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## One-step beyond: mobile e-delivery at Westminster City Council

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### Abstract

For many local government organisations the vision of delivering 100% of services electronically by 2005 in practical terms remains a long way off. The reality is that the myriad of targets, initiatives, agendas and performance indicators, which comprise it, must be completed within a matter of months. For those just beginning on the path to modernisation and e-Service delivery it is becoming ever more important to 'leap-frog' and catch-up through learning from those who have already had significant successes. Westminster City Council is one such example. A partnership approach with a clear vision, top-down buy-in and a staged approach to integrating back-office land and property management related functions around a central gazetteer have enabled them to go 'one-step-beyond'. Westminster City Council have made best use of GIS, mobile technology including GPRS to empower field based Street Environmental Managers (SEMs) to collect and manage data through hand-held computers in real time.

This paper considers the key value of geographic and land and property related information in delivering services electronically, in particular how Westminster have used it as the basis for success. It also describes practical and organisational challenges of integrating back-office systems and departments to deliver robust, dynamic and efficient front-office environments that truly empower those who use them.

### 2005 a dream or becoming reality?

The target of delivering 100% of services that can be delivered electronically by 2005, is looming large for many central and local government organisations. Many observers are worried that some authorities and agencies have simply not taken the e-Government agenda seriously enough yet. Official figures will no doubt claim that in the main, organisations are ahead but the reality maybe something quite different. The next round of Implementing Electronic Government statements is upon Local Authorities and it will be interesting to see the progress that has been made. With government budgeting cycles the beginning of 2005 is less than 24 months away !

If we consider the authorities and agencies that are showing real signs of success on the e-Government track today it is most commonly those that had the foresight to start a number of years ago. For any organisation, public or private sector, the changes required to adopt an 'e' approach cannot happen over night. Success with e-Government requires organisational and technical change. It requires integration of people, data, systems and culture. Are government organisations sufficiently nimble to meet the requirements of e-Government in the timescales that remain? Perhaps we should manage our expectations of what e-Government will deliver by when.

For Local Authorities such as Westminster City Council the road to 2005 started a number of years ago, in the late 90's in fact, and it is only now that they are really beginning to reap the benefits of taking a holistic enterprise wide view to the improvement of business systems and process. The real focus and key to success of their work is a single record of land and property references to underpin all other systems and

datasets. An approach discussed at AGI conferences and Special Interest Groups (SIG's) for a number of years.

Now is the time to help government organisations who feel they are lagging behind to learn from those who have succeeded, to take best practise and to 'leap-frog' on the back of their understanding to accelerate modernisation agendas. Westminster are one of a number of authorities in a position to help and there are others.

If local authorities are to learn from their colleagues we would argue that the most important of lesson is the need to organise and structure around an architecture or 'foundation' that unifies on the basis of land and property reference datasets and geographic information (GI). This is a tried and now tested formula that has enabled Westminster to go one-step beyond what other authorities have achieved so far and deliver not only a call centre environment but also improve service provision using a wireless mobile GI based application for their officers in the field.

### Local Government making the most of GI?

Traditionally Local Authorities have claimed to be 'corporate' users of GI and GIS. On further inspection we find this is often limited to the planning or highways department. With e-Government agendas and developments in technology now is the ideal time to ensure GI and land and property are pervasive throughout an organisation. In turn enabling government organisations to realise their full potential. Examples of GI's ability to deliver innovation, data sharing, a common framework and improvements for decision making as a whole are coming thick and fast from local government. A recent SOCITM survey of Key Performance Indicators for ICT (SOCITM 2002) showed the at least 75% of the most requested citizen transactions were GI related. For example reporting a street light out, finding who's my councillor or simply asking when my rubbish will be collected are some examples of these GI based transactions. A number of authorities are meeting these head-on via their websites. Figure 1 shows screenshots from just a few local government GI based websites.



[www.chichester.gov.uk](http://www.chichester.gov.uk)



[www.wiltshire.gov.uk](http://www.wiltshire.gov.uk)



[www.eastriding.gov.uk](http://www.eastriding.gov.uk)

*Figure 1 GI based web-interfaces at East Riding of Yorkshire, Wiltshire and Swindon (Pathfinder) and Chichester DC*

To make the most of data assets through GI in the ways Westminster have most commonly begins with the compilation of a common address or gazetteer environment. The adopted standard for local government is quite rightly BS 7666. The concept is to build a foundation of land and property references, which is robust enough in content and technology to support the demands of contact management strategies in terms of websites, CRM, call-centres and even mobile applications. These address sets are brought together and matched from a number of existing systems. With that as a common reference other systems can be plugged into it. Today spatial database engine technology allows spatial data to be held in the same database tables as text and multi-media data, ensuring consistency of data management and structure. With data in this 'Spatial Integration' form the flexibility of access and distribution of data can be controlled and managed to desktops through browser technology or pc deployments.

