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Embrace Open to Unlock the Power of Where

CGI

Introduction

Location-enabled applications are transforming public service delivery in the UK, informing policy and enabling better decision-making. But to fully exploit the potential of these services, public sector organisations need to adopt an Open approach to data and service provision.

The Government has put the UK on course to become a world leader in location-based technologies and services. The public sector is central to this ambition: by improving analysis and driving better decisions, location services are anticipated to play a growing role in areas as diverse as managing the environment, improving transport networks and defending our borders.

Spurred by the publication of the UK Geospatial Strategy in 2020, public sector organisations across the country, are developing and deploying location-enabled applications. Many of them are working with CGI. In the following pages, CGI draws on this experience to explore the critical importance of Open in successfully delivering location-based services.

By Open, we refer to an approach that enables Open data and takes advantage of Open Standards and Open Architectures. As recognised by the Government, which has made Open the core principle of all its technology development, Open enables the public sector to move faster and be more responsive to changing needs. By taking an Open approach, organisations can democratise “the power of where” and make Location Intelligence available to multiple public stakeholders. Each of these stakeholders can incorporate the rich dynamic data into their applications, generating more value, informing policy making and delivering better outcomes.

Open also creates intriguing opportunities for greater collaboration between the public and private sectors: enabling Open access to Government data could unleash a wave of private sector innovation. It has been estimated that enabling Open access to Ordnance Survey’s data could add £13.0 million - £28.5 million to the UK’s GDP.

Open is the key to unlock “the power of where” and deliver the benefits it offers the economy and society. However, achieving Open will not always be straightforward: in many public sector contexts, data is distributed across multiple silos. There may also be cultural resistance to sharing data. The paper concludes with three key considerations to help the public sector address these barriers.

Unlock the ‘power of where’ in the public sector

1. Safeguarding the environment: CGI helps the Department for Environment, Food & Rural Affairs (Defra) store and process satellite data and provides access to the critical Analysis Ready Data (ARD) that Defra needs to safeguard the environment.

2. Planning the future of transport: we are working with the Welsh Government to develop its Active Travel service that uses location data – integrated with data from other sources – to let citizens access personalised information about their healthy travel options.

3. Streamlining service delivery: CGI has enabled The Coal Authority to digitise and automate the generation of mining reports. The new digital mining report service integrates data from multiple sources, including location data and uses intelligent automation. It is 100% more productive than the former manual service.

