

Working Together

How technology partnerships are tackling the challenges of disparate spatial systems and data for government.

David Miller, COO of eSpatial Solutions Ltd. discusses the situation facing the Public Sector as a result of ODPM's e-GIF initiative and examines a revolutionary solution driven by new technology partnerships.

The Current Situation

The e-Government Interoperability Framework (e-GIF) issued by the Office of the Deputy Prime Minister (ODPM) sets out the government's technical policies and specifications for achieving interoperability and Information and Communication Technology (ICT) systems coherence across the Public Sector. Better public services tailored to meet the needs of the citizen and business, require the seamless flow of information across government. e-GIF has set the underlying infrastructure, freeing up public sector organisations so that they can concentrate on serving the customer through building value-added information and services.

Adherence to the e-GIF policies and specifications is mandatory. However, the requirements being imposed on Local Authorities by the ODPM are putting considerable pressure to deliver on the vision of joined-up and web enabled government. The challenge facing the Public Sector is the delivery of multiple value-added services that utilize trusted spatial data. This is reinforced by the pending ratification of the Traffic Management Act (TMA), which received Royal Assent in July 2004.

eSpatial views partnerships as the key mechanism to addressing the ongoing challenges facing the Public Sector. These partnerships are not only the one between industry and government but also partnerships between technology providers. We are working towards a scenario where all major vendors can come together to deliver complete, workable solutions as directed by e-GIF.

The Problem

One of the main barriers facing the Public Sector is the fragmented nature of spatial

data. One aspect of this fragmentation with a particularly negative impact is that it has been difficult to consolidate spatial data with attribute data and this, coupled with departmental silos of Geographic Information Systems (GIS) data, has resulted in the ongoing support of several data stores and applications which is costly and resource intensive.

The introduction of the Ordnance Surveys' GML-based OS MasterMap™ and the Positional Accuracy Improvement (PAI) issues relating to it, have highlighted data quality concerns that must now be considered. For example, the data quality of Basic Land & Property Units (BLPU) is mixed due to a number of common data capture errors (snapping, overshoots, undershoots, spikes, slivers etc.).

As more and more information is being pushed out to an ever-greater number of users, the ongoing management of data and users becomes problematic. Never before has the necessity for an easy-to-manage central data store, servicing multiple applications and users been more apparent. The ability to link to a national data hub such as the National Land & Property Gazetteer (NLPG) and update from Local Land and Property Gazetteer (LLPG) is key to the success and manageability of any large-scale system. Combined with that ability is the requirement for role based access and editing, with concise permission management and on-the-fly error checking.

So who will build and manage these systems? A move towards commercially open standards-based systems, whereby Oracle and Java are the tools of choice, will see the timely development and deployment of systems that are easier to maintain and grow.

The Solution

The globally accepted solution to the problem of fragmented spatial data, is to provide a common data store that can be utilised by new and existing applications. This presents the unique opportunity for a

single environment from which to manage all data from disparate applications including non-GIS based attribute data. The use of single common data stores, such as Oracle 10g™, also tackles the issue of working with GML formatted OS MasterMap™ data by utilising fully integrated loading tools such as Dotted Eyes' SuperpOSE™.

Another benefit that becomes apparent during the migration to a single data store is the ability to utilize tools such as Laser-Scan's Radius Topology to address data quality issues. PAI specific tools such as ShiftWiz™ from Dotted Eyes can be used to further improve data quality. Technology now exists which provides a scalable, web-based, data-cleaning environment that can monitor and implement data quality controls, on the fly, during the widespread use of spatial data.

The often complex administration of users' roles and permissions can now be controlled centrally via single web-based data and user administration. Using industry standard tools such as Java Application Server's (J2EE) access control and LDAP directories, access can be defined based on user's roles to decide who can see, edit and clean data. The use of Oracle Spatial to store your GI data in the same data store as your attribute data allows for the straightforward publishing of spatial data into never-before possible applications and systems, releasing the power of spatial across the entire administrative body.

Also worth noting are the reduced need to dedicate highly skilled GIS professionals to manage your spatial data, thus freeing them for other tasks, and the ability to push this function out to your general IT staff with commensurate massive cost and time saving benefits. The lower administration and support overhead required in maintaining a central data store system is also endorsed when managing the ongoing updates from Ordnance Survey and the regulated updates to National Land & Property Gazetteer (NLPG) using tools provided by software such as eSpatial's iSMART™ Spatial Data Hub.

The mandating of web-based data dissemination, brings with it new challenges such as the need to function over low

bandwidth connections, the ability to deploy to every PC irrespective of its specifications and the need for pure-web/zero download client software. This has led to a shift away from traditional, large-scale client-server based software to a more lightweight, web-based infrastructure. All of this supports the move towards a single data store and open standards-based information management.

Standard IT techniques can now be utilised to manage your full GIS system. Commercial off-the-shelf software allows you to implement and maintain a Local Government spatial data hub even for users who are not Oracle DBA's. Web-publishing environments such as eSpatial's iSMART, deliver standard feature requirements, pure web viewing, querying, editing and data capture including Metadata standards such as Gemini and EGMS. iSMART's development environment provides for rapid development of bespoke applications that utilize the benefits of this Trust Data and for rapid integration of spatial functionality into business applications.

Conclusion

The emergence of strategic partnerships in the technology industry has led to a shift in how large-scale projects are developed and deployed. No longer are single vendors responsible for all aspects of system, now "best of breed" technologies can be utilised where needed and seamlessly integrated into a larger overall project. Companies such as eSpatial, who specialise in web GIS systems, work hand in hand with other major technology players such as Oracle and Laser-Scan. Specialised tools and services can be employed where needed, especially in core areas such as PAI, by companies like Dotted Eyes, who have years of experience in the Public Sector. Larger System Integrators like Accenture and Black & Veatch show their strengths in the fields of project management, implementation and design.

Today's interoperable systems, utilise standard IT technologies thus placing GIS, the traditional black box of IT, back into the hands of IT administrators and delivering on the regulatory requirements coming from central government.