

Applying the Multi-view framework to assess National Spatial Data Infrastructures with particular focus on the Dutch SDI

Lukasz Grus
Joep Crompvoets
Arnold Bregt
Tatiana Delgado Fernandez
Bastiaan van Loenen
Witse Castelein



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Content

- **Assessing SDIs**
- **Multi-view framework to assess SDI**
- **Assessment results**
- **Dutch SDI monitoring**



SDI characteristics that determine assessment

- Complexity of SDI
- Problematic definition
- Multi-understanding
- Many players
- Serves multiple purposes

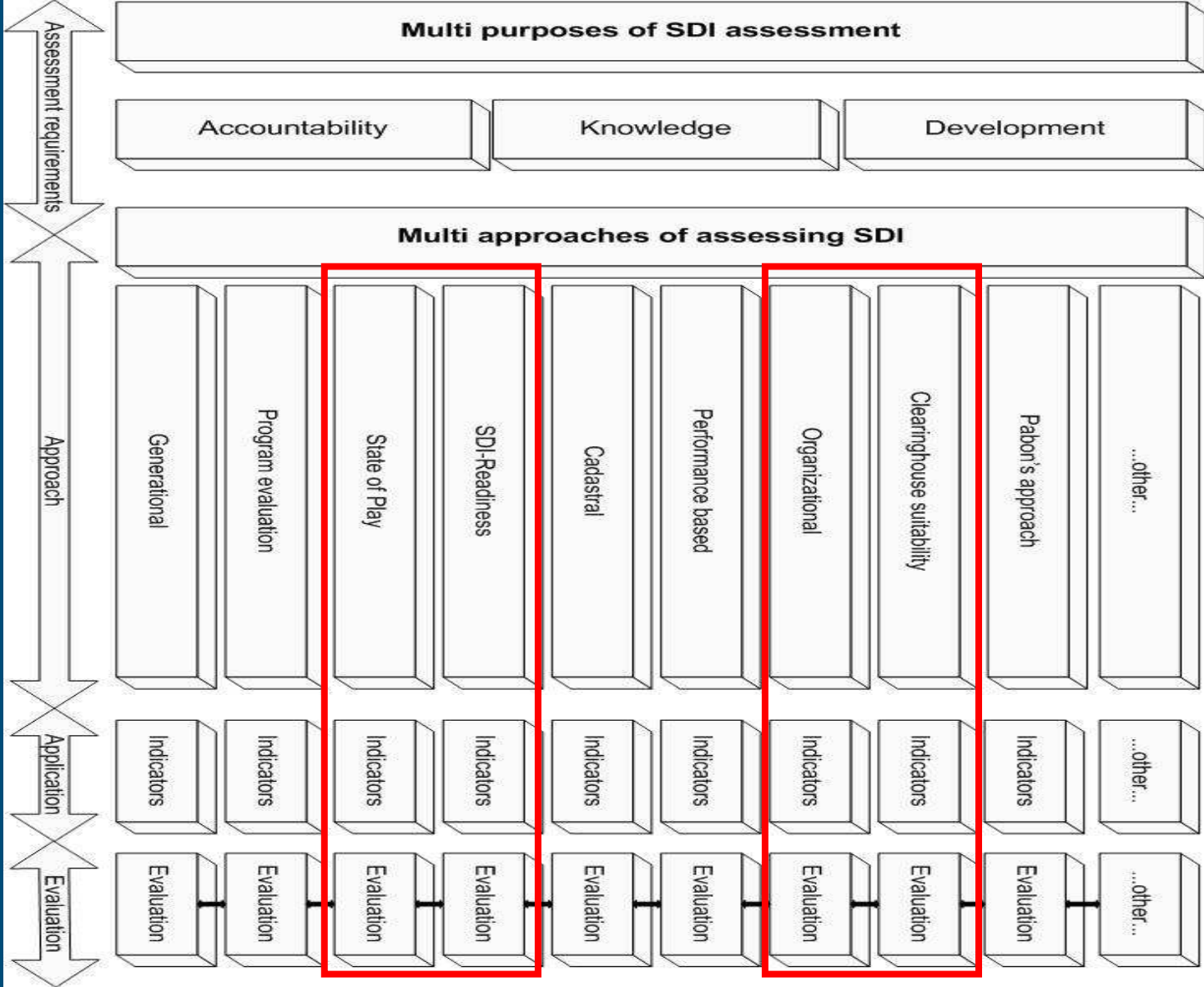


Principles of assessing SDI

- Use multiple assessment methods and approaches;
- Do not oversimplify;
- Incorporate different views/understandings;
- Decide on the purpose of the SDI assessment: accountability, development and knowledge;
- Flexibility;



Multi-view SDI framework



Multi-view SDI framework

- **Multi-view SDI assessment framework based on NSDI as CAS reasoning.**
- **Characteristics**
 - several assessment approaches
 - flexible (extensible)
 - multiple methods

 - reduced bias
 - full picture of SDI performance
 - multiple purposes of assessment



Multi-purpose

- **Link purpose to type of view (approach):**
 - **State of Play – accountability, developmental;**
 - **SDI readiness – knowledge, developmental;**
 - **Organizational – developmental;**
 - **Clearinghouse suitability – accountability, developmental;**



Countries sampled

Questionnaire distributed to SDI-coordinators
(including questions relating to the views)

- Brazil
- Canada
- Chile
- Colombia
- Cuba
- Denmark
- Ecuador
- Mexico
- Norway
- Nepal
- Spain
- The Netherlands
- Uruguay
- USA



Clearinghouse suitability view

- Examination of the developments of the existing national spatial data clearinghouses around the world
- Focus on a systematic description of 15 clearinghouse characteristics described by Crompvoets et al. (2004).



