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WEB BASED GIS TECHNOLOGY FOR LOCAL GOVERNMENT – EXPERIENCES FROM THE UNITED KINGDOM

INTRANET ORAZ INTERNET GIS NA POTRZEBY ADMINISTRACJI PUBLICZNEJ – DOŚWIADCZENIA WIELKIEJ BRYTANII

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Introduction

Intranet and Internet GIS allow data sharing throughout the local government departments and with the outside world. Geography is the easiest way to improve internal and external communication. It integrates – or 'joins up' – the work of departments and provides the infrastructure for delivering services to the public, who understand location – maps and addresses, when they do not necessarily understand department structures or jargon. Geographical data sharing is a part of e-government and improves the quality of services.

Intranet GIS (back office system) delivers spatial data to all local government departments via web browser over an internal intranet. Geographical data sharing integrates the work of Local Government. It allows quicker decision processes, departments can see how their services fit with others, a new level of planning can take place and the allocation of resources is improved.

Internet GIS (front office) enables the authority to communicate with the public 24 hours a day via the web, allowing better understanding of the displayed data.

Intranet GIS

Decision making at all levels in Local Government will be better informed by an understanding of the different themes of corporate information that relate to a location. Very

few decisions within Local Government can be taken without consideration of information from other departments. Geography is often the only common 'glue' joining the data residing in different departmental systems. Intranet GIS joins-up internal data bases and delivers an integrated Local Government system. Via the web browser it opens up GIS across the entire organisation. Data that was locked up in departmental silos informs decision-making and analysis across departmental boundaries.

Departments where geography plays a pivotal role include: Electoral Registration, Revenues, Customer Services, Building Control, Parking, Transport, Arboriculture, Planning, Parks & Countryside, Traffic Engineering, Crime Safety, Social Services, Housing or Environmental Health etc.

The joined-up concept emanates from the UK Government's decision to promote e-government as the standard for all local authorities in the UK by 2005. The idea is to encourage local authorities to make all their systems and services electronic and integrated, allowing citizens to access information more easily. Joined-up is the first step in e-government as it ensures that all departments within a local authority share essential information, helping to cut duplication and ensuring that they act as a cohesive unit to deliver improved services.

Intranet GIS will be presented on the examples of the implementations in London Borough of Ealing and the Dorset County Council, which successfully share geographical data to deliver joined-up services.

London Borough of Ealing

The London Borough of Ealing has long recognised the benefits of using GIS for delivering social and community services. However, sharing location-based information across the entire council has not always occurred. To reverse this situation, the eGIS division of the council embarked on a project to deliver joined-up government practices.

Historically the London Borough of Ealing had been a long-time convert to the benefits of GIS explains Darren Bestley, head of eGIS for the authority. Back in 1992, they were using a Unix-based system that was extremely complicated. The environment team began using desktop GIS for a tree maintenance project. Such was its success that word rapidly spread about the benefits of using this solution.

The Challenge. Today Ealing has some 130 licences reflecting the enthusiasm that many departments have for GIS and the fact that a very large percentage of the information they all work with is location-based. However like every other local authority, most departments worked in isolation and very little information sharing took place, even though this could have helped to improve services. To tackle this, Ealing wanted to make the concept of joined-up government and services a reality.

The Solution. The first step in achieving this goal was to form an eGIS team with Bestley at its head. The main problem that they identified was that no central point existed for the maintenance and storage of geographic information with the result that each department had its own set of data in various versions and copies. An immediate investment was made in a dedicated server and the centralisation of historical and current maps as well as aerial photos and all Ordnance Survey data began.

The next step was to assess the GIS needs of the employees. Whereas some were power users of GIS, others only needed a viewing capability. GDC have found that many of those

with full desktop GIS licences are barely scratching the service in terms of functionality. Most users just required the ability to view information, conduct simple analysis and produce printouts. Therefore, the administration console has been introduced for the administrator to add new users, passwords, templates, tables, data etc. Central administration enables full control over the way different users interact with the data and tailor the functionality to each user's needs.

