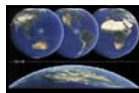


Assessing an SDI readiness index

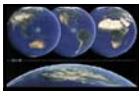
Tatiana Delgado Fernández (Cuba)
Kate Lance, Margaret Buck, Harlan Onsrud (USA)

From Pharaohs to Geoinformatics
FIG Working Week 2005 and GSDI-8
Cairo, Egypt April 16-21, 2005



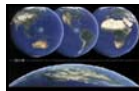
Motivation

- UN Global Survey to determine e-Government readiness (UNDESA, 2003)
- Necessity to develop a model for assessing the obstacles for SDI development, particularly in developing countries, and to prioritize strategies for surmounting these obstacles.



SDI Readiness Index

- *Degree to which a country is prepared to deliver its geographical information in a community (local, national, regional or global). It demands a variety of geospatial services offered in the widest connectivity to satisfy government, business and citizen geoinformation needs.*



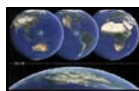
Study Methodology

- identify factors involved in the readiness of countries to undertake a National SDI.
- design a model to determine the SDI readiness index.
- assess the model in a case study.
- refine the model in a worldwide census.
- apply the SDI readiness index by means of a global survey.



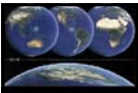
Factors in an SDI readiness index

Factor	Decision Criteria
Organizational (O)	Politician vision (Ov)
	Institutional leadership (Ol)
	Umbrella legal agreement(s) (Oa)
Information/ Data availability (I)	Digital cartography availability (Ic)
	Metadata availability (Im)
People (P)	Human Capital (Pc)
	SDI culture-education (Ps)
	Individual leadership (Pl)
Access network (A)	Web connectivity (Aw)
	Telecommunication infrastructure (At)
	Geospatial software availability (As)/ own development (Ad)/ open source (Ao)
	Government central funding (Fg)
Financial Resources (F)	Data Policy aimed to return on investment (Fr)
	Private sector activity (Fp)



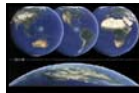
Propositions

- *A country has an appropriated level of organization to undertake SDI if and only if it has an appropriate level of: vision on SDI, institutional leadership and legal framework.*



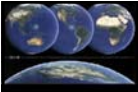
Propositions

- A country has an appropriated level of information to undertake SDI if and only if there is an appropriated availability of digital cartography and metadata or if there is not an appropriated availability of digital cartography then it has a strong level of metadata.



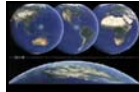
Propositions

- A country has an appropriated level of people to undertake SDI if and only if there is an appropriated level of: national human capital, SDI culture and individual leadership.



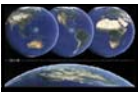
Propositions

- A country has an appropriated level of financial resources to undertake SDI if and only if there is an appropriated level of funding from the Government or from private sector or an appropriated level of return on investment from geospatial industry.



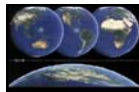
Propositions

- A country has an appropriated level of access network to undertake SDI if and only if there is an appropriated level of technological infrastructure, web connectivity and an appropriated availability of Geospatial software or own geoinformatics development or open source culture.



Propositions

- A country is ready to undertake an SDI if and only if it has an appropriated level of the global factors: Organizational, Informational, People and Financial Resources, and any level of Access Network.



Model based on Fuzzy-Compensatory Logic

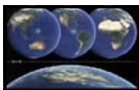
Fuzzy Logic

$$SDI\ readiness = O \wedge I \wedge P \wedge F \wedge A^{0.5}$$

$$SDI\ readiness = (O \vee OI \wedge Oa) \wedge (I \wedge (\neg \neg I) \wedge (\neg I \wedge Im^2)) \wedge (P \wedge Ps \wedge Pf) \wedge (Fg \vee Fp \vee Fr) \wedge (A \wedge Aw \wedge (As \vee Ad \vee Ao))^{1/2}$$

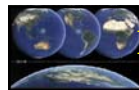
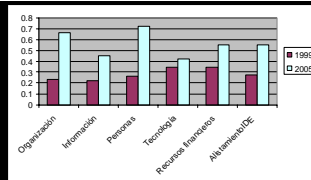
Compensatory Logic

$$SDI\ readiness\ index = (O \vee OI \wedge Oa)^{1/3} * (I \wedge (\neg \neg I) \wedge (\neg I \wedge Im^2))^{1/2} * (P \wedge Ps \wedge Pf)^{1/3} * (Fg \vee Fp \vee Fr)^{1/3} * (A \wedge Aw \wedge (As \vee Ad \vee Ao))^{1/2}$$



Assessing The SDI Readiness Index Cuba Case Study

Factors	1999	2005
Organization	0.23	0.66
Information	0.22	0.45
People	0.26	0.72
Access Network	0.34	0.42
Financial Resources	0.34	0.55
SDI Readiness	0.28	0.56



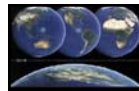
Recommendations To Surmount Common Obstacles

- *Scenario 1. Countries with low SDI readiness index weighted by low availability of financial resources*
- *Scenario 2. Countries with low SDI readiness index weighted by low human capital, SDI culture, organizational barriers.*
- *Scenario 3. Countries with low SDI readiness index weighted by low technological infrastructure.*
- *Scenario 4. Countries with low SDI readiness index weighted by low digital cartography availability.*



Conclusions and Future Work

- The readiness index based on a model using fuzzy-compensatory logic provides a quantitative means to compare countries, as well as compare SDI progress over time within a country.
- The use of the SDI readiness index helps to identify a strategy to address the primary obstacles of SDI development.
- Future Work
 - refine the model in a worldwide census.
 - apply the SDI readiness index by means of a global survey.



Questions

Tatiana Delgado Fernández
Executive Secretary of IDERC
tatiana@geocuba.co.cu