

# MÓDULO I :: INFRAESTRUTURAS DE DADOS ESPACIAIS : MOTIVAÇÕES E DESAFIOS

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# DOS MAPAS ÀS BASES DE DADOS GEOGRÁFICAS : O ADVENTO DA GEOINFORMAÇÃO

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## FASE 1: INOVAÇÃO

**1963** :: Início do Desenvolvimento do CGIS

**1969** :: Fundação da Intergraph

“ Design with Nature”

Primeiro manual Técnico sobre SIG

**1972** :: Lançamento do Landsat 1 [antigo ERTS]

Conferencia de Estocolmo >> Relatório Bruntland

**1973** :: Uso pioneiro da digitalização pelo Ordnance Survey (GB)

**1977** :: Universidade de Harvard : Odyssey GIS

## FASE 2: DESENVOLVIMENTO E COMERCIALIZAÇÃO

**1981** :: ArcInfo © >> o primeiro aplicativo comercial de GIS

**1983** :: Início do Desenvolvimento do aplicativo SAGA (UFRJ)

**1984** :: Criação da Divisão de Processamento de Imagens >> INPE

**1985** :: GPS entra em operação

**1986** :: Map Info © : Primeiro SIG Desktop  
Lançamento pela DPI –INPE do SITIM (em DOS)

**1987** :: Relatório de Lord Chorley >> “Handling Geographic Information”

Relatório Bruntland : Nosso Futuro Comum

**1988** :: Bureau of Census, EUA >>Formato TIGER ©

**1990** :: Surgimento da Web (Rede de Alcance Global)

**1991** :: Lançamento de GIS : Principles and Applications (“Big Book’)

Início do Desenvolvimento do SPRING, pelo INPE

**1993** ::Mosaic , primeiro navegador grafico

**1994** :: Implantação da Infra-estrutura de Dados Espaciais Americana  
(NSDI)

**1996** :: Map Quest © : Primeiro Serviço de Mapas na rede

**1998** :: Fundação da Google ©

# AS INFRAESTRUTURAS DE DADOS ESPACIAIS (IDE's) ENTRAM EM CENA



- Conceitos básicos:



## I. Informação

**Geoespacial** é aquela relacionada a uma localização sobre o território.

Fundamental para a tomada de decisões permitindo estabelecer o “aonde”:

- ONDE investir
- ONDE conservar
- ONDE subsidiar
- Etc...



Em amplos setores da sociedade tem sido reconhecido que o uso efetivo de que este tipo de informação contribui no **direcionamento** dos principais temas de interesse tais como :

- Mudanças climáticas
- Desastres naturais
- Pandemias
- Segurança Pública
- Meio Ambiente

Etc..



Fonte :IDE , Chile

- Definições de IDE

- **EUA:FGDC, 1997** > “conjunto de políticas, padrões, e procedimentos ...para promover o uso , administração e produção mais eficientes de dados geoespaciais.
- **AUSTRALIA:N.ZELANDIA:ANSZLIC, 2004**  
> Uma IDE provê uma base única para busca de dados espaciais e a sua avaliação e transferência para os usuários e provedores em todos os níveis de governo...empresas e do público em geral.
- **BRASIL:CONCAR(2010)** > Conjunto integrado de tecnologias , políticas, mecanismos e procedimentos de coordenação e monitoramento, padrões e acordos para facilitar o armazenamento, acesso, compartilhamento e disseminação e o uso de dados geoespaciais do nível federal ao distrital”



QUAIS OS COMPONENTES DE UMA IDE ?

## PESSOAS (ATORES)

Atores em uma IDE :



