

making the CEO listen

Business Case Methodology



Figure 1 – Business Case Methodology Overview

- Resource management
- Information quality underpinning decisions
- Pace of technology change
- Outsourcing
- Security

Why is ROI number one? It's probably because IT has historically been seen as a cost with difficult to quantify benefits. IT projects have also been the ones that most often fail – usually spectacularly.

However, this shouldn't be the case for GIS. GIS has many benefits, many of which arise from its specific applications. Three of the primary benefits of GIS are:

- **The added value of GIS:** Put simply, there are answers to questions that can only be derived geographically: where is my nearest? Am I in a conservation zone? What is the shortest route to...? These obvious "where" questions cannot be derived with traditional tabular data and the industry should never undersell this simple point. Don't assume senior management know this – in many cases they won't.

Show me the money! In this prize-winning paper delivered at AGI'07, **Keith Wishart**, Business Strategist, ESRI (UK) Ltd and **Andrew Coote**, formerly Consultancy Services Director, ESRI (UK) Ltd, argue that we have to learn the language of business if we are to get GIS adopted in commercially-driven organisations.

analysis of needs or problems, proposed alternative solutions, assumptions, constraints, and a risk-adjusted cost-benefit analysis."

The terms in italics are important. They are not ones the GIS industry is generally adept at using but needs to learn. But it is argued that this is not so much a problem to be overcome but an opportunity to be seized. In grasping this opportunity, the industry needs to discard much of the technical terminology that it has become comfortable using: there can be no point-in-polygons or rasters at the board table. However, GIS is benefit-rich and solves real-life problems, so this transition is worth taking.

- **The power of GIS to integrate disparate information:** GIS has a unique capability to integrate disparate information sources that referential models lack. As an example, consider a list of health incidents recorded against patients' postcodes created in one system and a list of health authority areas with capacity information created in another. It might have been the case that neither dataset was managed geographically but by combining the geographic locations of the postcode data and the area boundaries of the health authorities, we can derive new information about how well resourced each authority is compared to the prevalence of the specific incidents in its area. It could be argued that this can be done without GIS but it would be an inefficient struggle and if the boundaries were to change (as is often the case) this would present significant problems.
- **Business visualisation:** A picture paints a thousand words and GIS has a real role to convey management performance data or "director's dashboards" as they are sometimes called to senior decision makers: where are my most profitable customers? What part of my network needs the most investment?

A case for GIS Too often industry case studies wax lyrical about benefits without expressing them in



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Speaking the language Users of GIS often report that the biggest barrier to take up of the technology is a lack of senior management awareness to what the technology can offer. So what keeps senior managers awake at night, where is their pain? In annual surveys such as The Times' annual review of the 100 biggest users of IT, the following consistently appear among the top ten concerns:

- Return on investment (ROI)
- Aligning ICT with business need
- Integration of systems
- Improving Customer care
- Corporate Governance

terms of hard cash. So recently ESRI (UK) has been investing effort into collecting quantified benefit case studies from their customers and the wider GIS industry. There are unfortunately few commercial business cases in the public domain but the following are a few public sector examples where the business case for GIS has been well-documented:

South Yorkshire Police Intranet Mapping System

The Intranet Mapping Service (IMS) is a web-based mapping information system that displays data and information from the South Yorkshire Police data repositories such as Command & Control and the Crime Management System. The data reflects six different crime themes and anti-social behaviour. Multiple analyses of these seven themes are overlaid upon four scales of Ordnance Survey mapping.

As South Yorkshire Police is funded partly by a public taxation system, it is only right that benefits derived from a financial perspective are measured. An audit of the new GIS was undertaken evaluating efficiency savings over a 58-day trial period. The analysis revealed a cash benefit saving of £103,513 during the trial period. The equivalent annual cash benefit saving would equate to £622,121.

Teignbridge District Council – Optimising the efficiency of refuse collection services

Efficient refuse collection clearly has benefits to the council taxpayer. That's why Teignbridge District Council is using GIS – combined with GPS, OS MasterMap Integrated Transport Network data and other property information – to analyse and optimise refuse collection routes. To date, the Council has been able to save £20,000 by spreading workloads more efficiently between crews and reducing fuel consumption. And further optimisation puts the council on target to deliver savings of some £110,000 per year.

Cash Savings:

- £15,000 due to evenly distributing the workload across different crews and cessation of overtime.
- £5,000 from the reduction in fuel and maintenance.