Having applications that use web-based technology to access and distribute data is vital in today's world of IT. It makes the simple update of applications without a need to visit desktops, initial delivery of applications and the ability to offer different services to different users as needed.

### **Understand geography to succeed with Contact Management Strategies and CRM**

It is estimated that only 30-40 local authorities have clear Contact Management Strategies and a good understanding of the needs and wants of their citizens. This is a worrying figure given that local governments customers and efficiency gains on the taxes they pay are the focus of e-Government.

Success with the content of Contact Management Strategies through mechanisms such as CRM, websites, kiosks and mobile will rely on integration and consistency of data in these 'back-office' environments. It is also dependent on a real understanding of citizen requirements, often influenced heavily by both human and physical geography of their area. The structure of a contact management strategy for an urban authority is likely to be very different from that of a rural authority.

In the Westminster case, their success is based on a real understanding of the dynamics of population movement on a daily basis in and out of the city itself. They know that 25% of properties are businesses and a resident population of over 230,000 increasing to over 1 million on a daily basis. The impact of issues such as noise and waste management can have a direct effect on the enjoyment and quality of life for all these customers and initiatives to manage these must be part of any overall strategy.

### Westminster City Council Customer Service Initiative

Westminster City Council's began their customer contact strategy with their 'Customer Service Initiative' (CSI), the roots of which originated back to the late 1990's. It is the key focus for meeting the needs and expectations of all their customers 24 hours a day. Essential components of the strategy are:

- Multi-channel access to Council services
- Joined up approach to dealing with enquiries
- Better quality services
- First time resolution of problems
- Dedicated customer service staff

The strategy managed Corporately impacts on all areas of the Council. The experience described over the next few pages sets out how some of the components have been tackled at a departmental level.

### The Westminster Experience

In some ways the potential issues of Y2K were a trigger for visionaries at Westminster City Council particularly in the Planning and Transportation and Environment and Leisure departments. At that time the systems within these departments were disparate and disconnected causing duplication of effort and considerable frustration for those involved. Y2k and the drive towards joined up service provision were identified as opportunities to streamline a number of these applications into an integrated system based around a central land and property database. The benefits of the integrated approach could be clearly set out through efficiency gains in system and data management to create a foundation. However, what was more important was the consolidation, aggregation and free-flow of information to improve cross-departmental and joined-up service delivery to the residents and businesses of Westminster. Figure 2 shows the 'Pre-integration' situation at Westminster as this would provide a platform for some of the CSI's aims. Figure 2 Planning and Transport and Environment and Leisure Systems at Westminster before integration and Y2K.

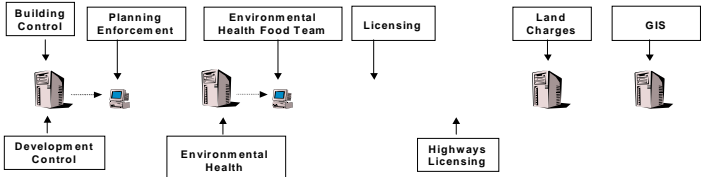
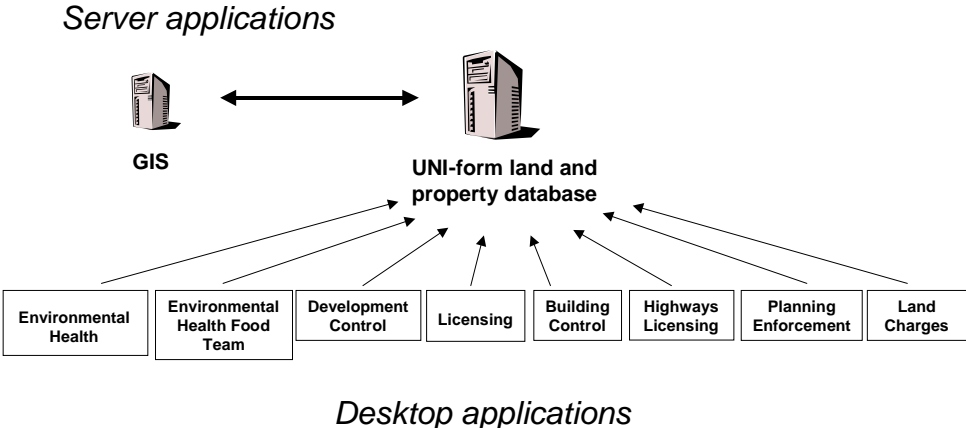


Figure 2- Pre land and property data integration at Westminster Council

Westminster approached the integration challenge by unifying land and property and address information from a number of sources. Once this was in place they were able to populate their UNI-form land and property administration environment and plug the various CAPS Solutions modules into it. Since the Planning and Transport and Environment and Leisure departments between them cover all sectors of the Westminster population, it was always

intended that the land and property database become the de facto standard for Westminster Council and this has proved to be the case. (See figure 3 below).

