

About ESRI (UK)

ESRI (UK) is part of the global ESRI network. With the single, largest pool of GIS expertise in the UK, the company is the technical authority on GIS. ESRI (UK) provides solutions, technology and services including off-the-shelf applications built on the ArcGIS software suite and an extensive range of consulting and training services.

ESRI (UK)'s public sector customers include Leeds City Council, Gloucestershire County Council, Defra, Environment Agency, the Met Office and South Yorkshire Police.

ESRI (UK) is accredited by Buying Solutions as a supplier to the public sector.

Towards Transparent Government using GIS



An ESRI (UK) White Paper

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Introduction

Today, the challenges facing government are greater than ever. Budgets are set to diminish further and pressure to deliver efficiencies continues to rise, even as responsibilities increase. Every aspect of spending is under ever-closer scrutiny and public trust in government is at a low.

Over the last decade, government has looked to technology to respond to the challenges it has faced.

- To reduce operational costs in service delivery, and encourage participation, there was a move towards **transactional government**, enabling citizens to pay bills and access services such as searching for jobs or vehicle registration through the web.
- To further streamline processes and join up government, the next stage of investment focused on **transformational government** - reducing the costs of government operations as a vital part of responding to the Gershon agenda.

Geographic Information Systems (GIS) technology has played a key role in delivering both of these changes – helping reduce the cost and complexity of information sharing and providing a means of identifying people and places to support transactions.

In responding to the challenges of today, the next generation of **transparent government** will further help address the fundamental issues of efficiency and transformation whilst delivering a new and highly relevant agenda. The key to delivering this transparency is the application of GIS.

This paper explains what we mean by transparent government and why it is so important – whether in terms of enabling shared services, rebuilding public trust or meeting the ongoing pressures to do more with less. Crucially, it also underlines how much of this “transparency” is already being delivered, drawing on examples from the USA as well as the UK, to show that transparent government is a global trend – and one that is well underway.

Understanding transparency

Transparency refers to a number of emerging trends in government.

- Firstly, there is a requirement for greater transparency around how taxpayers’ money is being spent.
- Secondly, this same transparency around expenditure will help ensure investment is targeted towards priorities - vital in light of the tightened budgets forecast across government.
- Thirdly, as more and more public services are developed, delivered and managed in a collaborative way, involving multiple organisations and even working across geographies, the ability to share information cost-effectively is imperative.

A transparent philosophy can help government organisations decide how best to share information - and make it easier to give key partners access to the data they need, in the way they need it. Transparency, therefore, can enable many of the cross-government programmes to deliver the results and, in particular, the efficiencies required.

Geography and transparency

Delivering transparency requires two fundamental things: a commitment to making information available, whether to the public or to partners within government, and a framework for sharing and understanding that information. It's the latter of these that geography, and specifically GIS from ESRI (UK), can provide.

The framework GIS offers is based on a simple principle of geocoding every piece of data. This means that as well as being able to answer the questions of "what?", "who" and even "how much?", GIS can record where specific activities have taken place.

For example, GIS can highlight where maintenance or inspections were carried out; where carbon emissions were recorded; what results for a specific initiative were achieved in which area, and where investment has been targeted.

With the map as the context, it becomes far easier to share and report on this information. And critically, it makes it easier to compare and contrast data for analysis, in order to better target future work efforts and optimise spending.

GIS is already used extensively across government for this purpose, and much data already exists in this format. Many public services are currently delivered using GIS, because it makes displaying information so simple: via a map.

ESRI (UK)'s LocalView Internet solution is a perfect example of this. Adopted by many authorities, it enables local residents to find community resources such as the nearest GP, post office or library, as well as report problems such as fly tipping, broken street lamps or graffiti. This isn't just of use to residents; an Internet version also provides a valuable tool for those working in local and regional authorities dealing with day-to-day service

delivery. This visual map-based approach is also ultimately invaluable to those working in service planning or policy development at a central government level – for example, in understanding the impact of different community programmes.

GIS at the heart of government

The next step is to extend the potential of GIS by increasing the use of geocoding to all kinds of information - not just things that are 'obviously' geographical like transport or land use, but also information such as economic data or use of public services.

By doing this, GIS can become the single cross-government standard for information sharing, as well as being a simple and user-friendly means of reporting that data to the public and to auditors. In this way, GIS can help address key government challenges of the next decade, such as:

- increasing public trust in government
- meeting sustainability requirements
- supporting partnership working
- prioritising expenditure at a time when budgets are set to shrink

The following sections look at each of these aspects in turn.

