

**Activities of IBGE to build the
Brazilian SDI**

**Ninth United Nations Regional Cartographic
Conference for the Americas**

10 – 14 August 2009 New York, NY - USA

Overview of the Brazilian SDI enterprise

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Why a NSDI for Brazil ?



- Lack of data**
 - fragmentation of datasets and sources
 - gaps in availability
 - lack of harmonisation between datasets at different geographical scales
- Lack of knowledge about existing data**
 - access to these data sets is difficult
 - poor documentation of geospatial data in a standardised manner
 - duplication of information collection
- Data policy restrictions and lack of institutional integration**
 - pricing, copyright, access rights, licensing policy
 - people are not used to sharing data sets with other sectors and/or organizations
- Lack of standards and their use**
 - incompatible information
 - incompatible information systems
 - Geospatial data sets stored in a certain GIS system may not be easily exported to another system
- Hence, it is difficult to identify, access and use data that is available**
- That's why we need a national spatial data infrastructure**

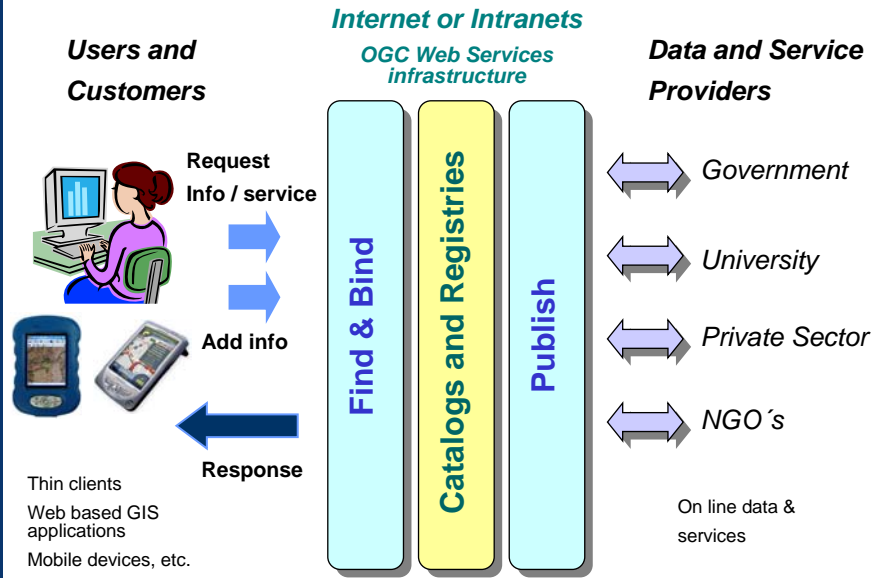
The Vision of a NSDI for Brazil



- ✓ Geospatial data should be collected once and maintained at the level where this can be done most effectively
- ✓ It should be possible to combine seamlessly geospatial data from different sources and share it between many users and applications
- ✓ It should be possible for information collected at one level to be shared between all the different levels
- ✓ Geospatial data needed for good governance at all levels should be promptly available for extensive use
- ✓ It should be easy to discover which geospatial data is available, which fits the needs for a particular use and how it can be acquired and used
- ✓ Geospatial data should become easy to understand and interpret because it is properly documented and can be visualized within the appropriate context selected in a user-friendly way

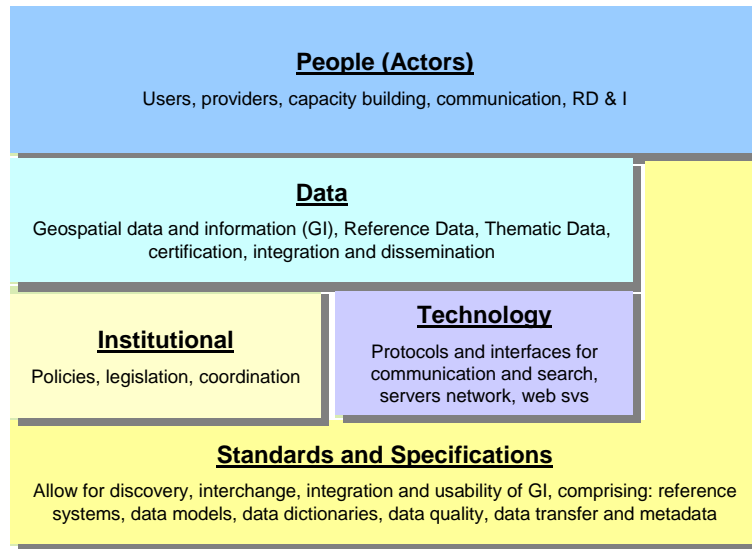
... inspiration coming from the INSPIRE directive