**Figure 3 – Post land and property integration at Westminster City Council**



Now all information processed through the system, whether it is a planning or license application, building regulations inspection, Environmental Health noise complaint or land charges search, can be linked to a single land or property reference. It can also be visualised using GIS within the context of geographically based policies supporting both best practice and strategic analysis.

With a strong integrated foundation in place, it has become possible to extend the system into further service areas and develop new access channels with the continued aim of improving the delivery of services both directly and indirectly to the customer. The best example of this is the recent implementation of UNI-form web mobile application, using the new O2 General Packet Radio Service (GPRS) (the next generation of mobile technology) connected tools for officers.

**Mobile Workers**

In an area as diverse and active as Westminster it has always been important to ensure that Council teams and resources are ideally located to best provide a service. This means staff have always been dispersed in the field across the City to be in a position to deal proactively and reactively with situations as they arise.

A mobile solution is therefore potentially the ideal tool to meet the needs of the Environmental Service Street Environment Managers (SEMs) and the Environmental Health Noise Team, since both are active over a 24 hour period seven days a week and usually deal with customers either directly or via the Westminster Call Centre.

There are over 40 SEMs responsible for maintaining the cleanliness of Westminster’s streets, either through contract monitoring of the Council’s waste collection service provider or responding to issues raised by the public. A team of 16 Noise Team officers deal with complaints ranging from a domestic party, to car alarms and noisy construction sites.

Having the right information to hand and the ability to keep others informed of progress has always been essential, and the Council have always sought ways to improve upon this. A mobile wireless solution with direct access to back-office systems through the internet now allows officers to be informed as soon as an issue is raised and, by knowing any history of cases at a location, enables them to deal with the incident

promptly and effectively. For Environmental Health officers, direct access to historical information could, for example, be the difference between issuing a verbal warning or an official enforcement action. This promotes a consistent approach to handling any issue and enables any officer to deal with the current situation effectively, no matter who was involved in previous investigations.

In addition, officers in the street have a large part to play in instigating remedial actions to resolve issues on the spot, such as getting the Council's waste contractor to deal with abandoned waste. They therefore need to be able to record these incidents and pass instructions to the contractor for rectification as soon as possible.

### The solution

In partnership with ESRI (UK) and CAPS Solutions a web-based interface to the UNI-form application was developed to provide the most effective way of distributing access across a number of channels, both on office based workstations and street based wireless hand-held devices. Figure 4 shows access to the core land and property gazetteer to then identify an incident through the web interface.



Figure 4 – UNI-form Web in a mobile environment at Westminster CC.

To support the SEMs field based contract monitoring requirements ESRI(UK) and CAPS Solutions redeveloped the Contract Management module to provide more complex functionality and structured it to meet anticipated future requirements. This did not affect the interface for other parts of the systems, but instead were delivered in the most appropriate style for the specific user group. For example, the call centre team was provided with screens that included wizard driven data entry, scripted call handling prompts and fast gazetteer searches (Fig 4). These gazetteer searches can also be carried out through a GIS interface. Map based searching and property confirmation is key and shown in figure 6. The mobile interface was developed to deal with the confines of common hand held devices, and focused on screen ergonomics, tailored work flows and simple navigation.



*Figure 5 – Map based interface for SEMs using UNI-form mobile*

The thin client approach for the mobile workforce is essential. It allows the application to be deployed across any style of compatible device (the only prerequisite is running Windows CE 3.0). Foot based SEMs are able to use ruggedised, waterproof devices with built in keyboards, whilst Noise officers are equipped with larger tablet based devices that may be charged in their vehicles, together with attachable printers and keyboards.

More importantly a wireless thin client ensures that data can be viewed and updated in real time from any location, with server-side automated triggers in place to action the next stage in the work flow process, such as an email to the waste contractors. Down load of data from devices at the end of shift previously associated with traditional mobile working has now become a thing of the past, largely through the successful introduction of GPRS. Westminster CC were one of the earliest adopters of this 2.5 G technology from O2 in any industry. Its application has helped to significantly speed-up the application usage in the field.

The system has now been in operation since December 2001, when the Noise Team and call centre went live. The larger and more complex functions of the SEM application have been active since April 2002. So far the anticipated benefits have been realised, but there are also some key issues that must be appreciated.