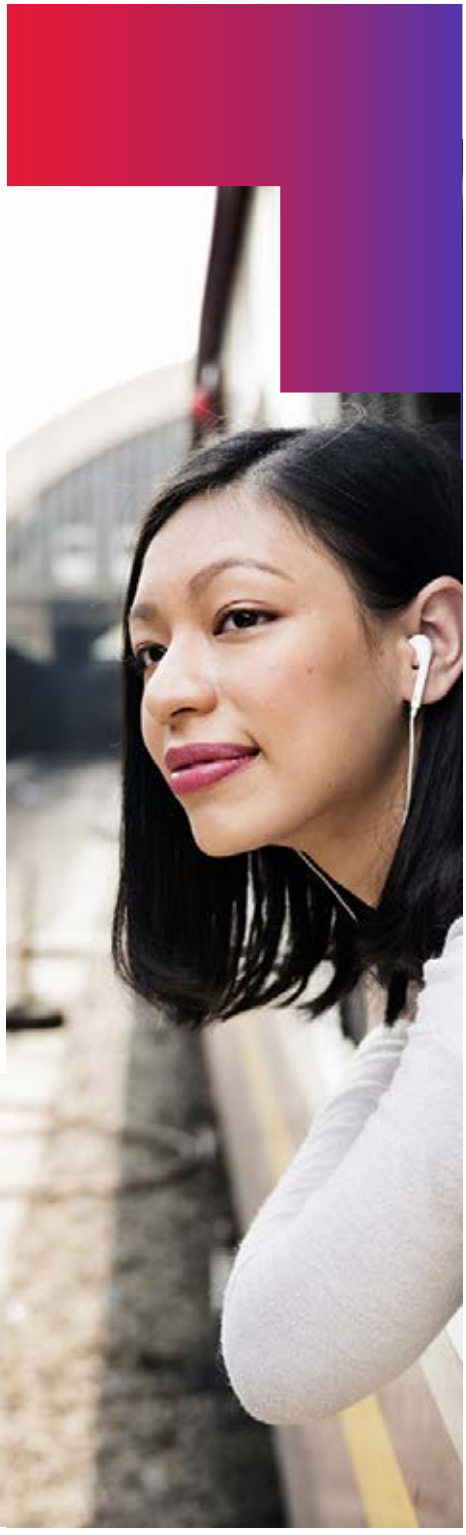
The power of open

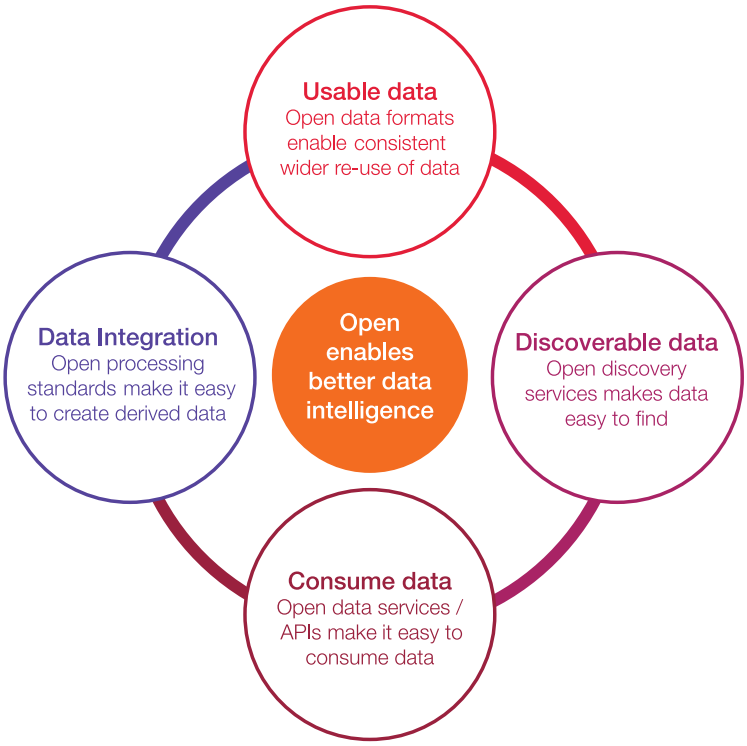
Location services are well established in the UK public sector: Government departments and agencies have been using these tools for almost four decades. Typically, early-generation location-enabled tools served one very specific function.

For example, a tool used to locate the optimal sites for placing wind turbines was designed to perform only that task. To generate this insight, data would be combined from multiple sources including location, windspeed and zoning regulations. But the information was typically not made available for use in other applications.

When data is Open – meaning it conforms to interoperable Open Standards – it can easily be accessed and reused by multiple stakeholders. Data generated in one part of the public sector can enable insights and drive value elsewhere: within the same organisation, in another government department or by citizens and businesses.

Ultimately, the ability to access and integrate data from multiple sources, including location, means organisations can benefit from rich data-led insights. With this Location Intelligence, they can make better decisions and achieve better outcomes.





Above: The Power of Open Data

Making data Open creates more opportunities to drive value from data - many of these opportunities may not have been envisaged by the original data owner.

Increasingly, public sector organisations seek to combine dynamic data from multiple sources, including location sources, and integrate them within business and operational systems, which can then be used by public servants and citizens. DataMapWales is a powerful example of this Open approach in practice.

This Open data portal contains a vast amount of location data relating to Wales. Thanks to data federation, all of this information is accessible to government departments and the public. Third party developers are encouraged to use dynamic data from the portal to create location-enabled services. Active Travel, an app which citizens can use to plan journeys using healthy travel options, is one such service.