“ *In the current climate, the public rightly expect greater value for money from local services. We are setting some pretty clear mood music about making sure every taxpayer's pound is worked as hard as possible. Councils must be able to show they are providing a fair deal on pay in an open and transparent way - the public have the right to see the full picture.* ”

Rosie Winterton MP, in a speech to the Society of Local Authority Chief Executives (Solace) in Brighton

http://news.bbc.co.uk/1/hi/uk_politics/8320538.stm

Transparency and trust

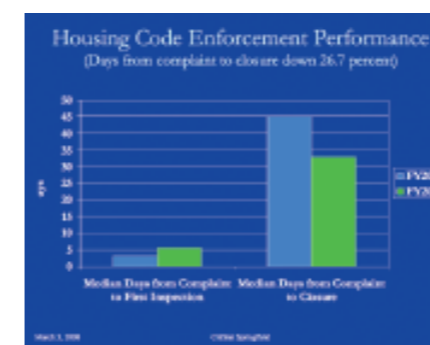
Recent political developments have caused considerable damage to public trust in government. From the expenses scandal to data losses to the collapse of Icelandic banks holding taxpayers' money, there is a clear sense that government needs to be seen to be more accountable and transparent about its spending than ever.

GIS can help achieve this - providing a user-friendly way of showing exactly where government has invested in services. This has a number of benefits, both in terms of public perception and overall monitoring and performance management.

By specifically recording where government funds are invested, it is much easier to identify individual locations – down to individual wards – which have suffered from under-investment. Geocoding spend also provides a stronger basis for measuring the impact of public expenditure in each area, showing how investment has contributed to improved performance against a specific measure. At a collaborative level, meanwhile, it can help organisations avoid replicating others' investment and effort.



Transparent public services
StateStat uses ESRI GIS to track where and how public money is spent in the US



More than maps
ESRI GIS can be used to display a whole range of information in charts and graphs

Managing spend, building trust: CitiStat



A model of this kind of transparent performance management system - based around GIS - is already operating in the USA. **CitiStat** is a programme that enables residents of Baltimore to

keep track of how the Mayor's Office is performing in all its duties, from housing to health to transport. It gives a regular update on progress against key priorities and offers a transparent view, right down to the actions of individual staff, of how public resources are being used for the good of the citizens.

The key to it is a GIS platform from ESRI that ensures all actions and measures are geocoded, which enables accurate tracking and mapping of spend, availability of facilities and other vital statistics.

This also facilitates collaborative working with the police, fire service and other agencies, whose performance can be scrutinised and their contributions to specific targets analysed. Since implementing CitiStat, violent crime in Baltimore dropped 40 percent.

The CitiStat programme is now providing the basic model for StateStat, gathering data for the whole of Maryland.

To find out more about CitiStat, visit <http://baltimorecity.gov/government/citistat/>

Transparency and sustainability

Sustainability is set to be a major trend in UK government over the coming years. The UK is the first country in the world to set legally binding carbon reduction targets, against which government organisations are required to record and report carbon emission levels, energy use, and to monitor air and water pollution.

In view of these targets, sustainability will become a critical factor in virtually every government decision. For example:

- **Transport infrastructure:** what is the impact of a major road building scheme on traffic levels and air pollution?
- **Energy:** what are the likely environmental impacts of approving a power station, and how will local communities be affected?
- **Asset management:** what is the ecological impact of moving a government facility to a new location?
- **Procurement:** when deciding between local and long-distance suppliers, what is the ratio of carbon footprint to cost?

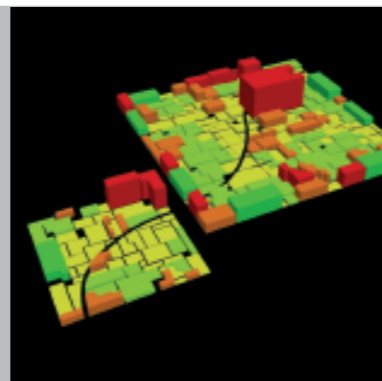
Location underpins all of these questions. To answer them effectively, government needs the ability to compare the status quo in a given location with the potential impact of any changes. Only by doing this can government make a considered and truly sustainable decision.

GIS is a technology designed to meet these needs. It provides the geographical context for all manner of different data sets to be compared and examined, enabling potential impacts to be modelled for more sustainable, transparent decision-making.



City of the future
An artist's impression of the brand new Masdar City

Seeing the big picture
ESRI GIS is used for 3D visualisation of Masdar City data



Masdar City: new standards in sustainable living



Masdar City is a pioneering development in the United Arab Emirates. In a few years time, it will house some 50,000 residents, 1,500 businesses and provide jobs to an additional 40,000 commuters.

Masdar City has set its sights on becoming the world's first carbon-neutral, zero-waste city. And ESRI GIS is a critical tool in enabling that goal.

Masdar City and programme manager CH2M HILL are using ESRI GIS for tasks from planning the layout of the city and its innovative transport network to developing the power and water infrastructure. Once residents move in, GIS will provide them with daily information on their own carbon footprint and resource use - right down to how much water they're using to shower - providing a transparent way of encouraging them to maintain Masdar's pioneering standards in sustainable living.