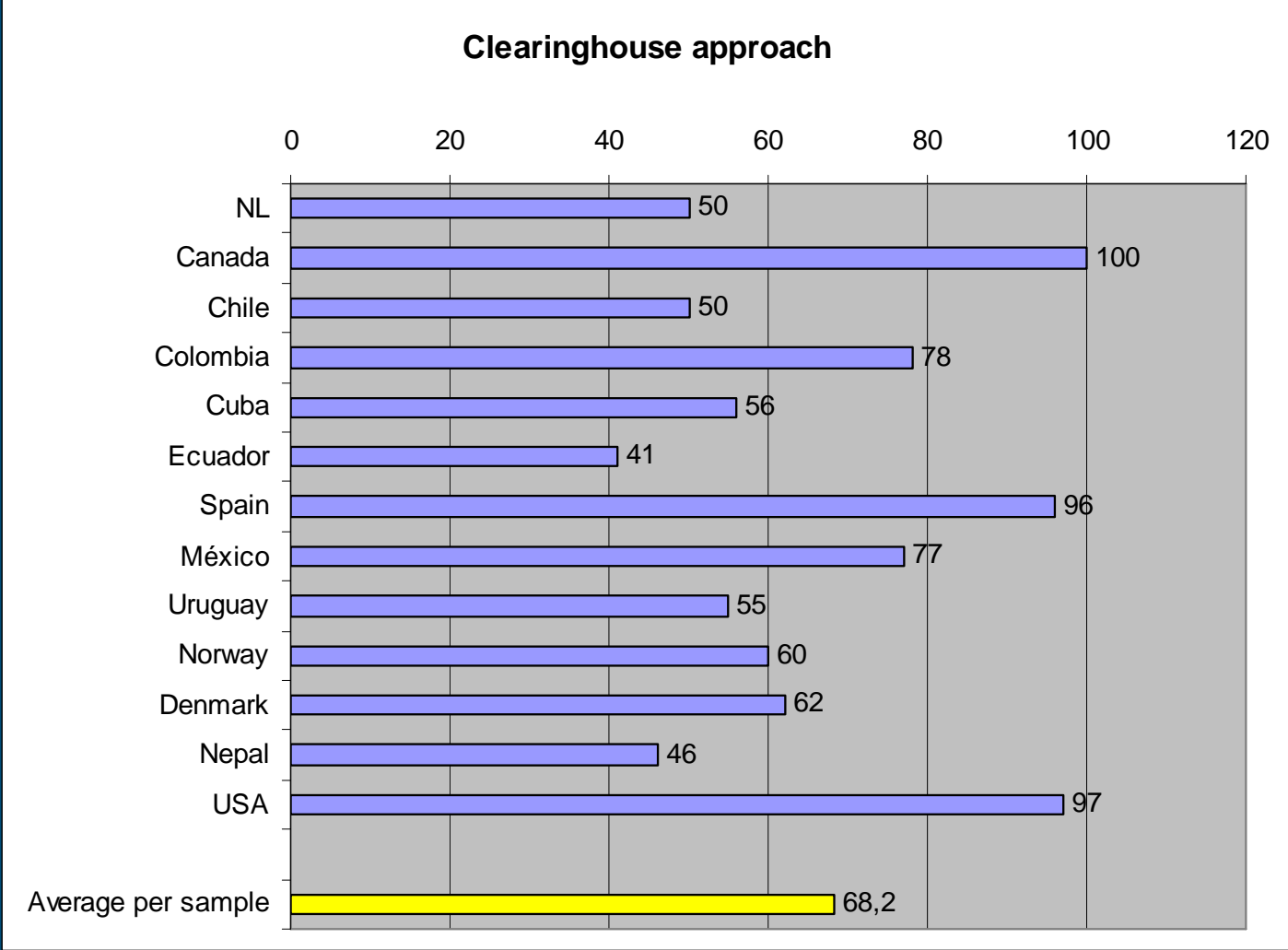
Clearinghouse suitability view

Clearinghouse characteristics measured:

- 1) Number of data suppliers;
- 2) Monthly number of visitors;
- 3) Number of web references (Google);
- 4) Languages used;
- 5) Frequency of web updates;
- 6) Level of (meta)data accessibility;
- 7) Number of datasets;
- 8) Most recently produced dataset;
- 9) (De)centralised network architecture;
- 10) Availability of view (web mapping) services;
- 11) Mechanisms for searching;
- 12) Use of maps for searching;
- 13) Registration-only access;
- 14) Funding continuity, and
- 15) Metadata-standard applied.



Clearinghouse suitability view



Clearinghouse suitability per country

Organizational view

- Intention to identify, describe and compare the current status of the organizational aspects of the NSDI
- Assessment of characteristics of institutional components:
 - leadership
 - vision
 - communication channels
 - self organising ability of sector
- Four stages of development
 - Stand-alone (stage 1)
 - Exchange (stage 2)
 - Intermediary (stage 3)
 - Network (stage 4)