The Benefits. Intranet-based application does not only present a cost-effective solution but also allow, for the first time, true sharing of data. Data can be viewed in a variety of different formats such as planning application maps, aerial photography, street and service maps. Different departments can now see how their services fit with others and a new level of planning can now take place.

By combining the aboricultural department's map of roadside trees with a map of the parking department's location of CCTV cameras, an instant guide is provided on where pruning of the trees may need to take place to improve camera visibility. Elsewhere, the education department can better plan safer school routes by referring to accident black spot maps.

A quicker decision process regarding the allocation of resources for various activities has been another benefit of the system. Using an in-built search engine and the layering function of Intranet GIS, the employees can get detailed visual representations of the various needs of Ealing. They can then accurately match that with available resources, ensuring a better service for all our constituents.

While intranet GIS has delivered a multitude of benefits, desktop GIS continues to play a pivotal role as the primary workhorse for maintaining the data and providing primary analysis, which can then be shared through intranet GIS. An example has been the use of desktop GIS in the area of crime reduction.

The combination of Ealing's own data with crime statistics from our local police forces has enabled Ealing to create hot spot maps showing where crimes were most likely to occur. Armed with this information they can identify areas for new lighting and CCTV cameras. With this type of geographic analysis, the possibilities for improved service are endless and these actions have had a positive effect on Ealing's community.

Thanks to intranet GIS, all location data is now shared throughout the London Borough of Ealing. Joined up services have become a reality and it is just as feasible for others, provided GIS is placed firmly at the centre of any strategy.

Dorset County Council

30% of Dorset's heathland is located in and around the urban areas of south east Dorset in close proximity to nearly half a million people. These locations are frequented on a regular basis by local residents as well as visitors to this popular area of the South Coast much of which has recently been designated a 'World Heritage Site.'

It became clear to Andy Elliott, Senior GIS Support Officer at Dorset County Council that there was a need to collate spatial data and analyse geographical intelligence and, following extensive trials of a range of systems, the Heathland Project team selected intranet and internet GIS, integrated with the spatial data warehouse.

Dorset County Council has always been aware of the importance of its landscape, particularly after the series of fires of 1976 which decimated much of its heathland. A determination to

protect this valuable cultural landscape led to the creation of the Heathland Forum and a subsequent successful approach to the European Union's Life Nature Fund, resulting in an award of £1.2 million over a five year period. This investment enabled the Partnership to set up the Urban Heaths LIFE Project (UHLP) to combat the urban pressures on heathlands within the region. The UHLP provides extra wardens for the heath, new firefighting equipment for the Dorset Fire and Rescue Service (DFRS), a dedicated wildlife and heathland protection officer within the Police and the creation of an education programme, designed to raise awareness of the dangers and consequences of arson on heathlands to the environment, community and the individual. It is hoped that all of this will help to retain and preserve Dorset's ecological and environmental assets.

Heathland Partnership. The Partnership's remit covers the Bournemouth/Poole conurbation and comprises a wide cross-section of organisations and agencies including: Dorset County Council, Borough of Poole, Bournemouth Borough Council, Christchurch Borough Council, Dorset Fire and Rescue Service, Dorset Police, Dorset Wildlife Trust, East Dorset District Council, English Nature and the Herpetological Conservation Trust.

The Challenge. Dorset County Council wanted to find a cost effective way to capture and analyse GI data, both for present day statistics as well as retrospective years. The Council was keen to move away from paper records to a more reliable and sophisticated approach and, despite having utilized its own desktop mapping system during the infamous foot and mouth outbreak, it was decided that a web response was the best way forward. DCC was also determined to source a solution that could be tailored to meet Dorset's specific needs as well as one that could evolve with the Council over time.

The Solution. Andy Elliott says: *We were extremely impressed with intranet and internet GIS Administration Console which provides a quick and effective way of administering data and users. We believe that we are taking this technology to its limit and view this as a true partnership approach.*

Dorset County Council is already using intranet GIS solution as its preferred tool for capturing and analyzing its GI data. In addition, DCC has purchased internet GIS and spatial warehouse software which will be implemented early in 2004. Internet GIS provides data and information to Partners and members of the public over the internet while spatial warehouse provides data management including synchronization and change only update functionality.