Location Intelligence

Location Intelligence (LI) refers to the collection, visualisation and analysis of location-based data to reveal trends and relationships that organisations can use to solve business or societal problems. LI offers very rich insights, which public sector organisations can use to enable better policy decisions and better outcomes.

Open development

To understand the power of Open for developing location-enabled services, it is useful to consider how cars evolved from costly, one-of-a-kind artefacts to become the cheap, dependable products we know today. When cars first appeared on the roads more than a century ago, they were expensive bespoke products, crafted in adapted carriage works and made from unique components manufactured in the same workshops.

With industrialisation, and the arrival of the production line, cars started to be built with components that could be shared between models and over time, the components became more and more standardised, to the extent that different brands could build cars using the same parts. The result was that cars were cheaper to make and easier to maintain.

With Open development, the components are completely modular and can be easily combined to create new solutions or improve existing ones. A typical IT architecture is made up of three tiers or layers: a presentation layer (a client, such as a web browser), an application layer which controls the business logic and a data layer. With Open, it is relatively straightforward to swap out one of the three layers and introduce a new one. Developers can add new functionality and take advantage of new technologies as they emerge.

Beyond the advantages of speed, cost and flexibility, Open can help the public sector address the longstanding issue of “siloization”, whereby data is held in discreet and inaccessible silos across, and within, organisations. With Open, silos are joined up and it is easier for information to be shared between applications, which in turn allows organisations to create Location Intelligence. These rich insights can be democratised and made available to different end users.

The Open approach offers compelling advantages in the public sector context where organisations need to offer new or improved services while facing budgetary pressures. Key benefits include:

1. **Speed:** the public sector environment is fast-moving with new challenges emerging all the time, as policy priorities evolve, and user expectations become increasingly consumer-like and demanding. Open brings a greater ability to swiftly engineer solutions.

2. **Cost:** faced with budget constraints, Government departments and agencies cannot easily discard previous investments. With Open, organisations can improve services iteratively by introducing new technologies that work with existing systems. Additionally, by using components built to Open Standards, organisations can reduce the risk of vendor lock-in, which adds cost and reduces flexibility for future developments. Open brings the freedom to select solutions from other vendors.

3. **Flexibility:** change is inevitable, and it’s impossible to predict what the future will look like. With Open, organisations can at least be ready for whatever tomorrow might bring. Open is inherently flexible and gives organisations more options for how they can respond to future needs.

Open by design

CGI has developed an ‘Open by design’ approach based on three dimensions of Open:

Open Standards: the core principle that drives modern development in the age of big and Open data. Open Standards facilitate interoperability and data exchange among different products or services.

Open Architectures: a technology-agnostic approach to development, allowing the adoption of best-in-breed and new technologies, as they become available. Critically, this approach means existing technology investments can be combined with new technology and integrated into the location-enabled solution.

Open Source: when it makes sense, adopting Open Source Software, which is cost effective and delivers at the enterprise scale required for many public sector deployments.

Open by Design makes it faster to deliver location enabled services that can be quickly and cheaply adapted to keep pace with changing requirements.

For almost a decade, the Government has been committed to Open. In the Cabinet Office’s most recent statement of Open Standards principles, it affirms that these will apply to every aspect of Government IT. As well as making Government data available to citizens, the Cabinet Office statement recognises that Open Standards can unlock the “massive efficiency gains” of Web-based technology and improve public services for all users. Looking forward, the Government believes that Open principles will provide robust foundations for future development and ensure this is “affordable, secure, and innovative”.

Open means the public sector can do more with data

The Department for Environment Food & Rural Affairs (Defra) generates huge volumes of raw data every day. Before it can be used, this raw data has to be processed into Analysis Ready Data (ARD). This is a costly process: creating ARD accounted for 70% of the cost of using Earth Observation data from the European Space Agency's SENTINEL satellite system.