Broader unquantified benefits:

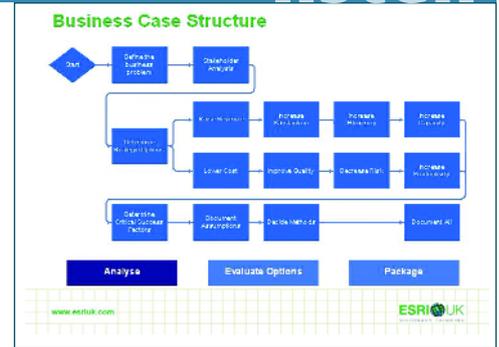
- Environmental Benefits – reduced CO2 emissions resulting from fewer miles travelled and reduced congestion.
- Teignbridge plan to expand the system into other areas of their services such as bulk waste collection.

In addition to making significant improvements in efficiency, the council has also improved responsiveness and timeliness of refuse collection services overall resulting in improved customer service to the citizen.

Huntingdonshire District Council – Using land and property information to improve revenue collection

Huntingdonshire District Council has been

Figure 2 – Business Case Structure: Analysis



awarded the top “Excellent” classification in its Comprehensive Performance Assessment and it is also among the strongest performing local authorities in the country.

The council uses GIS to help it manage and analyse data on everything from social trends and council services to footpaths and property. However, when GIS successfully linked the council’s corporate Local Land and Property Gazetteer (LLPG) with address information in the council tax database, £155,000 in unpaid tax bills was highlighted straight away.

Cash Savings:

- £155,000 due to identifying unbilled properties resulting from addressing anomalies
- £100,000 staff time saving through the elimination of duplication and costs associated with the maintenance of land and property information.

Broader unquantified benefits:

- Improved accuracy of address information in the corporate LLPG assists all services that rely on address information to deliver front line services.

A methodology for constructing a GIS business case

The UK Treasury Green Book (1) contains a very well thought out and presented framework for business case development. Based on this framework, ESRI (UK) has developed a GIS business case methodology that has been used successfully for a number of years. It is based on experience of what works in practice and aims to be a simple, easy to follow method for deriving business-driven benefits.

Figure one shows an overview of the process, which can be summarised as analyse, evaluate and package.

Phase 1: Analysis

The analysis is then broken down into the follow steps shown in figure two.

The first step – defining the business problem – is absolutely key to creating a successful business case. One of the most common pitfalls in a GIS business case is to drive them from a technical perspective. There must be a business issue, i.e. a customer and a problem or there is no possibility of creating a business case!

Phase 2: Evaluate

Options that have been created in the first phase



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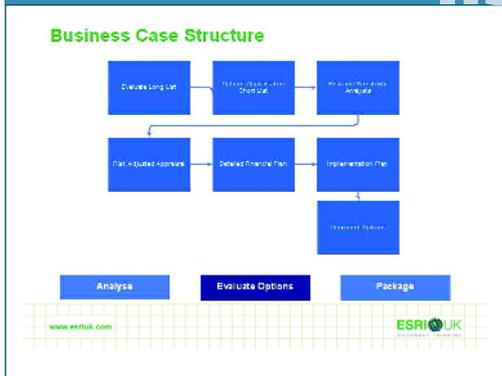


Figure 3 – Business Case Structure: Evaluate

are then evaluated in the next stage shown in figure 3. A rigorous analysis of risk is required at this stage if the plan is to become financially robust. An implementation plan should also be created at this stage to demonstrate that (a) the project is feasible and (b) this exercise often feeds back into the risk analysis. This highlights

an important point that creating these business cases is highly iterative.

Costs Identifying detailed cost components to the business case is probably one of the easier parts of the exercise, although it is easy to miss some of the less obvious contributors. There are a number of “cost checklists” available; the following from a report by GITA in 2006 (2) is a good example:

- Hardware integration with pre-existing computing infrastructure
- Evaluation, selection, acquisition and installation of software
- Undertaking requirements/needs analysis
- Contractual aspects
- Systems customisation
- Applications portfolio development
- Interfacing to other “data servers” and operational systems
- Business case analysis
- Project management
- Delivery and installation
- Business process re-engineering
- Transitional costs (i.e. parallel running of old and new systems)
- On-going cost implications (i.e. staff costs and consumables)
- Data purchase
- Data capture, data conversion
- Data re-survey and validation
- Training, human resources planning, skills development and re-skilling

Benefits Identifying benefits can be harder and so we have developed a “benefits spectrum” to help systematically analyse and capture potential benefits. This is shown in figure four. Typical benefits, with some case study examples derived from public sources and the wider IT industry, include:

Raised Revenues

- Improved sales from better targeted marketing. *Loyalty Management, who run the Nectar loyalty card scheme, created personalised maps produced by measuring distances from the collector’s new home to sponsor store locations in the area. These Home Movers Packs were*

introduced following a successful pilot project with response rates of up to 25 percent, well in excess of expected response rates (3).