Benefits. Intranet GIS currently has over 500 users across the Authority and its Partners but this number is growing all the time.

In terms of local authority users, all are now able to view and utilize the same GI data despite having several systems in operation as the Intranet GIS open standards approach unifies all information. The Council has also eradicated concerns over licensing, maintenance and training as web-based offering is quick and easy to install with minimal training requirements.

Even more significant are the benefits afforded to the environment and therefore to the citizens of Dorset. All local schools are being visited by the Education Officer in conjunction with the Dorset Fire and Rescue Service, the Police and Partners. This has promoted the issue among the group that is largely responsible for deliberately causing damage to Dorset's heathland.

The combination of a coordinated approach, education and technology has led to a 52% reduction in the incidence of heathland fires. Wardens are now able to monitor damaging activity and predict and prepare for further damage. The Dorset Fire and Rescue Service can now access vital, up to the minute data such as access routes, rendezvous points, fire hydrants and out of bounds areas enabling them to plan for, respond to and fight heathland fires. The

increased reliability of the data accrued has also meant that Dorset Police's crime analysis teams have had greater success in detecting offenders, leading to a number of successful prosecutions.

A Visionary Council. As well as raising environmental awareness in schools, Dorset County Council also hopes to increase understanding of geographical issues on a wider level. In the first initiative of its kind in the UK, the Council plans to provide every school in Dorset with use of internet and intranet GIS. This will enable students in secondary and even primary schools to access all local environmental data and statistics with a view to incorporating the information into their studies of geographical topics.

Andy Elliott comments: *Schools will be able to run their own GI projects and we can provide the data they require in a format that brings the subject to life. We are keen to broaden the awareness of GI – currently it doesn't feature on the curriculum until students reach the 6th form but schools in the region are telling us that they would like access much earlier. Intranet GIS means that we can deliver an interface that is easy to use and content which can be tailored to make it appropriate for either primary or secondary users. We are looking forward to starting this initiative early in 2004.*

Internet GIS

Information on web pages of big cities is often fragmented due to the many neighbouring boroughs. Internet GIS facilitates finding the location of the nearest service irrespective of the geographical boundaries. The citizens may not know, or indeed care, which authority provides a particular service. A common interface and mapping functionality for numerous neighboring boroughs delivers more relevant information for the citizens.

Web based GIS is a means of giving the citizens the ability to communicate with the Local Government via the internet (e-Government). Internet GIS allows reporting problems (blocked drains, neighbour noise or traffic light failure) with one click of the mouse on the map. Detailed information is then sent to the respective official who can deal with the problem. The advantages of the internet data sharing are described using the example of the London Central Partnership.

London Council Information from A to B – London CABI

E-government project, the London Central Partnership, comprising the London Borough of Camden, the London Borough of Islington, the Royal Borough of Kensington & Chelsea, Westminster City Council and the Corporation of London, the London Central Partnership aimed to combine geographical information from the five Boroughs and deliver it to citizens.

The same information is used to help the Boroughs tackle common priorities such as social inclusion, polarities in income and deprivation, and fear of crime. There is also a desire to share this information with other organisations such as Greater London Authority and Transport for London, explains Dave Yarwood, GIS Project Manager at lead partner Royal Borough of Kensington & Chelsea.

Objectives. The objective of the partnership was to explore how geographic information could be shared between boroughs and represented to the public in a seamless manner. As well providing useful information such as the location of the nearest swimming pool or library, the LCP hopes this information will help to address shared problems such as social inclusion and fear of crime.

The CABI project seeks to demonstrate that the combined information of 5 local authorities is more powerful and relevant to customers than an authority by authority view, particularly in large metropolitan areas like London. It aims to identify good data management practice and develop a consistent geographical interface for the public which will deliver Council information to citizens for the whole partnership area through each Borough's own web-site. The project will act as a proof of concept that the partners can work together sharing geographical data using open standards, and creates a framework which other London boroughs could in time subscribe to.

