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Towards the Social and Economic Assessment of Spatial Data Infrastructures

Max Craglia and Joanna Nowak

Spatial Data Infrastructures Unit,
DG Joint Research Center, Italy

Institute for Environment and Sustainability

Background

- 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
- Workshop organised in Ispra Jan 2006 to gather available evidence and move field forward.

Challenges

- Identify range of benefits from micro to macro
- Scale up/aggregation issues
  - Are local measures valid for “global”?
- Combine quantitative and qualitative methodologies
- Repeatability vs specificity of context issues
- Build up portfolios of narratives, and longitudinal and comparative studies
- Generalise without trivialize

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.
  - Cost in relation to recurrent investment

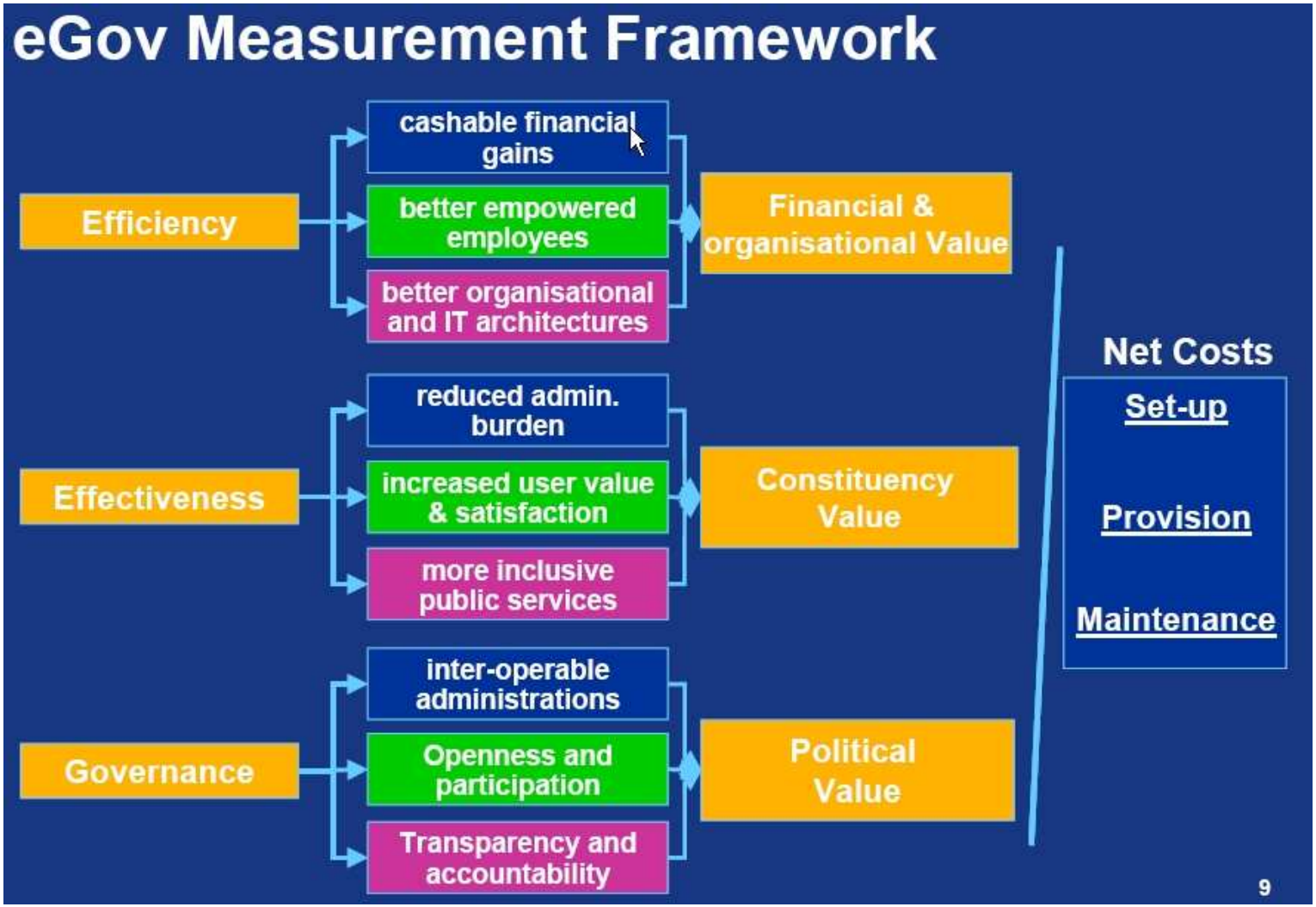
Summary of Findings 2

- 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

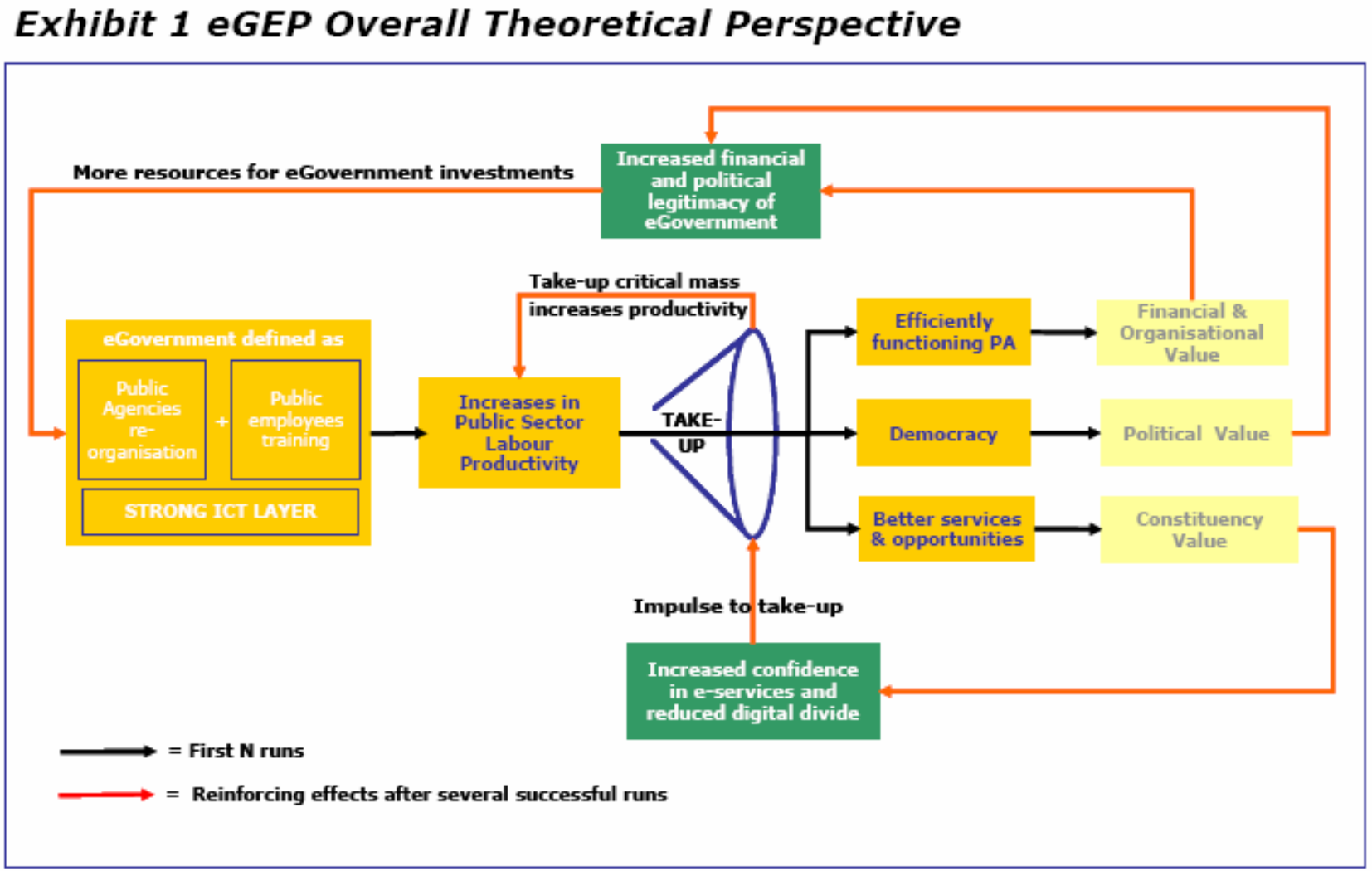
- **CBA does not replace policy-making**: Most studies reviewed have positive benefits/cost ratios but all have front loaded investments which maybe politically unpalatable compared to education, health, law and order.