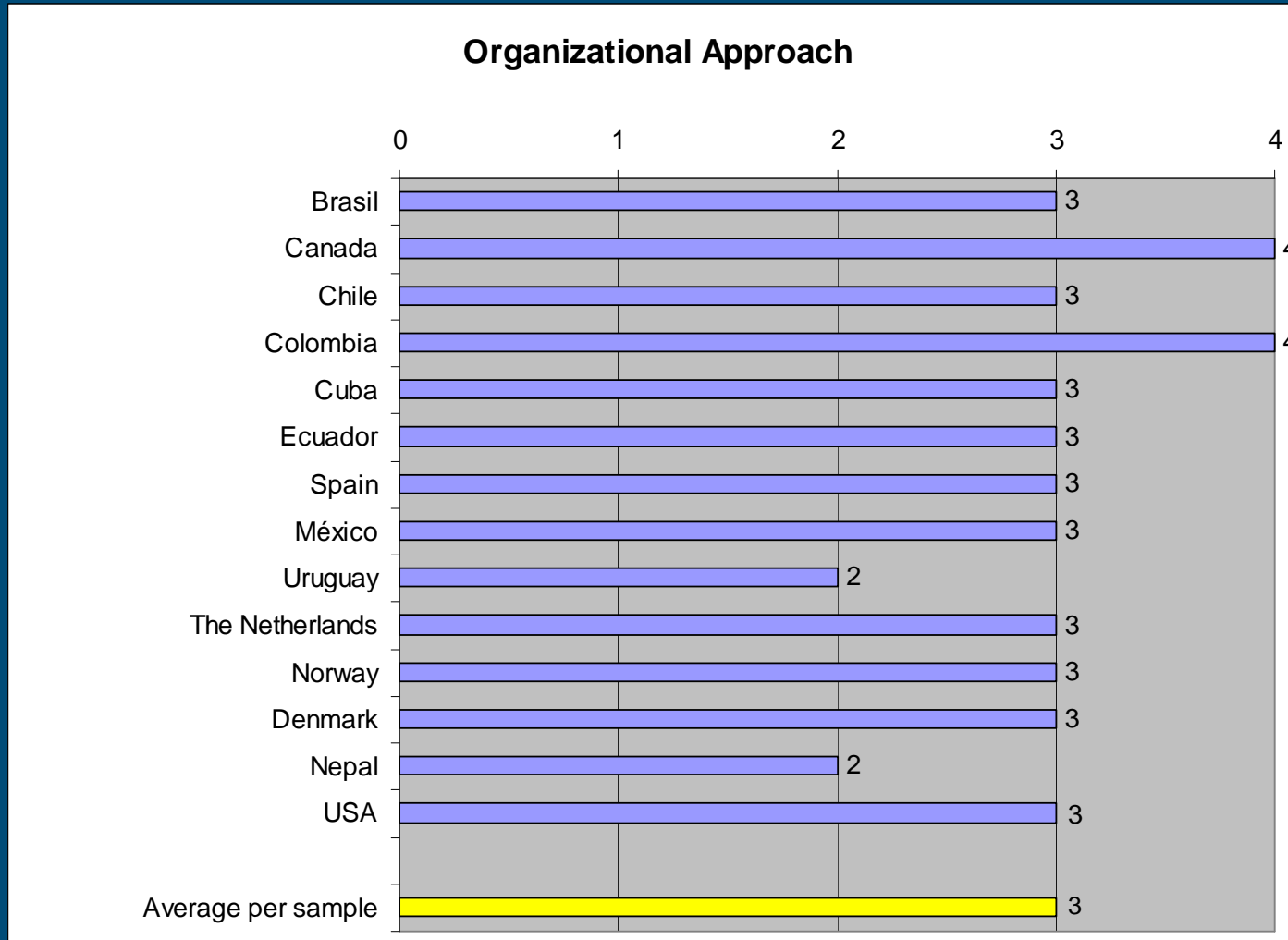


Organizational view

| Stage | Stand-alone | Exchange | Intermediary | Network |
|-------------------------|-------------|----------|--------------|---------|
| Aspect | | | | |
| Leadership | | I | VI | II |
| Vision | I | V | III | |
| Communication | | II | VI | I |
| Self-organising ability | | I | VI | II |



Organizational view







State of Play view

- **State of Play of SDIs in Europe performed by the Spatial Applications Division of K.U. Leuven (Vandenbroucke)**
- **Assessment refers to the items that relate to a number of organizational issues and to the six generic components of an SDI (GSDI-Cookbook) + Thematic environmental data**
 - **Organizational aspects**
 - **Legal Framework and Funding Mechanism,**
 - **Spatial data,**
 - **Metadata,**
 - **Access and other Services,**
 - **Standards,**
 - **and Thematic environmental data**