### Benefits of the mobile GIS approach

There have been a number of significant benefits through the application of the mobile technology at Westminster City Council:

- Using GIS, jobs can be automatically allocated to an officer based on their area location. The job is 'owned' by the area and controlled across daily shifts through an area management screen until it has been resolved
- On-street officer time is increased as fewer administrative requirements are needed (previous internal reviews suggest that 1 day per officer per week was lost through office duplication in some instances)
- The complaint history of any premises can be accessed in real time via hand helds to support consistent escalation of enforcement
- GPRS provides an 'always on' connection and packet based transmissions reducing costs but provides faster speeds than other wireless communications solutions
- Jobs can be updated in real time, rather than by an administration team several days later

- The Call Centre can review a job's status and provide feedback back to the customer should they call again
- SEMs no longer have to carry large street collection schedules and other service manuals as these can be viewed from their hand held
- Automated daily management reports are extracted and emailed to key recipients
- A web browser application can be deployed at ease across office and mobile environments
- The Council's refuse contractors are able to view and update the system from their own offices

### Issues with the mobile application at Westminster City Council

As with all ground-breaking applications, Westminster City Council still face a number of issues:

- Accurately maintained data is crucial to any successful system, and its quality should always be evaluated at every stage of implementation. This is essential for successful joined up working since all services must link information to land and property references consistently.
- A dynamic 24/7 service requires solid contingency plans to cater for all situations, especially as multi-channel solutions by their very nature can have a number of potential failure points.
- GPRS is good, but may require enhancement/optimisation to make it truly responsive to some needs. Street based staff do experience black spots and loss of coverage, and advanced data compression and connectivity tools are currently being evaluated to help improve this issue
- Examine the training requirements of all mobile users and provide extensive training and refreshment training as necessary. Some street based staff had few IT skills as this had not previously been a significant function of their job. It is important that a basic understanding is provided before the transition of work processes to hand held computers can be explained.
- Mobile hardware is an emerging market and rapidly evolving, so care should be taken when selecting products to try and future proof them as much as possible. For example, since the start of the Westminster project, Windows CE versions have changed and provide increased functionality, whilst GPRS cards have only recently become available for CE devices and can only improve in terms of connectivity, power consumption and performance.

### The future

Throughout the development cycle, the concept of flexibility and extensibility was essential for future ambitions. With the mobile system now in place, the Council is now identifying the requirements of other services requiring street based access to UNI-form in order that the functionality may be extended to them. The framework in place will allow any new development to take place relatively easily for both ESRI as solution providers and Westminster as the manager of the change process. Areas targeted in the next stages include further sections of Environmental Health and Licensing.

In addition to extending the standard functionality of the mobile environment, Westminster is also commissioning ESRI to expand the Contract Management module to incorporate the Global Positioning System (GPS) tracking and load monitoring of the Council's fleet of refuse collection vehicles. This will serve four major ambitions:

1. Transmit weight and location data over GPRS to provide real time monitoring of the fleet by reconciling this information against the scheduled times of collection
2. Allow the Council's waste contractors to identify problems and react to events efficiently, thus improve the daily service performance



3. Provide greater information to the public via the call centre and articulate accurately how the service is performing and what issues may be affecting it
4. Build up a seasonal history of refuse collections on a street by street basis, to develop future policy initiatives, provide logistical planning strategies and ultimately support predictive monitoring to identify potential issues before they arise

The solution in some ways may appear ambitious, but it may only be achieved due to the intensive work carried out over the last few years to set a firm foundation in place, with a flexible, integrated system and accurately maintained data.

## Conclusions

The principal message from this paper and Westminster Council's obvious achievements must be that a land and property systems and data integration approach to local e-Government is now tried and tested and proving extremely flexible and consistent in what it can deliver to their business both now and for the future. This approach has been discussed for many years and many organisations are seeing the benefit of gaining a top-down and organisation wide buy-in to the solution as a whole.

Westminster have gone a long way to implementing some very advanced technology to dramatically improve efficiency and responsiveness, although this is just one aspect of their overall Customer Service Initiative. This has been realised through an innovative partnership approach that invests and builds for the future. Not all of the achievements will register directly with the customer and that is how it should be. Improved service delivery based on new technologies may often be transparent to the beneficiary, as it can feature at various stages of a service function, few of which are visible at the final delivery point. However without this in place the customer would certainly know the difference

It has taken a number of years to realise these goals and for those just starting out on the road to 2005 it may seem a long way off. This means it becomes more important to use best practice through forum like the AGI in order to learn from others. The 2005 agenda presents many exciting opportunities and it is not too late to realise achievements like those at Westminster.