Similarities e-gov



Source: eGEP project

Underpinned by a theoretical model



Source: eGEP project

But also 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
- Multi-purpose but also less clearly defined user groups

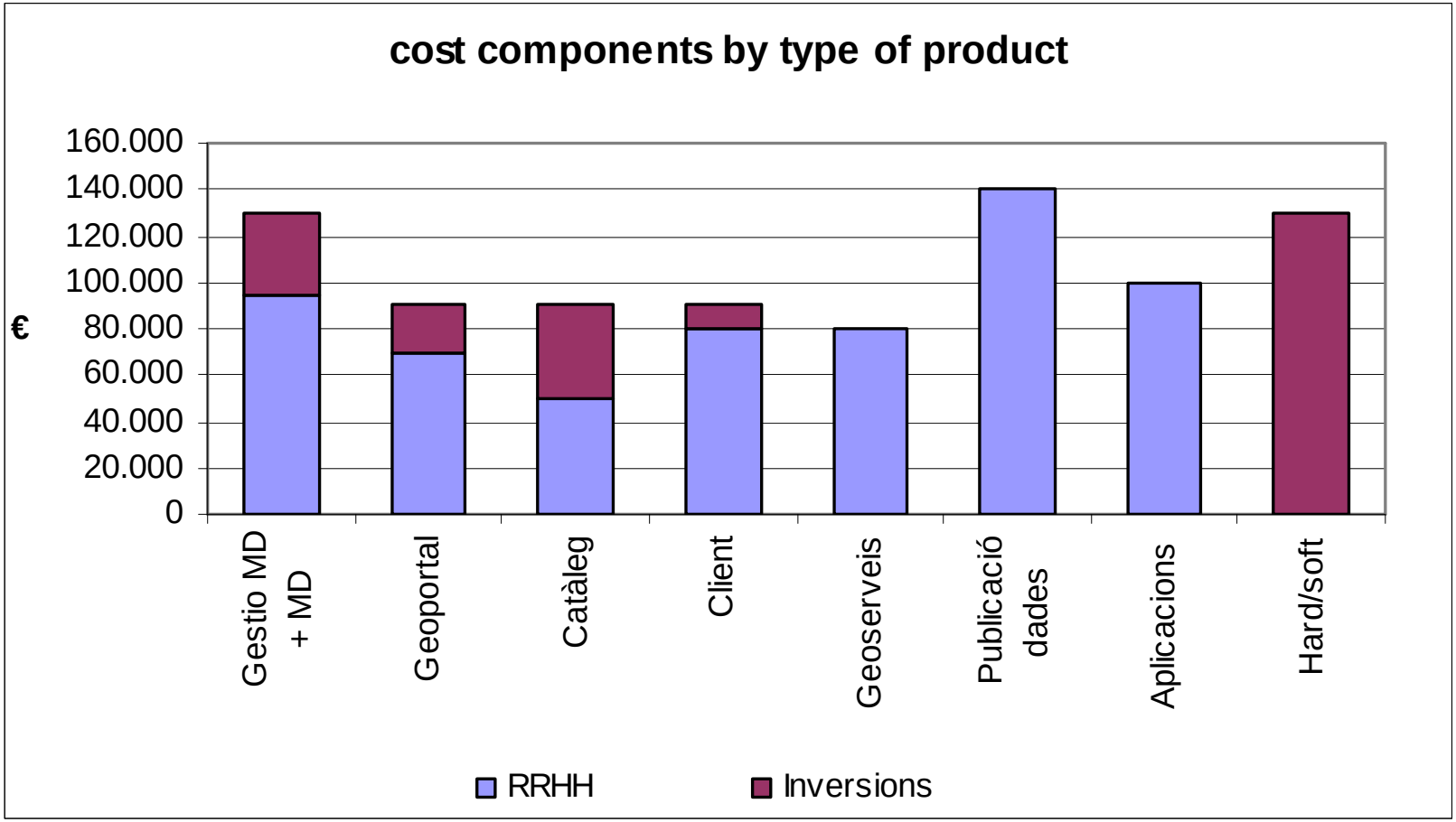
Ways Forward

- 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

How we progressed

- Three studies launched:
  - Catalunya SDI (established)
  - Regione Lombardia SDI (in development)
  - JRC SDI (early development)
- Similar methodological framework, different stages of development and levels of attention
  - Catalunya (region, local authorities, private sector)
  - Lombardia (regional + local authorities)
  - JRC (focus on thematic applications: flood, fire, soils, nature protection, forestry)