- Web sales channel – access to new customers (comparators easy to create using return from existing channels).

Lower Costs

- Lower software integration costs – legacy system redevelopment avoided.

Research firms Gartner Group and Forrester agree that approximately 35 percent of IT dollars are spent building point-to-point interfaces. Using this percentage to provide a rough estimate, 35 percent of an implementation budget will typically go to integration tasks (4).

- System development – costs reduced by using common interfaces, implementation risk reduced by repeatability.

Building components for an SOA requires only ~20% additional investment over development for one-time use, compared to the ~50% additional investment required to build traditional reusable components. This is the conclusion of a wide ranging US study by Poulin, Lockheed Martin and Himler, LogicLibrary (5).

- Training costs – reduced by staff needing to learn less systems

As a result of moving to a single integrated GIS platform, South Yorkshire Police, reported reduction in training costs of £43,000 per annum.

Increase Satisfaction

- Improved customer services – integrated information = reduced call-contact time.

An SAP customer, the printer company Brother, reported that their national service organisation measured a 10% talk time reduction on 60% of the 1.8 million phone calls per year from using the solution database. That saving alone in terms of dollars and cents is about \$621,000 – or another 94,000 phone calls that the same number of people can answer (6).

- Reducing disruptive activity.

Halcrow produced a report in July 2004 for the Department for Transport, which estimated the annual costs of disruption caused by utility works in England in the year 2002/03 at some £4.3 billion, based on an estimated 1.1m works per annum (7). In simple terms, a 1% reduction from better coordination between utilities, based on these figures equates to a saving of £43m per annum.

Increased Efficiency

- Reduced data entry – time savings evaluated by “stop watch” comparison.

Searchflow – one of the NLIS property search processing companies, commissioned indep-



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endent research, which demonstrated a reduction in legal staff time from an average 74 minutes to 15 minutes per transaction (8).

- Reduce quality assurance – staff time savings from removing steps in workflow. *British Waterways* – estimate savings of £81k per annum by use of GIS to remove the need to undertake 4500 site visits as part of their annual building audit (9).

Decreased Risk

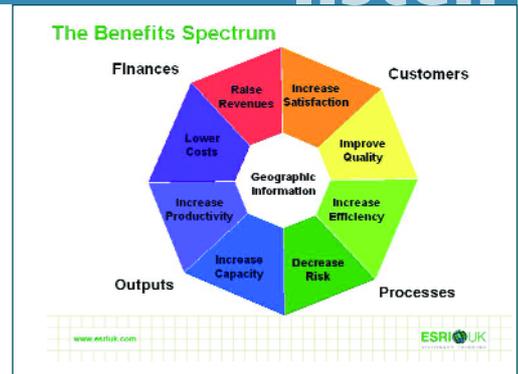
- Opportunities offered by data conflation. *A major insurance provider reported an estimated return of between five and ten times its initial multi-million point outlay based on the greater certainty from accumulating perils at an individual property level. By protecting the business more accurately against risk, boosting the volume of transactions and increasing opportunities for revenue generation, the cost gains far outweigh the initial investment (10).*

Phase 3: Present

The final stage involves packaging all this information up for presentation. It is best not to be prescriptive in terms of how this is done, as it will vary from organisation to organisation. It will be necessary to seek out from the finance department how they like figures presented, e.g. discounted cash flows, nett present value, internal rate of return, etc. The final packaging also needs to take into consideration non-economic impacts such as social or environmental impacts and relationships to other corporate or public policies.

A call to action The ultimate goal in publishing this article has been to argue that, historically, the GI industry has been poor at making the business

Figure 4 – The Benefits Spectrum



case for GIS – but that need not be the case. GIS is benefit rich and solves real world problems. What does the industry need to do collectively for its common good?

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