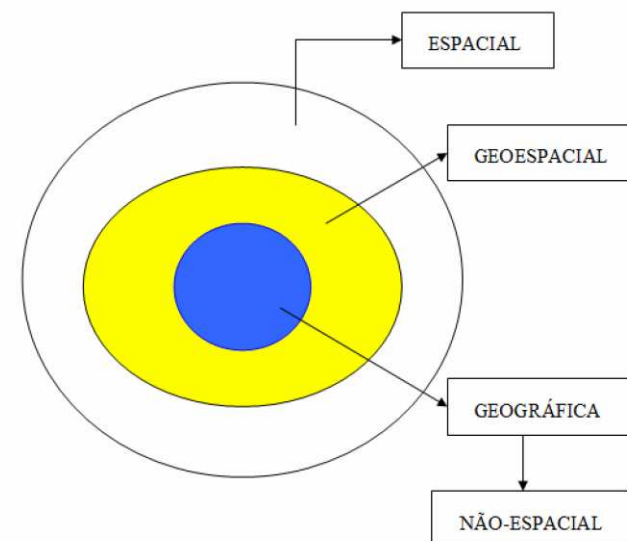
- **Setor produtivo – Publico e Privado**
- **Academia – Capacitação, Treinamento e Pesquisa em IDE**
- **Usuário : Determina que dados espaciais são necessários e a forma de acesso**

# DADOS



Dados – e seus metadados – são o componente central de uma IDE

As IDE's armazenam e disponibilizam dados, metadados e informações geoespaciais



# INSTITUIÇÕES

O componente institucional de uma IDE abrange :

- Políticas : Custódia, Preço e Licenciamento.
- Legislação e Coordenação

# TECNOLOGIA



- Meios físicos e a infra-estrutura necessários para o estabelecimento da rede e dos mecanismos informáticos que possibilitam a busca, a consulta, a disponibilização e o uso dos dados geoespaciais.