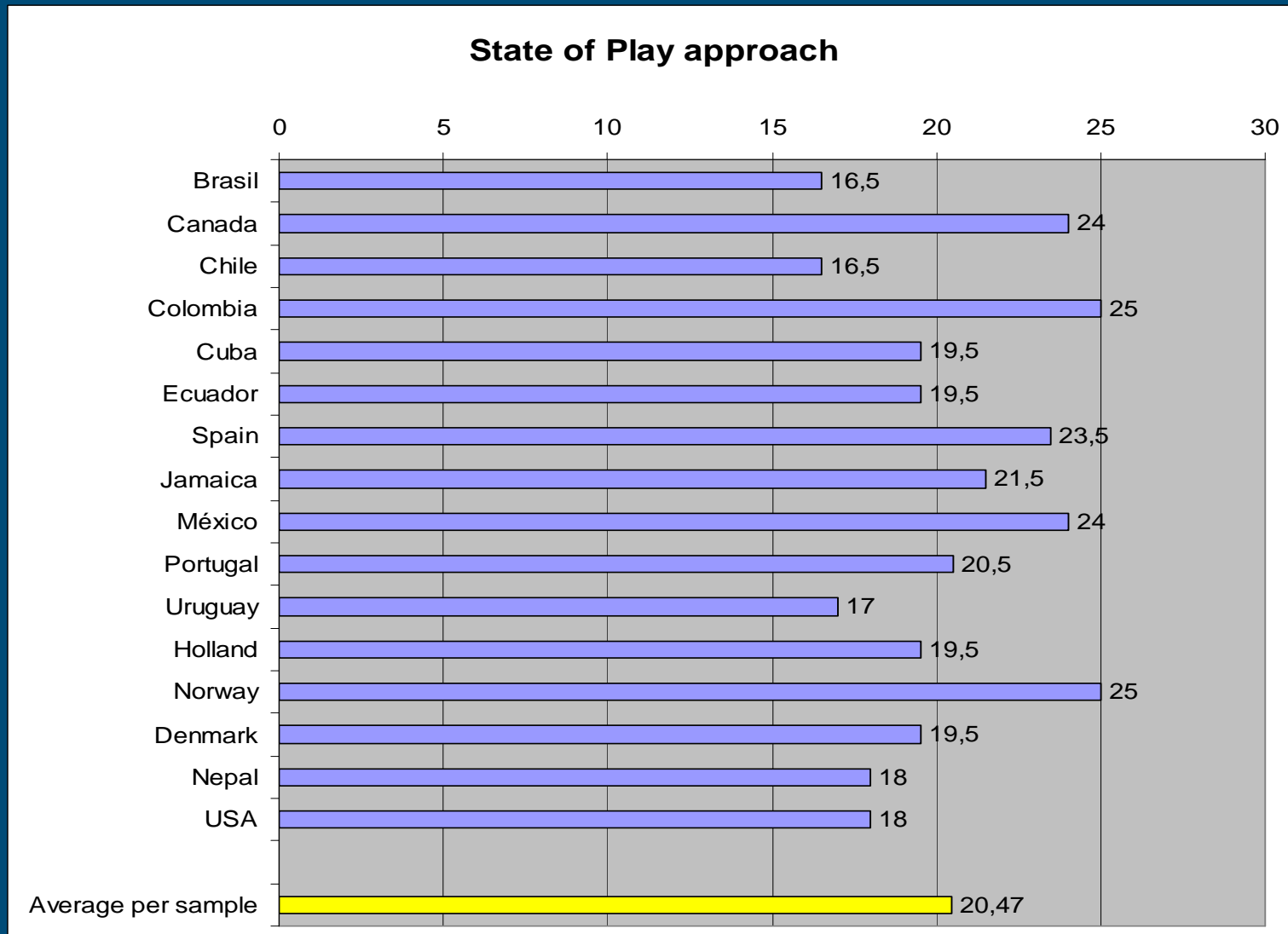


State of Play view

| Country | Organizational aspects | | | | | | | | | | | Legal and financial aspects | | | | | | | | | Spatial Data | | | | | Meta-data | | | Access services | | | Stand ards | | | | Thematic envir. Data | | | |
|----------|------------------------|---|---|---|---|---|---|---|---|----|----|-----------------------------|----|----|----|----|----|----|----|----|--------------|----|----|----|----|-----------|----|----|-----------------|----|----|------------|----|----|----|----------------------|--|--|--|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brasil | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| Chile | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| Colombia | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| Cuba | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| Ecuador | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| Spain | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| México | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| Uruguay | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| Holland | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| Norway | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| Denmark | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| Nepal | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| USA | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |

| | |
|---|----------------------------------|
|  | In full agreement - Value 1 |
|  | In partial agreement - Value 0,5 |
|  | Not in agreement - Value 0 |
|  | Insufficient information |

State of Play view



Values calculated without statements 4, 5, 6.