To read the full case study, visit www.esriuk.com/transparency

Facilitating sustainable policy development: a GIS scenario

Many local authorities in the UK already offer incentives to households that use renewable energy. This makes it plausible that central government will introduce a policy for all newly built homes and commercial properties, requiring that they have some kind of renewable energy source available.

Such a project is already underway in the US city of Boston. To help meet the city's greenhouse gas reduction targets, Boston's mayor set a target of installing 25 megawatts of solar power in homes across the city by 2015. One of the first steps it took was developing a GIS-based application, using ESRI's ArcGIS Spatial Analyst, to calculate the total amount of solar radiation available on building rooftops. This information was then shared with property developers and solar energy investors via a solar radiation map - which helped identify the best places to start deploying solar panels.

In the UK, GIS could become an equally vital tool. By using GIS to examine historic climate information and terrain, government could identify which areas would be suitable for, say, solar panels, and which would be better suited to wind turbines. This information could be issued as guidance to property developers, as well as being made available to the public online to demonstrate the integrity of the decision-making process.

GIS could also be harnessed once the properties are built. How much less energy is being used than predicted? Have carbon emissions reduced? How much more could be achieved by adding further energy saving measures, such as improved insulation? This kind of analysis could itself influence future policy decisions around construction, thereby increasing the positive environmental impact.

To see the interactive map used in the Boston project, visit <http://gis.cityofboston.gov/solarboston>

Transparency and partnership working

As acknowledged at the start of this paper, the modernising government agenda of the last decade has prioritised the idea of joined-up working - breaking down internal barriers between public services so that they can be developed and delivered in a more citizen-centric way. Instead of focusing on process, the focus is on the user of the service.

Examples of this multidisciplinary approach can be seen in every aspect of government work, from portals like DirectGov to joined-up initiatives like the Tell Us Once programme, which aims to make it simpler to inform government about changes of circumstances.

In each case, the approach relies on co-operation and collaboration from staff but also - crucially - effective information sharing through applied technology.

It's not just a case of long-term or ongoing partnerships either. Multidisciplinary working is set to become increasingly commonplace as a flexible and rapid response to an external event such as a flood or civil emergency. In these situations, it's essential that the structures are already in place to facilitate information sharing so that resilience plans can be quickly put into effect.

What GIS offers here is a simple and transparent way of sharing information. The key to this is the shared point of reference - a geocoded location - for any piece of data. With this in place, it's simpler to report any event, to monitor progress and use data to support long-term partnership working and service planning.

“Crime maps are a key part of delivering neighbourhood policing and giving communities access to information like this not only improves public confidence but ensures police are responding to local people's needs. "We know the public want this information, which will allow them to hold the police to account and help create an even more responsive and effective service.

David Hanson MP

<http://news.bbc.co.uk/1/hi/uk/8315089.stm>



Transparent technology

The concept of “cloud computing” has been under discussion for some years, and its potential is well on the way to being realised. It promises to exponentially expand the range of data and services available to any one organisation, by making use of the Internet ‘cloud’ to share information and deliver web services. What this essentially means is that organisations are no longer restricted to the data, hardware and software they own: instead they can benefit from all kinds of applications and information available online.

GIS is an application ideally suited to this computing model. The more data available to a GIS user, the more valuable the results can be: adding extra layers or data types to create a fuller picture.

For partnership-based working across government, this is an invaluable development. More and more information will be available online, and because only relevant, aggregated data is being shared as a transparent data stream, it provides a secure and dependable means of sharing that information: there's no need to transport records from one location to another. Instead, users can conduct more complex analysis and work in closer partnership with their colleagues in different organisations, through the power of the cloud.

Tackling crime in the North West



An ESRI (UK) GIS solution has proved an invaluable tool for tackling neighbourhood crime and anti-social behaviour in the North West -

providing transparent information sharing to underpin joint working between Cheshire councils, Cheshire Police and Cheshire Fire and Rescue Service.

The GIS platform is used to record and then manage data about crime incidents across the whole region. Each partner submits information to a central hub, and any registered user working for one of the partners can access the regional data.

There have been a number of benefits:

- Partners can share information faster and with less effort: for example, for monthly performance reporting, partners can simply access the system rather than having to make multiple data requests to other organisations.
- It's easier to identify crime hotspots - by location, by crime type or even by date. For example, in the run-up to Bonfire Night, police and fire services could identify where criminal damage and arson were most likely to occur, and prioritise resources accordingly.
- By sharing information about house fires with demographic data from the local authorities, the fire and rescue service has been able to target fire prevention and education resources in areas of most risk - for example, where there is a high proportion of elderly residents.

The system has more than 60 registered users from the county and district councils, four district general hospitals, ambulance service and fire and rescue service - and many more in the Cheshire Constabulary.