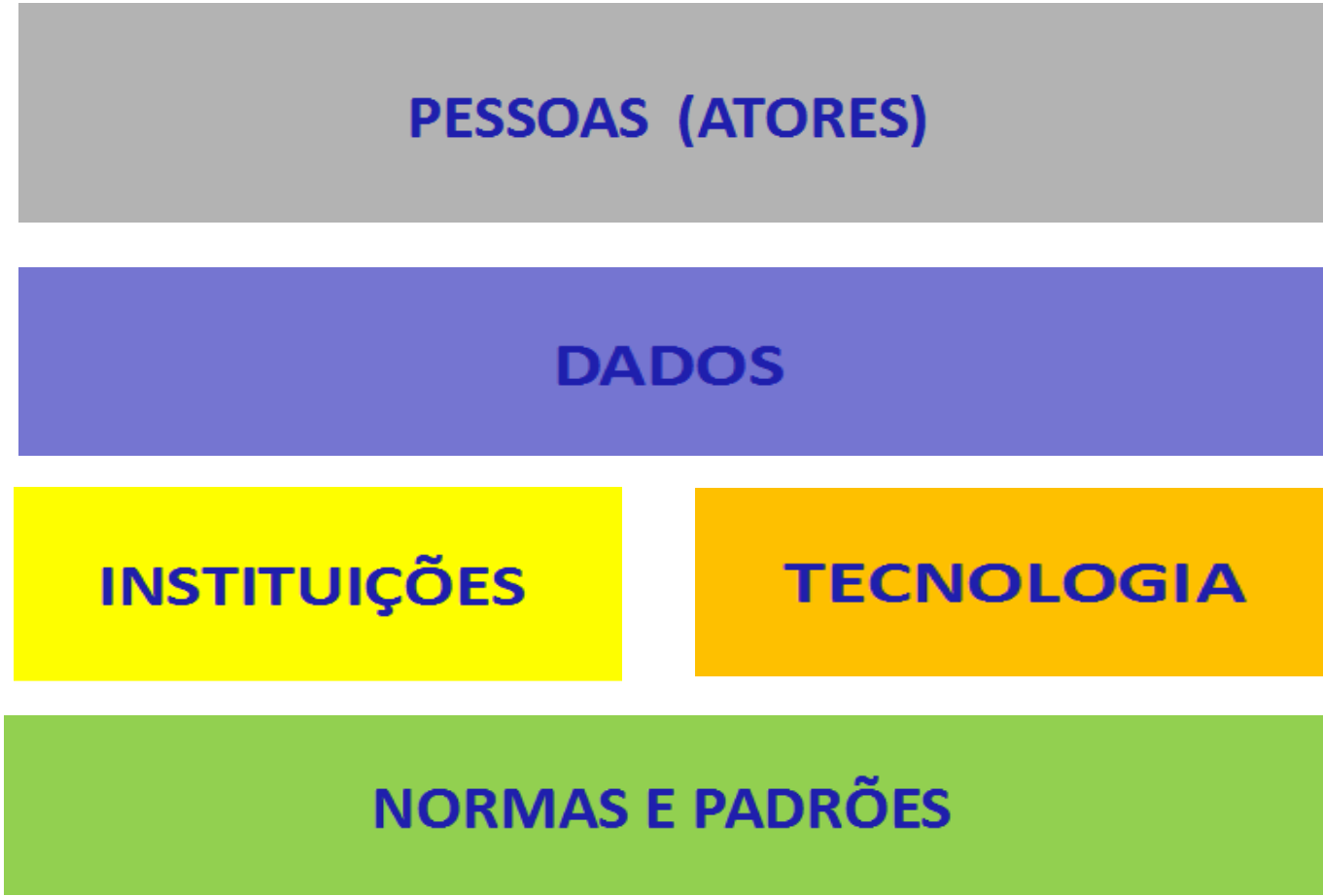
## NORMAS E PADRÕES



- Permitem a descoberta, o intercâmbio, a integração e a utilização da IG

Padrões de Dados Espaciais :

- Sistemas de Referencia
- Modelos de Dados
- Qualidade de Dados
- Transferencia de Dados e Metadados



**PESSOAS (ATORES)**

**DADOS**

**INSTITUIÇÕES**

**TECNOLOGIA**

**NORMAS E PADRÕES**

Com eles construímos uma IDE !

## O que faz uma Infraestrutura de Dados Espaciais - IDE

Essa infraestrutura permite que por meio de um simples navegador os usuários possam encontrar, visualizar, usar e combinar Informação Geoespacial para atender as suas necessidades.



- Uma Cronologia...

Panorama Mundial - Linha do Tempo de IDE



- Estados Unidos



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you are here: [home](#) → [nsdi](#) → [national spatial data infrastructure](#)

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## National Spatial Data Infrastructure

Consistent means to share geographic data among all users could produce significant savings for data collection and use and enhance decision making. [Executive Order 12906](#) calls for the establishment of the National Spatial Data Infrastructure defined as the technologies, policies, and people necessary to promote sharing of geospatial data throughout all levels of government, the private and non-profit sectors, and the academic community.

The goal of this Infrastructure is to reduce duplication of effort among agencies, improve quality and reduce costs related to geographic information, to make geographic data more accessible to the public, to increase the benefits of using available data, and to establish key partnerships with states, counties, cities, tribal nations, academia and the private sector to increase data availability.

The NSDI has come to be seen as the technology, policies, criteria, standards and people necessary to promote geospatial data sharing throughout all levels of government, the private and non-profit sectors, and academia. It provides a base or structure of practices and relationships among data producers and users that facilitates data sharing and use. It is a set of actions and new ways of accessing, sharing and using geographic data that enables far more comprehensive analysis of data to help decision-makers choose the best course(s) of action. Much has been accomplished in recent years to further the implementation of the NSDI, but there is still much to be done to achieve the vision of current and accurate geographic data being readily available across the country.

### Related Information

- [NSDI Strategic Plans](#)
- [Factsheets](#)
  - [NSDI](#)
  - [NSDI Community Demonstration Projects](#)
  - [NSDI Future Directions Initiative: Towards a National Geospatial Strategy and Implementation Plan](#)
- Read about the [planning activities](#) of the FGDC to support the development of the NSDI