SDI-readiness index view

- SDI readiness index is defined as *the degree to which a country is prepared to deliver its geographical information in a community.*
- **Aspects:**
 - organizational
 - information
 - access network
 - human resources
 - financial resources

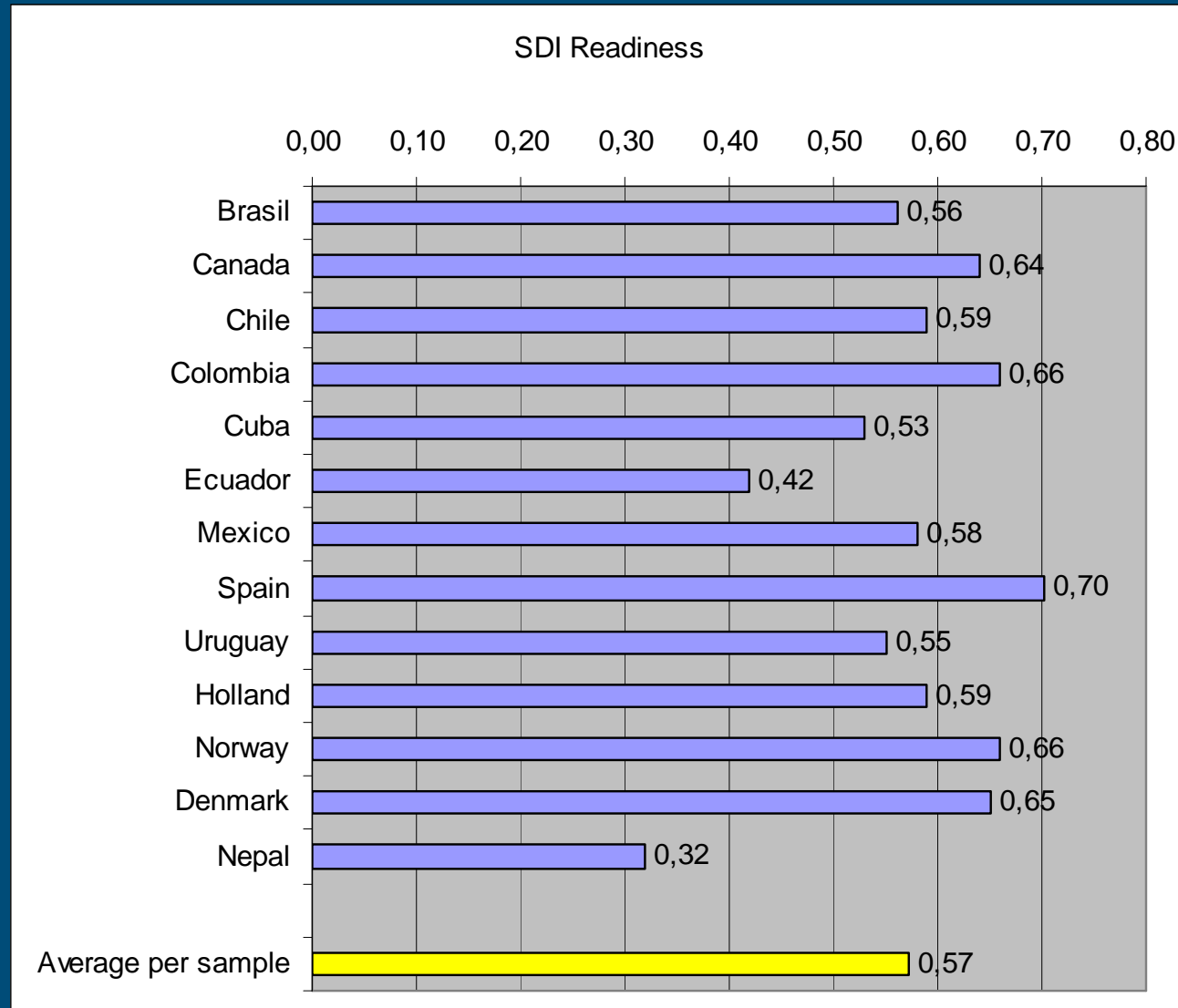


SDI-readiness index view

- Integrating factors from several points of view:
 - *organizational* (vision, institutional framework, legal framework);
 - *information* (digital cartography availability, metadata availability);
 - *access network and technology* (communication infrastructure, web connectivity, availability of commercial or inhouse spatially-related software, use of open source service);
 - *human resources* (human capital, Culture/Education on SDI culture, individual leadership), and
 - *financial resources* (government funding, funding by means of cost recovery, private and enterprise sector funding).



SDI readiness view results



Results per country

| Country \ Assessment view | <u>Clearinghouse view</u> | <u>Organizational view</u> | <u>SoP view</u> | <u>SDI readiness view</u> |
|------------------------------|---------------------------|----------------------------|-----------------|---------------------------|
| Brasil | No data | On average | Below average | On Average |
| Canada | Above average | Above average | Above average | Above average |
| Chile | Below average | On average | Below average | On average |
| Colombia | Above average | Above average | Above average | Above average |
| Cuba | Below average | On average | On average | Below average |
| Ecuador | Below average | On average | On average | Below average |
| Spain | Above average | On average | Above average | Above average |
| Mexico | Above average | On average | Above average | On average |
| Uruguay | Below average | Below average | Below average | On average |
| The Netherlands | Below average | On average | On average | On average |
| Norway | On average | On average | Above average | Above average |
| Denmark | Around average | On average | On average | Above average |
| Nepal | Below average | Below average | Below average | Below average |
| USA (Minnesota state) | Above average | On average | Below average | No data |

Results

- **Canadian, Colombian and Spanish SDIs in each assessment view performs relatively better than others**