Catalunya costs



Benefit analysis

EFFICIENCY		
Impact	**Indicator (Unit)**	**Source**
Cashable	Time saved (hours/month)	ADRE
Financial Gains	Material saved (euros/month)	ADRE
Better empowered	Δ % in number of employees re-trained	ISA
employees	Δ % in improved motivation	ISA
Better organisational	Number of internal procedures redesigned	ADRE
and IT architectures	Number of new procedures	ADRE/TPA
	Δ % in number of interoperable services across departments	ISA/ANDRE
	Δ % in data shared across departments	ISA/ANDRE
	Improved planning of decisions or actions	ISA/ESUR
	Δ % in number of integrated geo-services available in main Government Portal	ADRE/TPA

EFFECTIVENESS		
Impact	**Indicator**	**Source**
	Δ % K€ cost savings for citizens (travel, postage, fees to intermediaries)	SCMC/TPA
Reduced Administrative burden	Δ % K€ cost savings for businesses (travel, postage fees to intermediaries)	SCMC/TPA
	Δ % in volume of service usage/info downloads	WMET/POPS
Increased user Value and Satisfaction	Δ % in number of frequent users of the SDI	WMET
	Δ % in number of users reporting SDI services to be useful	RSS
	Δ % in usage of SDI by government agencies, businesses	RSS/ISA
More inclusive	Δ % of SDI use by citizens	RSS/ISA
Public services	Uses that could have not been supplied without the SDI.	ISA

DEMOCRACY		
Impact	**Indicator**	**Source**
Openness	Number of applications for digital interaction and consultation (online forum, e-petitioning, etc)	TPA
Transparency and accountability	number of metadata records of geo-resources available though catalogues	TPA/WCR
	% increase in queries and claims submitted online	WMET
Participation	% increase in online forum interaction	WMET

Legend of Indicators Data Sources Acronyms	Full Description of Source
OS	Official Statistics
ADRE56	Administrative Records Data, for instance: □ Personnel costs; □ Material costs;
	□ Volumes of output (files, cases, transaction processed); □ Description of standard procedures and business processes and of corresponding working times; □ Other
SCMC57	Standard Cost Model Calculations
ISA58	Internal Self-Assessment based on qualitative Scale
RSS59	Random sample survey for user Satisfaction and usage Data
	and index construction
ESUR	Employee Surveys
POPS*61*	Pop-up Surveys.
TPA62 .	Third Party Assessment
WCR63	Automatic Web Crawler Software
WMET64 .	Web Metrics Data: □ Number of hits or user contact sessions; □ Number of document downloads;
	□ Amount of time users spend on a site; □ Number of transactions completed; □ Web analytics (click streams, repeat use, cross-usage)

State of progress

- Indicators being tested + interviews and survey of private sector
- Need to look also at the potential dis-benefits!
- Lombardia: 15 interviews done at regional, provincial, and local authority level. Analysis in progress now
- JRC: 14 interviews to see how people are doing their thematic work now, what are their requirements and expectations from an SDI, so that we can prioritize development and measure afterwards what has changed among users

Some ideas to conclude

- If you focus on only on SDI, then you end up with evaluation = extent to which goals are achieved. Since most goals are “increase access and sharing on GI” then that is the only main measure of success.
- (and if you invest heavily in IT you should expect some improvement in information management!)
- Do not focus just on SDI but on its utility for applications that have policy/social/economic value to society (these are also more comparable)

More ideas

- Users of SDI are critical for evaluation
- So far users (if any) are GI experts not the general public who is not interested in **data** but in information [discuss]
- Broader public may become users when you provide services that give information, not just data (see Google earth)
- *So no delusion about increased PP please (yet).*
- What do the funders need? i.e. evaluation for whom? Are they interested in saving money or promoting use? Are the two aligned or contradicting?
- Still missing a theoretical framework informing the expected benefits, e.g. impact on innovation, competitiveness, productivity, environmental and social?

Thank you for your attention

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