To read the full case study, visit www.esriuk.com/transparency

Transparency, efficiency and the bottom line

Perhaps the most valuable benefit of transparency, in the immediate term at least, will be seen in financial terms. While local authorities have become accustomed to the annual challenge of doing more with less, it's clear that budget cuts and efficiency drives will continue to be an integral part of the business of government over the next decade. But services and processes have already been streamlined and finding more cuts will prove challenging.

This places a new emphasis on the importance of transparency around every aspect of spending, from annual targets to future investment. From central departments to local authorities, government will need to be ever more aware of not only how their budget is allocated but also, crucially, what results that expenditure is delivering. Funding will need to be focused on priorities, and performance management will become increasingly important.

Planning investment through GIS

The **Department of Health Estates and Facilities Management** team has already begun using GIS to target its long term investment. It has developed a GIS application that enables it to make smarter decisions about where to locate new facilities, based on comparing demographic information (essentially patient ages and health within a given area) with details of existing provision.

So if trends show that an area has an ageing population, it may be appropriate to invest in care facilities that will support the elderly, rather than new maternity wards.

The role of the GIS solution is to overlay different data sets to help decision-making. For instance, decisions about where to situate facilities for the elderly could be influenced by information about public transport journey times – helping ensure that a new day centre is as accessible as possible.

Find out more about this solution in the ESRI (UK) white paper **Enabling the business of government**, available on our website www.esriuk.com/transparency

GIS and long-term investment

Many government organisations already employ GIS to help with these kinds of issues. For instance, a lot of longer-term programmes are based on GIS analysis of demographic data: what will the population profile of the area look like in five or ten years' time, and what services will they need? For example, with the ongoing trend towards an ageing population, services from healthcare to transport to planning must take into account the needs of older people.

Yet over the coming decade, the need for transparency about investment that GIS can provide will extend to many more areas. For example, when trying to identify where spend can be reduced, local authorities can map out exactly what services already exist in each area and where there is a potential overlap. They can also see which areas are under-served, and take action.

This is exactly the kind of approach being developed in the Total Place strategy, announced in the 2009 Budget, which aims to map flows of public spending in local areas and make links between services, to identify where public money can be spent more effectively. Part of Sir Michael Bichard's work looking at the scope for efficiency savings in the public sector (the Operational Efficiency Programme), Total Place perfectly illustrates the role GIS can play in delivering transparency around spending.

Transparency in every location

But GIS provides the potential for even deeper analysis. Often, the same service or policy initiative leads to very different results in different locations. GIS can help in understanding why this might be the case, overlaying a wealth of other information to identify key differences between the locations - from demographics to accessibility of the service by public transport. This transparency can then inform future investment and help redesign existing services.

This is similar to the approach adopted in many commercial operations, which use GIS to examine why one store, for instance, is performing better than another. But it is already something that can be used in government too.

Becoming transparent

Transparency might sound like a distant vision. But as this paper has shown, the evolution of government, the next generation of modernisation, is already underway. Transparency, in operational aspects, in reporting and in enabling joint working, is set to become a vital issue for every government organisation. And GIS as a tool is ideally suited to delivering that transparency.

As a global leader in GIS, ESRI (UK) is the perfect partner for government organisations seeking to respond to the issues outlined above: the need to rebuild trust in public services, the increasing importance of sustainability and the ongoing shift towards partnership-based working.

Above all, ESRI (UK) can help government apply GIS where its impact is needed most urgently: as a tool to identify the potential for further savings and efficiencies. What's more, thanks to ESRI (UK)'s innovative Enterprise Licence Agreement (see box below), the costs of using and applying GIS can be kept to a minimum.

For further ideas of how GIS can help, visit our website, www.esriuk.com/transparency and download the white paper **Enabling the business of government**, which shows how ESRI is already working with public sector partners to deliver more transparent processes, cost savings and more effective public services.

ESRI's Enterprise Licence Agreement

ESRI's ArcGIS is a world-leading GIS suite used extensively across the UK public sector. To reflect the needs and challenges facing government organisations, ESRI (UK) has developed an Enterprise Licence Agreement that makes it easier for an organisation to extend their use of ArcGIS for use by analysts, decision makers, field staff and members of the public to view and manipulate geographic information via a range of fixed and mobile devices.

The Enterprise Licence Agreement offers unrestricted, organisation-wide access to leading GIS software* for potentially little more than a typical support agreement.

Benefits include:

- Unlimited GIS expansion for a fixed cost
- A more rapid route to enterprise GIS
- A three-year fixed price contract for confident budgeting
- A complementary package of ESRI (UK) consultancy and discounted training

For more information contact us on 01296 745592 or visit www.esriuk.com/ela

*Applies to ESRI Inc software specified at www.esriuk.com/ela