Service Oriented Architecture (SOA)



"Publish", "Find" and "Bind" are based on underlying Web technologies such as: HTTP, XML, SOAP, UDDI and WSDL

The Components of an SDI



Adapted from Warnest, M. 2005 – A collaboration model for national spatial data infrastructure in federated countries. University of Melbourne, 2005.

The Legal Milestone of Brazil's NSDI



The **Presidential Decree Nbr 6666 of November 27th, 2008** has set Brazil on the map of nations that have established a legal framework for the implementation of their national SDI's



Source: H. Onsrud, Survey of National Spatial Data Infrastructure around the World

INDE's Definition



“Collection of integrated technologies, policies, mechanisms and procedures for coordination and monitoring, standards and agreements, necessary to regulate the production, storage, access, sharing, dissemination and use of geospatial data from the federal, state, districtal and municipal levels.”

Presidential Decree 6666/08

The term “Spatial Data Infrastructure” (SDI) is often used to denote the relevant base collection of technologies, policies and institutional arrangements that facilitate the availability of and access to spatial data.

The SDI provides a basis for spatial data discovery, evaluation, and application for users and providers within all levels of government, the commercial sector, the non-profit sector, academia and by citizens in general.

SDI Cookbook – Version 2.0

INDE's Objectives (Decree 6666/08)



The Brazilian SDI – INDE – has been established in the realm of the government's federal sector with the following main objectives:

- √ To promote enough ordering in the production, storage, access, sharing, dissemination and use of the geospatial data coming from the governmental organizations of all levels, aiming the country's development
 - √ To promote the use, in the production of geospatial data by the governmental organizations of all levels, of the standards and specifications homologated by CONCAR
 - √ To prevent duplicate actions and the waste of resources in the acquisition of geospatial data by the governmental organizations, through the release of the corresponding metadata by those organizations
- All the **federal organizations** that produce and maintain geospatial data sets and information will be obliged to make their GI collections, including the corresponding metadata, publicly available through the so-called Brazilian Directory of Geospatial Data - DBDG

The Brazilian Directory of Geospatial Data



For the fulfillment of the INDE's objectives, the **Brazilian Directory of Geospatial Data – "DBDG"** will be implemented. The portal that will provide access to the DBDG data, metadata and related services will be named **Brazilian Portal of Geospatial Data – "SIG Brasil"**.

The DBDG has been defined, in the Decree 6666/08, as a **system of data servers distributed in the Internet**, aimed at gathering GI producers, administrators and users in the cyberspace, for the **storage, sharing and access** to GI and related services.

The DBDG should rely on an **open, scalable and distributed architecture**, that will expectedly make use of the **OGC standards** for web services.

IBGE's Role in Building the INDE



The **Brazilian Institute for Geography and Statistics - IBGE** - has been assigned with some key responsibilities in the Decree 6666/08, among which:

- √ To **build, launch** and **operate** the SIG Brasil portal according to the INDE's action plan
- √ To **administrate** the DBDG by managing and maintaining the SIG Brasil portal
- √ To **disseminate** the procedures for electronic access to the distributed data and metadata warehouses, and for the use of the related services
- √ To **apply** to the Ministry of Planning, Budgeting and Administration (**MP**), the request for financial resources on behalf of the INDE's implementation and maintenance

IBGE reports to the **MP** and plays the role of CONCAR's Executive Secretariat. **CONCAR** is the National Commission of Cartography