CGI helped Defra implement a cost-effective and reliable way to create ARD. Built on Open Standards, the solution enables Defra to take advantage of ARD across multiple projects, including illegal forest felling detection, assessing water pollution and quality due to road run-offs, houses or farmland.

Because the ARD is Open, Defra is now able to collaborate more closely with other agencies to safeguard the environment. The government's adviser for the environment in England, Natural England is able to rapidly create derived data sets, using the ARD as a base data set and then applying Machine Learning algorithms. This has helped Natural England develop reliable processes for detecting changes in the way land is used, helping the agency work more flexibly.

Going Open: three key considerations

CGI is at work across the UK, helping Government agencies embrace Open to unlock the power of where – and, as a result, become more productive, efficient and responsive to citizens. Based on this experience, we offer three key considerations for successful Open development.

1

Adopt an Open mindset

Open is about democratising data and making it available and usable across as many different stakeholders as possible. Many public sector organisations do not have mechanisms in place that would allow them to make their data accessible – to other divisions within their organisation, or more widely.

More importantly, there can also be cultural barriers in the public sector to sharing data. The Government's embrace of Open is helping shift attitudes – but there can still be a reluctance to provide access to data. Without an Open mindset, Open technology implementations will not fulfil their potential.

2

Federate your data

To truly unlock the power of where and create the rich data-driven insights of Location Intelligence – organisations need to be able to access data in a standardised format. Data federation means homogenising data management and delivery by considering data across the enterprise rather than isolated silos. When building location services, organisations need to ask if there is data that they do not own but need to access from other domains. Data federation is the first step to enabling Location Intelligence.

3

You don't have to make a big bang

Open allows organisations to unlock the power of where without making massive upfront investments or causing disruptive change, Open lends itself to progressive improvement, allowing you to introduce new components when it fits business priorities and budget. With this 'mixed economy' approach, organisations can retain investments that continue to deliver for the business and integrate new technologies when and where they make sense.

Open gives the Forestry Commission a flexible platform for the future

The Forestry Commission is the government agency with responsibility for protecting, improving and expanding England's woodlands. Like many organisations that manage the environment, the agency used location technologies and data to drive key business services and applications.

The Forestry Commission wanted to take advantage of new and emerging location technologies and asked CGI to help it review and upgrade its Spatial Data Repository (SDR) – the platform that enabled the delivery of location-enabled key business applications, including services, web and desktop-based applications. Open was a core specification that would align the upgraded SDR with the Government's commitment to Open and deliver a truly open, interoperable architecture.

Working with the agency, we developed an implementation roadmap for the delivery of a single Open standards based SDR repository that would feed all applications across the Forestry Commission. Our approach reused the existing investment in location technologies – while delivering an Open architecture that would give the agency the flexibility to integrate new technologies.

Conclusion

Open is a proven approach for enabling location-enabled applications and delivering better public services

It's particularly compelling in the public sector environment where its iterative nature and accessibility mean that it meshes perfectly with public sector budget cycles and the need for accountability. As such, Open has been embraced by the Government and is a core principle for all its IT developments.

By adopting Open, Government departments and agencies can progressively modernise public services, integrating existing IT investments with new to deliver the best mix of functionality and value for money to the public. Now, and in the future, as organisations introduce new features and technologies to keep pace with business requirements.

This paper has looked at a handful of the many public bodies that are now deploying location services, enabled by the Open approach. Each of these organisations has embraced the power of Open to unlock the power of where. They are just at the beginning of a journey that can extend far into the future, allowing them to adapt swiftly to the changing policy agenda.

To learn more about how an Open approach can help public sector organisations unlock the power of where, contact: pascal.coulon@cgi.com

Open is a proven approach for enabling location-enabled applications and delivering better public services

About CGI

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world.

We are insights-driven and outcomes-based to help accelerate returns on your investments. Across 17 industries in 400 locations worldwide, our 76,000 professionals provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

Our commitment: Insights you can act on.

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