Open Standards. Internet GIS (web map server solution) is used to deliver mapping to partners using either OGC (Open GIS consortium) Web Map server compliant calls, or direct calls to Internet GIS to provide feature rich mapping and functionality including NLPG Gazetteer searching. Partners do not need to install any software on their own web sites.

In a short period of time the partners have identified key datasets available in all authorities, agreed Partnership-wide Meta data schemas and, using open standards, made this information available on the pilot CABI web site. The partners are now exploring the aim of embedding the geographic solutions into their own web sites using open standards for both receiving and delivering mapping to provide a cost effective and seamless way for citizens to access focussed joined up services.

Solution. In London, users can now log onto the website and without having any knowledge of the local authority they can identify the proximity of a service such as a sports centre – the nearest one could be in any of the five boroughs. As many people live in one borough and work in another, this joined-up thinking clearly makes sense. It means people can report any faults or problems – for example somebody might notice abandoned cars and not know which borough it's in, but by looking up the area on the website they would be able to locate the problem and report it online.

Residents and visitors tend not to think of an area in terms of precisely defined local authority borders and boundaries, and it surely makes sense for e-government to reflect this approach online. The LCP project is a prime example of how joined-up and joint working in local government can be achieved through the application of open standards such as Geography Markup Language.

AGI Award. The Judges of the Association for Geographic Information Local Government Award 2003 recommended the London CABI (Central Information from A to B) project as the winner. *The project provides an innovative solution for joining up geographic information to provide a seamless locator for services to the public. The CABI service enables citizens to find their nearest council facility irrespective of which Borough provides it. The solution is platform independent (various different GIS are used by the partner organisations), as geographic information from 5 local authorities are joined together in a web GIS using GML. The project demonstrates that the use of interoperability data standards (specifically OGC) can join up data into a seamless service as requested by the e-service delivery agenda. The project gives an example for good cross-organisational and public private sector partnerships. Aside from the 5 local authorities that contribute the data, GDC offered this unique technical solution by partnering with private sector companies.*

Conclusion

The UK's e-Envoy, Andrew Pinder, recently stated that *geography is one of the key common frameworks that will enable us to link information together and boost efficiency in government.* Despite setting itself an e-government agenda that many commentators said would be unachievable, the recently published Third Implementing e-Government (IEG3) statements show that UK Local Government may well achieve full online service delivery by 2005/6. In particular, the statements show that 53% of authorities have already implemented a full corporate GIS system. This demonstrates that Local Authorities recognise the importance of GIS both internally and for the public as a key to modernising government. Implementation of GIS is improving efficiency and making sure targets are met.

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STRESZCZENIE

Intranetowe i internetowe systemy informacji geograficznej (GIS) usprawniają pracę samorządów lokalnych oraz zapewniają mieszkańcom łatwy dostęp do zawartych w tych systemach informacji. Dzielenie się informacjami wewnątrz danego urzędu i ze światem zewnętrznym jest częścią e-administracji i poprawia jakość usług świadczonych przez samorządowe jednostki organizacyjne.

Intranetowy GIS udostępnia informacje przestrzenne wszystkim urzędnikom przez przeglądarkę w sieci intranetowej. Wspólne wykorzystanie danych przynosi liczne korzyści, a przede wszystkim pozwala na sprawniejsze zaspokajanie potrzeb społeczności lokalnej. Jednocześnie procesy administracyjne w urzędzie podlegają integracji.

Internetowy GIS samorządu lokalnego usprawnia kontakt z mieszkańcami, daje im możliwość dogodnego korzystania z usług e-administracji oraz zgłaszania sytuacji awaryjnych przez 24 godziny na dobę, a więc bez ograniczeń wynikających z czasu pracy urzędów.

Intranetowy i internetowy GIS ma obecnie istotne znaczenie dla funkcjonowania elektronicznej administracji publicznej w Wielkiej Brytanii.

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