CONCAR's Role in Building the INDE



CONCAR will play a **directive** and **normative** role in the scope of the INDE. It has been assigned with some key responsibilities in the Decree 6666/08, among which:

- √ To homologate the standards and specifications for both the INDE and the National Cartographic System
- √ To define the directives for the DBDG's implementation
- √ To ensure that the DBDG will comply with the Interoperability Standards of e-Government adopted by the Brazilian government
- √ To promote the development of software solutions based on open source code, freely distributed, to meet the DBDG requirements
- √ To coordinate the implementation of the DBDG according to the action plan for the INDE's implementation
- √ To submit to the MP, within 180 days from the Decree's publication, an action plan for the INDE's implementation

CONCAR's Work on Behalf of INDE



Period 2003 – 2008

- ✓ Actions restarted on October 2003; a Strategic Plan was developed in 2005, aiming at the INDE's implementation
- ✓ New legislation allowed the **SIRGAS2000** Geodetic Reference Frame to become official, on February 25, 2005 (based on Presidential Decree nbr 5.334 of Jan 2005)
- ✓ Creation of Technical Committees for the standardization of geospatial vector data (**CMND**, 2003), geospatial metadata (**CEMG**, 2003) and cadastral mapping (**CNMC**, 2006)
- ✓ Approval of the first (2006) and second (2007) versions of the technical specification for the structuring of geospatial vector data (**EDGV**) as a result of the CMND committee's work
- ✓ In 2008, the Brazilian profile for geospatial metadata ("**MGB Profile**") was submitted by the CEMG committee to CONCAR's approval, having the **ISO 19115:2003** as its foundation

CONCAR's Work on Behalf of INDE



Period 2007 – 2009

- ✓ Formulation and proposition of a Presidential Decree on the establishment of the National Spatial Data Infrastructure (INDE) of Brasil – 2007
- ✓ New legislation augments the CONCAR's set of representatives, allowing for the participation of the States and some additional ministries – 1st of August of 2008
- ✓ Publication, in Nov 28th - 2008, of the Presidential Decree 6666, on the establishment of the INDE
- ✓ Creation of the Committee for the Planning of the INDE (**CINDE**), in Dec 2008, whose mission has been to develop the action plan for the INDE's implementation
- ✓ Creation of the Committee for the Gazetteer ("Committee of Geographic Names" - **CENG**) in Mar 2009
- ✓ The INDE's Action Plan is presented to the Ministry of Planning and approved. A revised version is scheduled to be released in August, 2009

The Action Plan for the INDE's Implementation



The document comprises

Foreword - Summary – Body (8 chapters) - Annexes

1. Spatial Data Infrastructures: the Concepts

2. Backing Information for the INDE's Action Plan

3. INDE's Actors: Identification and Functions

4. Geospatial Data and Metadata

5. The Brazilian Directory of Geospatial Data

6. Capacity Building

7. Dissemination and Communication

8. INDE's Action Plan

The chapters' contents and topics have been formulated to fully address the basic dimensions of implementation of a NSDI:

Organizational, Technical, Human

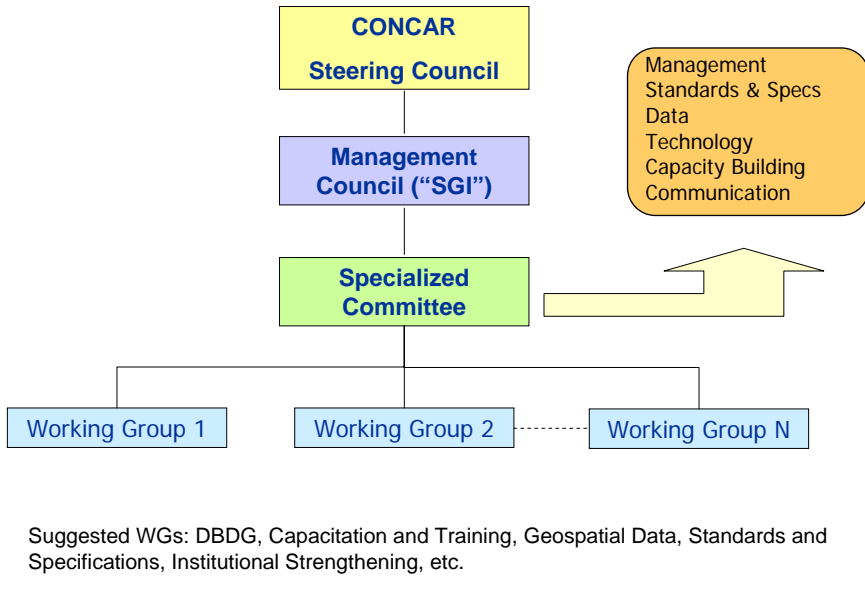
Chapter 8: INDE's Action Plan



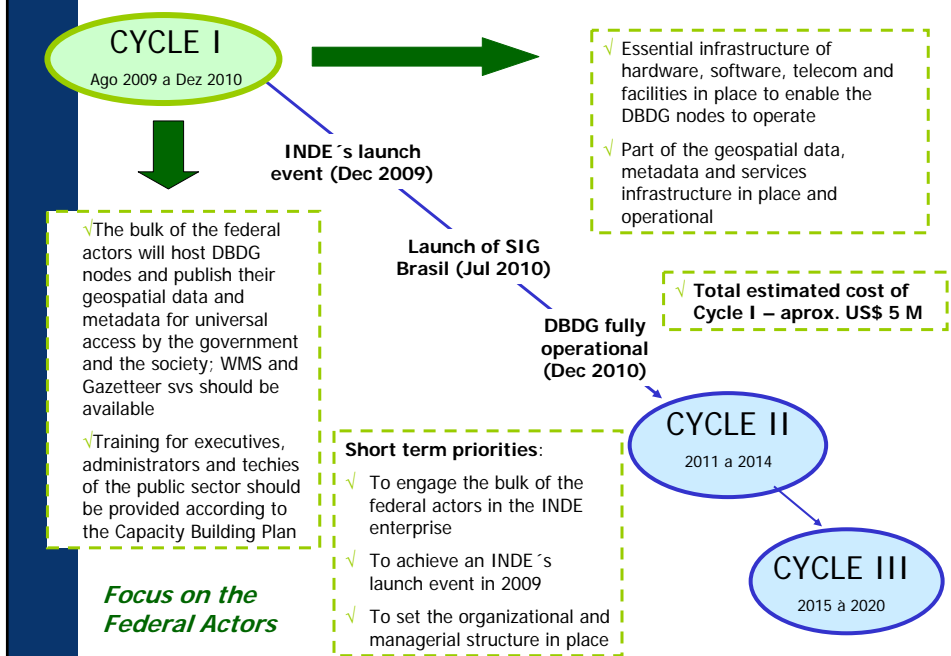
Chapter 8 – INDE's Action Plan

- Consolidates the contributions of the 7 previous WGs (Chapters 1 - 7)
- Answers the requests of **deadlines** and **cost evaluations** made in the Decree 6.666/08
- Develops a suggestion of an **organizational and managerial model** for the INDE
- Proposes an implementation strategy based on "**implementation cycles**" or "**building cycles**"
- Formulates an **analytical structure** based on the INDE's components; a set of deliverables is found underneath each component
- Details the Plan's **deliverables** and the **action lines** required to produce or execute them
- Proposes the **cronogram** of the **1st implementation cycle** and the associated **costs**

INDE's Organizational and Managerial Model



INDE's Implementation Strategy



INDE's Cycle II (2011-2014)



- DBDG consolidated in the federal sector and extended to the other public sector's levels
- The INDE will rely on a thorough set of standards and specifications that will be fully utilized by providers
- The DBDG services offer will meet the users' demands captured through the "SIG Brasil" portal
- The INDE will be integrated with other SDI's – thematic, regional and institutional / corporate ones
- The INDE's enterprise and its benefits will be widely disseminated all over the productive sectors of society

INDE's Cycle III (2015-2020)



- The INDE will have permeated all the society's productive sectors, beyond the public sector, and will be acknowledged as the main tool for search, exploration, access and use of GI in Brazil



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