### News

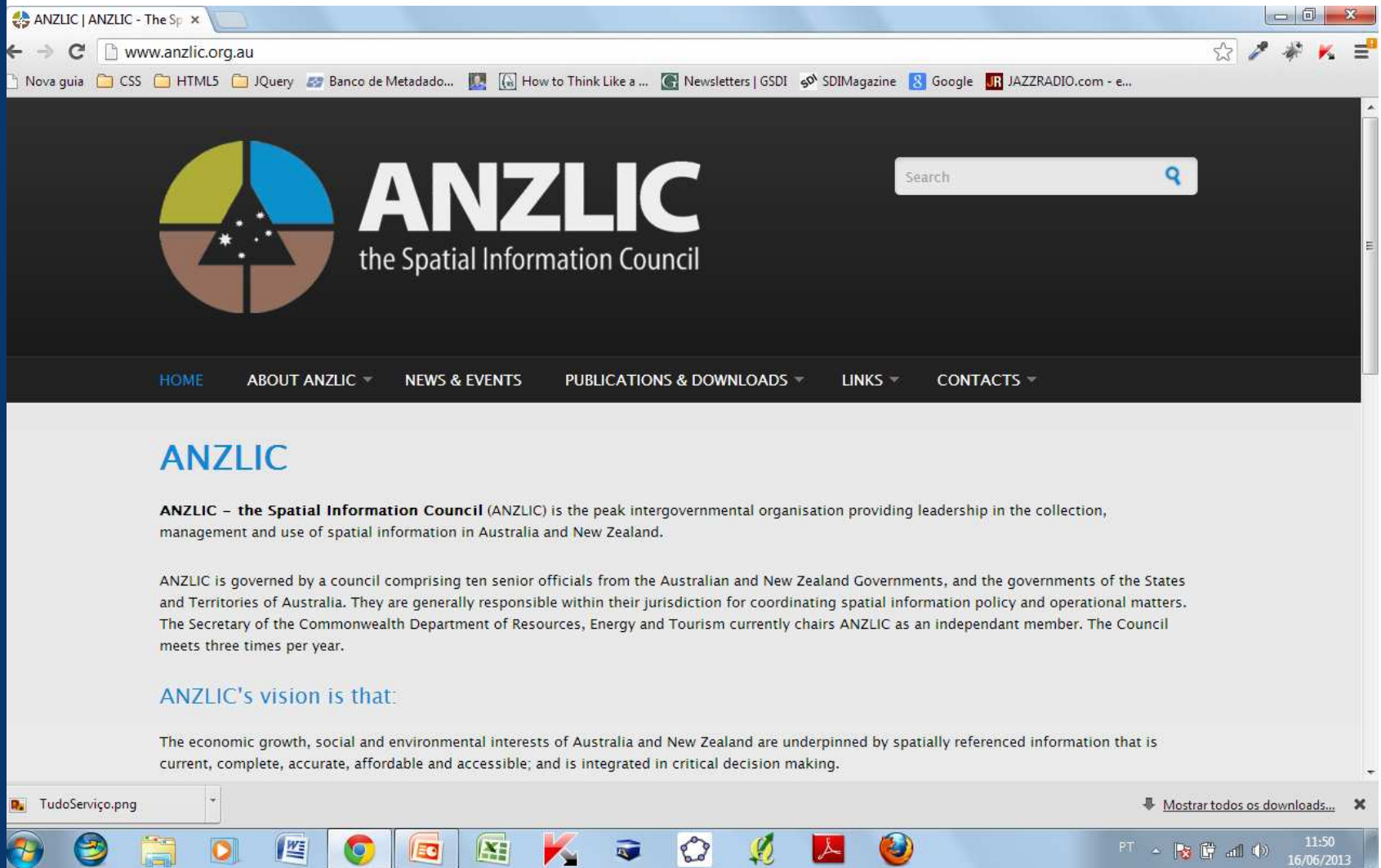
- 
[FGDC Steering Committee Endorses Revised A-16 NGDA Themes and Theme Lead Agencies List](#)  
 May 01, 2013
- 
[The FGDC requests review and comment on public review draft National Shoreline Data Content Standard](#)  
 Apr 18, 2013
- 
[FGDC Initiates New NSDI Strategic Plan](#)  
 Jan 31, 2013
- 
[FGDC 2012 Annual Report now available](#)  
 Jan 11, 2013
- 
[NC GIS 2013 Conference Announced](#)  
 Nov 06, 2012

[More news...](#)

« June 2013 »

|    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|
| Mo | Tu | We | Th | Fr | Sa | Su |
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| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |

