

Economic Aspects of SDIs: Cost-Benefit Studies

What figures do you believe?

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Economic Strategy?

The first big question:

Will creating SDI lead to “sustainable development of society” (Sweden) and support longer term economic growth in a nation and as a region (Croatia, Cataluña, other SDI strategies)?

The second big question:

At what cost?

Some basic issues

- What do we mean by “economic aspects”?
- No SDI is created in a vacuum.
- No SDI is created overnight.
- SDIs are not “projects”.
- Estimating costs and measuring benefits – exceptionally difficult for infrastructure.
- Assumptions - assessed, agreed and transparent.
- Risks must be assessed, agreed and included.
- ‘Place’ (location) is important - but so are other attributes.

What has history shown us?

Report Date	Organisation	Country	Type of Study	Benefit-Cost
1990	New South Wales state	Australia	Economic aspects of digital mapping	2:1 to 9:1
1990	Western Australia Dept. of Land Administration	Australia	Land Information Programme	5.9:1
1991	Office of Information Technology of South Australia	Australia	GI in the Public Sector	2.9:1 to 5.8:1
1992	AUSLIG	Australia	Economic & Social Benefits of Public Interest Programme	3.8:1
1992	Dept. of Defence	Australia	Economic Benefits of Hydrographic Programmes	2.7:1
1993	Gov. of Victoria	Australia	Strategic Framework for GIS Development	5.5:1

What has history shown us?

Report Date	Organisation	Country	Type of Study	Benefit-Cost
1995	ANZLIC	Australia/NZ	Australian Land and Geographic Data Benefits Study	4:1
1998	US Department of Agriculture	USA	ROI for GIS Projects from agency-wide Business Process Re-engineering study	\$168M savings/yr
1999	Dept. of Land & Water Conservation, NSW	Australia	Business Case for Community Access to Natural Resources Information (1999-2003)	1.82:1 average
2000	PIRA International (USA)	EU-wide	Commercial Exploitation of Europe's Public Sector information	[1]
2000	Centre for International Economics, Sydney (for GSDI)	Global	Describes preferred methodology for preparing business case for SDI	N/A

What has history shown us?

Report Date	Organisation	Country	Type of Study	Benefit-Cost
2002	Austrian Federal Ministry of Economics and Labour	Austria & Europe	Economic analysis of CBA for Austrian cadastral GI	23:1 [2]
2003	Environment Agency UK & Univ. of Sheffield, UK	EU-wide	Contribution to the Extended Impact Assessment for INSPIRE	4.4:1 to 8.9:1
2004	European Commission INSPIRE	EU-wide	Extended Impact Assessment for INSPIRE	5.4:1 to 12.4:1
2004	US Geological Survey US Dept. of Interior	USA	Determined net present value (NPV) of USA National Map programme over 30-years	\$2 billion benefit
2005	Booz Allen Hamilton (USA)	USA	Geospatial Interoperability ROI Study	RoI of 26.2%

Croatia SDI

Croatia SDI goals are:

- **Raising social awareness** of the importance of spatial data, and managing better coordination and cooperation between all included subjects;
- **Customization** of the existing spatial data to the appropriate standards and technologies;
- **Design of metadata** that will describe the existing sets of spatial data;
- **Creation of a catalogue** and the necessary infrastructure.

Croatia SDI

Types of costs considered were:

- **spatial data collection and/or maintenance;**
- **material infrastructure (hardware and net resources);**
- **customization of data to the appropriate standards, creation of metadata and a catalogue;**
- **human resources;**
- **other costs.**

Croatia SDI

Benefits were grouped into three categories:

- Reducing redundancy, reducing costs, and increasing the range of products and services for spatial data producers.
- Reducing costs and increasing the range of products and services for spatial data users.
- Direct and indirect benefits for the whole society through improvement of the public information services.

Croatia SDI

- Analysis issues?
- Results?
- The final question is ...
would you believe the results of this study if you were the funding body, either a central government fund or already overstretched 'own' budgets of individual agencies or local government authorities?

