearly 3 million people, was the first major fleet to join RIACT. Clive Surman-Wells, the company's Group Operations Solutions Manager, spoke about Northumbrian's interest in the program, "We're really excited and proud to be the first utility company to have the opportunity to try this new technology. There are so many benefits that have the potential to really change the game when it comes to helping manage our networks and keep our customers' water flowing."

In the early stages of RIACT, data collection is focused on two types of data:

1. Asset Mapping, which includes lighting infrastructure, street signs, telco boxes, manholes and drainage.
2. Highway status information, which includes construction areas, road markings and condition of carriage way.

As of February 2020, the program has made over 6.5 million observations of over 1,158,830 unique objects. These include 277,863 poles, 783,552 signs and other road assets, 41,671 road direction arrows, 35,428 line markings and 20,316 traffic lights; and these numbers keep growing on a daily basis as the vehicles are used in day-to-day operations.

Shortly after its introduction, the program was shortlisted for a Government in Geography award by the UK's Government Science and Engineering for its work in "Advancing geospatial data science."

With better, more precise asset data, utility companies and cities will be able to enhance their asset registers with accurate geospatial positioning and condition of assets. This will enable asset owners to:

- Improve reactive and planned maintenance programmes: reducing time spent on site finding the asset.
- Increase efficiencies and reduce street works fines by monitoring street works more accurately, for utilities, while for cities, more accurate monitoring means better permit enforcement, discouraging disruption caused by overrunning street works.
- Plan investment in assets: better understanding the condition of assets allows you to plan investment programmes better; replace sections of assets rather than one at a time.
- Maintain data on performance/replacement timings: optimise performance of the network and ensure asset replacement is completed in good time

In October 2019, George Freeman MP, UK Minister of State, Department for Transport went for a ride in a data-gathering vehicles and had this to say, "...as we were travelling (the vehicle) was doing intelligent digital mapping of the road environment in a way that can be used for such value by utility companies, by local authorities, councils. But also helping to lay the digital grid



Results



Over 1 million unique roadside objects detected in 6 months.



Northumbrian Water has been collecting data in the north east and is expanding the program with new areas. Whilst councils in Oxford and Milton Keynes have also signed up expanding the program even further.



Three utility companies and three councils are signed up on the program.



“... detailed and accurate geospatial data is a must for the success of these projects. We envisage this new rich data to be key to how vehicles, infrastructure, people and more will communicate in the digital age.”



Peter Hedlund
Head of Commercial
Ordnance Survey

that will be key to the revolution of electrification and autonomous vehicles that is slowly beginning to transform the future of mobility. This is a great collaboration between a great tech company (and) a British organisation in Ordnance Survey, really leading the world in how we do digital road mapping.”

Of course, this is just the beginning. As RIACT continues, more and more data will be collected, improving recognition, and with new customers signing up, including Councils, more and more streets will be covered. Additional ways will be developed to use this data, helping to make utility companies, fleets, cities and local governments throughout Great Britain smarter, safer and more efficient.

