



Towards the Social and Economic Assessment of Spatial Data Infrastructures

Max Craglia and Joanna Nowak

Spatial Data Infrastructures Unit,
DG Joint Research Center, Italy



Background

- We know very little about how much money and other resources are actually being expended on maintenance of the existing national Spatial Data Infrastructures, let alone on creation of enhanced versions of them or who is providing these resources. In broad terms, we do not know whether these resources are being applied wisely. It would seem helpful therefore to carry out some sound accounting of this expenditure: arguments for adding to it or for using it more effectively or efficiently are unconvincing if we do not know the present practice.

(David Rhind, 2000)

Background

- Major investments in SDI-related developments across the world
- SDI developments *mainly* technology/data oriented
 - Philosophy: the more advanced technology and the more data available, the better
- Yet very little published evidence of social and economic impacts of SDIs
- Workshop organised in Ispra Jan 2006 to gather available evidence and move field forward



Objectives

- Review existing SDI Return on Investment (RoI)/cost-benefit studies, methodologies, assumptions and outcomes.
- Are there consistent findings emerging?
- How far can we generalize findings (i.e. importance of context on outcomes)?
- Any lesson to be learned from RoI studies in other infrastructure projects (e-gov, telecoms, utilities, transport)?
- What is special about SDI compared to these other experiences?
- Presentations on <http://sdi.jrc.it/ws/costbenefit2006/>

Key Issues

- So far very few studies of SDI impacts, mainly ex-ante but no verification afterwards
- Lack of comparability and opaque assumptions
- No understanding of total geo-spatial investment in government, so SDI costs cannot be related to total investment
- Some GIS studies, mainly at organizational level, but complexity increases as we move from GIS to SDI, and from a data centric to a service-centric view

Challenges

- Identify range of benefits from micro to macro
- Scale up/aggregation issues
 - Are local measures valid for “global”?
- Integrate quantitative and qualitative methodologies
- Repeatability- context issues
- Build up portfolios of benchmarks, and longitudinal and comparative studies
- Validate and calibrate

Summary of Findings 1

- Review of key relevant experiences in US, Canada, Europe
- Costs relatively easier to measure than benefits
 - Costs encompass hardware, software but also personnel, staff time, and organizational costs resulting for internal reorganization, and training,
 - Particularly important to consider not only set up costs but also on –going maintenance and adaptation between older and newer systems.



Summary of Findings 2

- Benefits:
 - Efficiency benefits (e.g. time saved in searching, retrieving, and integrating data)
 - Effectiveness benefits (e.g. reduced uncertainty due to higher quality or more up-to-date data, more targeted policies, increased applications, more user value),
 - Wider socio-economic benefits (e.g. better governance, greater accountability, reduced risks, increased innovation and new business opportunities)

