The Value of Geospatial Information in Local Public Service Delivery

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GI needs in Local public service delivery

- Delivering services according to the needs of citizen and businesses locally requires knowledge about place
- Use of geospatial information in local government in England and Wales for
  - evidence-based decision-making
  - designing and managing services and infrastructures
  - achieving and enforcing regulatory compliance
  - describing and monitoring local conditions and change; and
  - understanding and locating customer needs.
- Used in a range of services including
  - planning, housing, employment, transport, environmental protection, health and social care
New approach to local public service delivery

- **Operational efficiency**: the need to reduce costs while delivering high quality services;
- **Shared Services**: working across organisational boundaries and to operate through partnership;
- **The Big Society**: local government as an enabler of a more self-service approach that facilitates citizens and business to act for themselves;
- **Reduced central control** - deliver services locally based on the needs of citizen and business. Move by local government from a service provider to a commissioning role of services
- **Information economy**: the move to ‘data democracy’ and greater transparency.
GI Policy Drivers

- European Union level: the INSPIRE Directive provides a technical framework to facilitate the access and sharing of data to assist policy-making;

- National level: the UK Location Strategy (CLG, 2008) was published with the aim to maximise the value of location based data to the public, government and business sectors; and

- The response to a consultation on the policy options for GI from the Ordnance Survey:
  - Free-of-charge access to some Ordnance Survey datasets;
  - the proposal for a public sector-wide mapping agreement;
  - the technical delivery of INSPIRE network services through the Ordnance Survey.
Background and purpose of study

- Financial constraints in the public sector (£156bn public sector dept in the UK, £1.2bn cuts to local government in 2010 on top of 4% efficiency savings)
- The economic value of GI for underpinning local services is little understood.
- The danger of executives cutting GI without understanding its contribution to intelligence about delivering services.
- To understand where changes to current geospatial policy and practice can enable better and more effective use of GI in local public service design and delivery, and support cost savings in a period of public expenditure constraint.
Geo-economics and approach

- **Geo-economics**: modelling the national economy’s ability to deliver more with the same resources by using geospatial information.

- **Approach of the study**
  - Collation of evidence of GI use by local public service providers
  - Assessment of costs and savings alongside social benefits
  - Data assembled and fed into an ACIL Tasman’s computable general equilibrium (CGE) model used to assess the economic value of GI at regional and national level from 2009 to 2015.
  - Measures the productivity increases if certain scenarios of GI uptake (shocks) are applied
An economic model developed by ACIL Tasman used previously to evaluate the economic impact of geospatial information at a national level in Australia and New Zealand.

The CGE provides a representation of the whole economy, set in a national and international trading context.

It uses a ‘bottom-up approach’ – starting with individual markets, producers and consumers and building up the system via demands and production from each component.

When an economic shock or disturbance such as an increase in a sector’s rate of growth is applied to the model, each of the markets adjusts to a new equilibrium according to the set of behavioural parameters which are underpinned by economic theory.
How productivity shocks feed through into the national economy

Geospatial applications in local government → Productivity Improvements → Local government public service delivery → Increases value added → Commercial sector (e.g. development and construction) → Increases value added → National economic impacts (for England and Wales)

- GDP
- Consumption
- Investment
- Industry Output
- Employment
Waves of adoption in Local government

- Adoption of GI in local government according to Roger’s model for technology adoption and diffusion
- The first wave: introduction of basic GIS on desktops moving beyond the innovator stage from 1990 onward;
- A second overlapping wave: central storage and gradual linking of databases providing selected local government staff with wider access to internal data;
- A third wave: introduction of web mapping. Most staff gained access to electronically stored maps accessible over an intranet and/or the internet.
- A fourth wave: integration of GI technologies into mainstream enterprise systems and the interoperability of data across organisations
Adoption of GI

Geospatial Adoption Waves

- Basic
- Central Storage
- Web
- Enterprise
Selected case studies within seven broad service areas

- Customer Interface
- Transport and Highways
- Planning and Consultations
- Revenue and Benefits
- Health and Social Care
- Safer Communities
- National Land and Property Gazetteer (NLPG)
Example of case study: Daventry

- Use of GI to optimise refuse (waste) collection routes leads to savings:
  - Mileage reduction of 12-13 per cent delivering savings of £25,000 p.a.
  - Spare capacity to allow for vehicle washing securing savings of £17,000 p.a.
  - Employee overtime will be virtually eliminated, saving approximately £28,000 p.a.
  - The planned purchase of a new vehicle has been rationalised to a smaller new vehicle saving £25,000.
  - Reduction from 18 to 16 collection rounds with cashable annual savings of £153,000 per annum
Benefits from case studies

- **Channel shift** – through deployment of transactional web mapping systems.
- **Improved transport efficiency** – by wide application of route optimisation and better streetworks management.
- **Better decision making** – using geospatially-enabled local information systems.
- **Reduced data duplication** – using master datasets such as the NLPG.
- **Empowering frontline workers** – by speeding up analysis and enhancing mobile working.
- **Helping identify social deprivation** – through data integration and analysis.
Economic Modelling results

- real output of local government increased by £222 million as a result of the productivity benefits associated with the accumulated impact of geospatial applications
- the average annualised cost to benefit cost ratio of using geospatial information in local government is around 1:2.5 (i.e. £1 spent results in £2.50 savings).
- leads to a 0.20 per cent increase in productivity for local government and potential for an increase of 0.10 per cent for Primary Care Trusts over the next 5 years
- Gross Domestic Products (GDP) for England and Wales was £323 million higher in 2009 than it would otherwise have been without the adoption of geospatial information (equivalent to 0.02 percent of GDP)
Economic Modelling results (2)

- projecting forward to 2015, GDP for England and Wales could be **£563 million** higher than it would otherwise have been without the adoption of geospatial information applications.
- Better policies and action to deliver the ideal scenario, could improve GDP to an estimated £700m by 2014-5
- government revenue from taxation was **£45 million** higher than it would otherwise have been. Revenues are projected to increase to £85 million by 2015
- Accumulated Net Present Value representing the added value of sharing the National Land and Property Gazetteer, a key local government dataset, is **£25 million** over 5 years.
Other benefits

- emissions intensity of the economies of England and Wales being around 0.013 per cent less in 2009 as a result of GI implementation (car journeys)
- environmental benefits arising as a result of better planning and management of infrastructure development.
- more sustainable environmental management through better and more accessible and interoperable data
- improved health and wellbeing of citizens dependent on local public services
- small improvements in time available for citizens for leisure and family activities.
Barriers and Opportunities

- Top three barriers to further implementation of GI
  - lack of awareness of benefits and resistance to change amongst users;
  - implementation costs (hardware and software);
  - inappropriate data pricing and/or restrictions on access.
Recommendations to overcome barriers

- data accessibility coupled with relaxing copyright and licensing restrictions
- awareness raising in relation to best practice
- skills enhancement in relation to business case development and greater benefits realisation.
Conclusions

- Research is based on hard evidence underpinned by solid economic theory and practice
- Based on conservative estimate, opportunity to gain an annual cost benefit ratio of 1:2.5 through better use of geospatial information in local public service delivery
- GDP was £320m higher in 2008-9 with a possible raise to an estimated £560m in 2014-5
- Improved geospatial information leads to other benefits but also provides opportunities for improved involvement in local decision making and for taking part in democracy at the local government level.
Further information:

- Report will be published shortly on [www.lga.gov.uk/GIresearch](http://www.lga.gov.uk/GIresearch)
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