Catalan SDI (IDEC)

- **“IDEC has a specific line of activity, and related funding, to disseminate SDI concepts and technologies to local municipalities with a view to modernise public administration and improve services to citizens and local businesses.”**
- **“not directly involved in the production and maintenance of topographic data, which is the responsibility of the ICC, but focuses solely on the added value of an SDI”**

Catalan SDI (IDEC)

Costs over 5-year period:

- **do not include** creation and updating of topographic data (would happen regardless of the development of the SDI) nor the indirect costs associated with the physical and technological infrastructure.
- **do include:** metadata creation and maintenance, geo-services (including geoportal, catalogue, WMS client), preparation of data for publication, applications, hardware and software, and management.

Catalan SDI (IDEC)

Benefits:

- **efficiency benefits** internal to the public administrations (time saved in internal queries by technical staff, time saved in attending queries by the public, time saved in internal procedures and the redesign of internal processes), and
- **effectiveness benefits** (time saved by the public and by companies in dealing with public administration).
- **Efficiency benefits** account for over 500 hours per month per commune = **savings exceed 2.6 million euro/year.**
- **Effectiveness savings** are approximately 480 hours per month per commune = **2.5 million euro/year.**

Catalan SDI (IDEC)

Investment decision?

- Study indicated that initial investment to set up the IDEC SDI is recovered in just 4 months.
- If the operating costs for 2004-05 area included, the payback period increases to just over 6 months.

The question again is – would you make the investment needed based on the CBA, assumptions, etc.?

Some Recommendations (1)

- Conduct a study looking at the 'value of geospatial data' as perceived by different stakeholders (government, business, citizens), for different uses and in different pricing, charging and dissemination scenarios, taking account of the e-government environment and information culture.
- This is necessary to underpin the conduct of a cost-benefit study, since, without a better understanding of the value of geodata, how can one properly assign a benefit to its use?

Some Recommendations (2)

- Prepare a proper business case within a framework acceptable to those who will fund the infrastructure.
- The business case should analyse the demand for an SDI (recognizing the indirect nature of demand), having first defined 'SDI' operationally.
- Identify and involve all major classes of stakeholders, by properly conducted survey techniques, in determining both demand and the value that stakeholders put on geospatial information and its use, possibly via use case studies. The CBA could be performed as part of this exercise, during which specific implementation targets and strategies would be developed, debated and costed. Strategy, assumptions and financial targets (IRR, ROI, C:B ratio) would be discussed with the funding agencies prior to and throughout the work.

Some Recommendations (3)

- Whatever mechanism is followed to justify creation of an SDI - CBA or business case or other - it should contain specific targets and concrete benefits which can be monitored over a period of many years, spanning decades, if necessary, since that is the actual time span needed to develop comprehensive information infrastructures.
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- Consider using the cost-effectiveness approach to CBA in investigating the investment needs and options for the SDI, as this methodology is suited to situations where commitment to the overall level of investment funding is already established, to broad guidelines, versus the traditional CBA approach.

Some Recommendations (4)

- Information audits are needed for all departments in the government to know what (geospatial) data and metadata they have already, and what is still needed, especially for metadata.
- In the case of INSPIRE, follow the guidelines that are already emerging from the Implementing Rules.
- Audits should indicate what data is held, why, how it is used and how often, with user's own estimates of the cost and benefit of having, versus not having, that information readily available.

Some Recommendations (5)

- Finally - don't be afraid to request - demand - rigour from the experts conducting your cost-benefit analyses.
- The methods used and lessons learned from the CBA for The National Map in the USA, compared to some of the frankly 'fuzzy' results from other SDI cost-benefit studies conducted to date, should offer a general framework within which a more rigorous approach could be taken in conducting such studies – even if you don't chose to follow the TNM 'simulation' approach.

Thank you for your attention!

Enjoy conducting your next CBA.

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