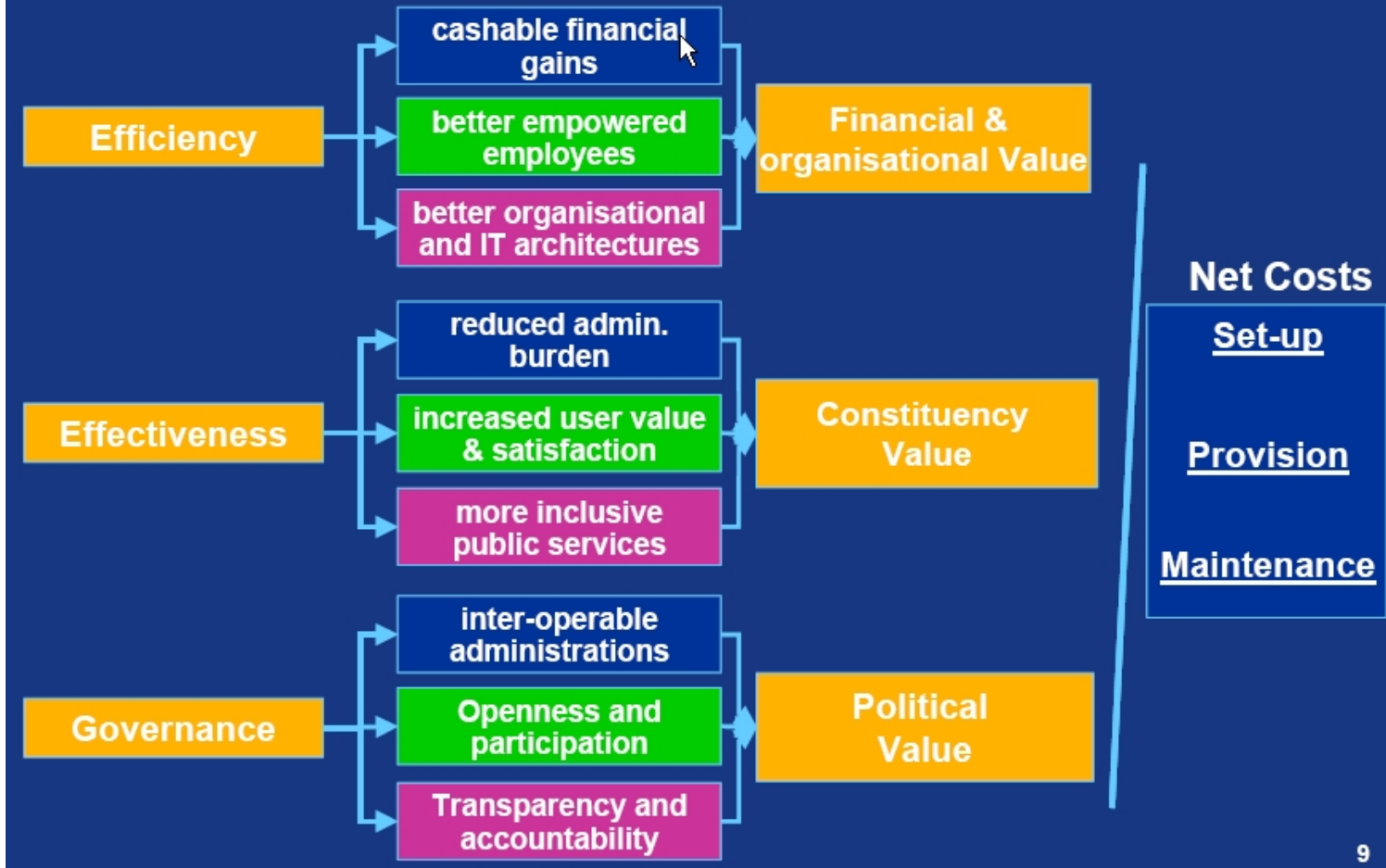


Summary of Findings 3

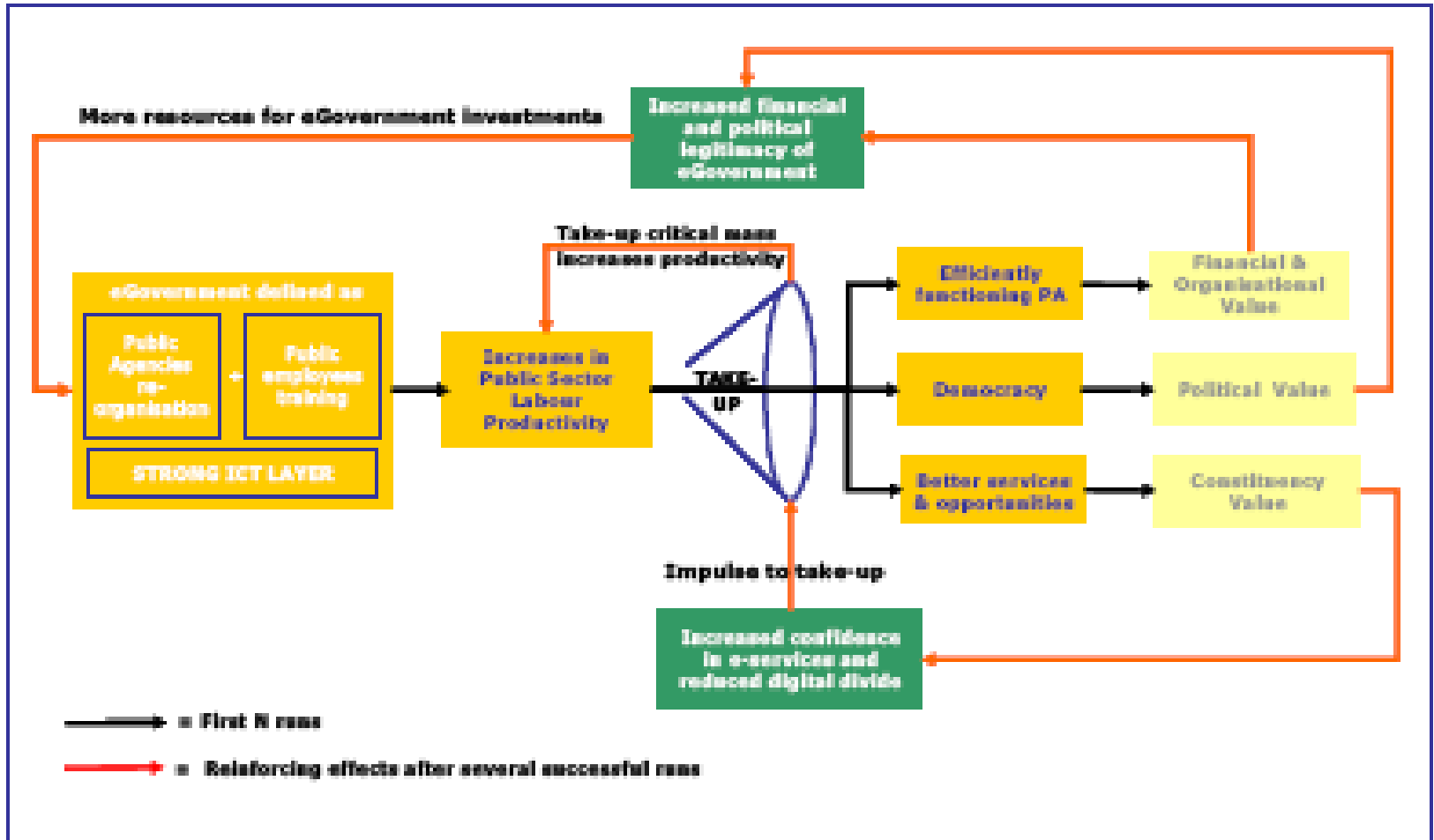
- Need to include both quantitative and qualitative benefits
- Combining the two requires measures of relative change from benchmarks
- CBA and RoI studies useful ex-ante (e.g NASA and USGS National Map study) but expected qualitative benefits need to be accounted for
- To measure impacts during SDI deployment, range of methods needed including surveys, focus groups, self reporting
- CBA does not replace policy-making: Most studies reviewed have positive benefits/cost ratios but all have front loaded investments which maybe politically unpalatable compared to education, health, law and order.

Similarities e-gov

eGov Measurement Framework



Underpinned by a theoretical model



Source: eGEP project

But also some differences.....

- Most e-government services are based around administrative procedures required by legislation, for which there needs to be an interaction between citizens, business or other public sector organisations with one or more government agencies.
- E-enabling processes already understood
- Clear user groups and bi-directional flows
- SDIs (still) more about access, uni-directional, and often disconnected from e-gov with some exceptions (e.g. Denmark, Netherlands,)
- Multi-purpose but also less clearly defined user groups
- SDI should not compete or develop in splendid isolation from e-gov because GI “is for specialists”, but spatially underpin e-gov.

Ways Forward 1

- Need to develop shared portfolio of studies at different scales (organisational, cross-agency, regional, national)
- Develop clearer and shared definition of components of SDI and their functional relationship
- Work on theoretical framework of expected impacts of SDIs
- Give priority to longitudinal studies of SDIs in progress
- Focus on identification of user communities and specific applications
- Develop understanding and measurement of total geo-spatial investment.
- Cross-link with e-gov measurement studies with specific SDI issues

Ways Forward 2

- More studies needed with agreed methodology + sharing of outcomes
- Study at regional levels to be launched by JRC + comparison with Lombardia Region, and internal JRC SDI development
- Launch in 2006 of *International Journal of SDI Research*
 - Fully peer reviewed
 - Published by JRC
 - On-line only
 - Free access
 - Immediate dissemination of knowledge



JRC IJSDIR

International Journal of Spatial Data Infrastructures Research

Call for Papers

<http://ijsdir.jrc.it>

Thank you for your attention