- **Nepalese SDI in each assessment view performs relatively worse than others.**
- **Differences between approaches results, but not very high**



Results

- **SDI readiness view vs. Clearinghouse suitability view**
 - Correlation coefficient = 0,69
- **SDI readiness view vs. State of Play view**
 - Correlation coefficient = 0,54
- **SDI clearinghouse suitability view vs. State of Play view**
 - Correlation coefficient = 0,44

Different views are not highly correlated which means that they measure different aspects of SDI (are not redundant)



Conclusions

- **Multi-view assessment framework shows broader picture of each country SDI**
- **This allows for more objective and less biased NSDI assessment**
- **Multi-view framework application will be continued using more than 4 assessment views, using experts that evaluate a selective number SDIs, and sampling more countries.**



Conclusions/Recommendations

- **Assessment cannot be too simple**
- **...but must be simple enough to be applicable**
- **Use more than one method/approach**
- **Make assessment not to punish but to help**
- **Use the results in a proper way**



GIDEON - Vision and implementation strategy



Objectives (2008-2011):

- Geo-information accessible for citizens and private sector;
- Private sector is able to create economic added value;
- Integrated use of geo-information by the public sector;
- Continues and ongoing development and innovation.



Implementation strategies

Embedding geo in e-Government

Legal geo basic registers

INSPIRE implementation

Supply optimization

Cooperation/Connection

Value adding

Knowledge, innovation and education



Monitoring and implementation

Current Status GIDEON: adopted by GI council and send by the Minister to the parliament (2 June).

Monitoring and implementation under discussion:

- **Progress monitoring and reporting to GI council and parliament;**
- **Communication and promotion of GIDEON in geo-sector and to establish links to other (ICT) initiatives;**
- **Observe ongoing developments and identify bottlenecks (pro-active);**
- **Support and facilitate the implementation for stakeholders.**

Challenge: Use multi-view framework to facilitate the monitoring of GIDEON – under discussion.



Thank you

- Questions?
- Survey distribution? Joep.crompvoets@wur.nl
lucas.grus@wur.nl, tatiana@geocuba.co.cu