# Australia :: Nova Zelândia



The screenshot shows a web browser window displaying the ANZLIC website. The browser's address bar shows 'www.anzlic.org.au'. The website's header features the ANZLIC logo, which is a stylized tree with a star, and the text 'ANZLIC the Spatial Information Council'. A search bar is located to the right of the logo. Below the header is a navigation menu with links: HOME, ABOUT ANZLIC, NEWS & EVENTS, PUBLICATIONS & DOWNLOADS, LINKS, and CONTACTS. The main content area has the heading 'ANZLIC' in large blue letters. Below this, a paragraph states: 'ANZLIC – the Spatial Information Council (ANZLIC) is the peak intergovernmental organisation providing leadership in the collection, management and use of spatial information in Australia and New Zealand.' Another paragraph follows: 'ANZLIC is governed by a council comprising ten senior officials from the Australian and New Zealand Governments, and the governments of the States and Territories of Australia. They are generally responsible within their jurisdiction for coordinating spatial information policy and operational matters. The Secretary of the Commonwealth Department of Resources, Energy and Tourism currently chairs ANZLIC as an independent member. The Council meets three times per year.' Below this is the section 'ANZLIC's vision is that:' followed by a paragraph: 'The economic growth, social and environmental interests of Australia and New Zealand are underpinned by spatially referenced information that is current, complete, accurate, affordable and accessible; and is integrated in critical decision making.' The browser's taskbar at the bottom shows various icons, including the Windows logo, Internet Explorer, and several application icons. The system clock in the bottom right corner indicates the time is 11:50 on 16/06/2013.

ANZLIC | ANZLIC - The Sp x

www.anzlic.org.au

Nova guia CSS HTML5 JQuery Banco de Metadado... How to Think Like a ... Newsletters | GSDI SDIMagazine Google JAZZRADIO.com - e...

 **ANZLIC**  
the Spatial Information Council

Search

HOME ABOUT ANZLIC NEWS & EVENTS PUBLICATIONS & DOWNLOADS LINKS CONTACTS

## ANZLIC

**ANZLIC – the Spatial Information Council** (ANZLIC) is the peak intergovernmental organisation providing leadership in the collection, management and use of spatial information in Australia and New Zealand.

ANZLIC is governed by a council comprising ten senior officials from the Australian and New Zealand Governments, and the governments of the States and Territories of Australia. They are generally responsible within their jurisdiction for coordinating spatial information policy and operational matters. The Secretary of the Commonwealth Department of Resources, Energy and Tourism currently chairs ANZLIC as an independent member. The Council meets three times per year.

### ANZLIC's vision is that:

The economic growth, social and environmental interests of Australia and New Zealand are underpinned by spatially referenced information that is current, complete, accurate, affordable and accessible; and is integrated in critical decision making.

TudoServiço.png

Mostrar todos os downloads...

PT 11:50 16/06/2013

# Portugal

Bem vindo ao SNIG!

snig.igeo.pt/portal/

Nova guia CSS HTML5 JQuery Banco de Metadado... How to Think Like a ... Newsletters | GSDI SDIMagazine Google JAZZRADIO.com - e...

snig Sistema Nacional de Informação Geográfica

European SDI Best Practice Award 2009 eSDI-NET

A+ A A

CATÁLOGO VISUALIZADOR APLICAÇÕES GEOCOMUNIDADE

**SNIG**

- Início
- Apresentação
- Como integrar a Rede
- Edição e Publicação de Metadados
- Outras IDE

**INICIAR SESSÃO**

Utilizador:

Senha:

Iniciar

[Recuperar Senha?](#)

[Reiniciar](#)

**NOVIDADES**

- Últimos Registos Publicados

**Bem vindo ao SNIG!**

Actualizado em Sexta, 07 Junho 2013 08:31 Administrador

O Sistema Nacional de Informação Geográfica (SNIG) é a infra-estrutura nacional de dados espaciais e, através do seu geoportal, permite pesquisar, visualizar e explorar a informação geográfica sobre o território nacional, produzida pelas entidades oficiais e também por privados. É igualmente um espaço de contacto para dinamizar, articular e organizar as actividades ligadas a esta temática em Portugal e no contexto da directiva europeia INSPIRE (INfrastructure for SPatial InfoRmation in Europe).

Catálogo de informação geográfica nacional.

Visualização de mapas provenientes de servidores nacionais e internacionais

Aplicações para análise de mapas, geoprocessamento, edição de metadados e outras

Informação, documentação, cursos e projectos ligados às actividades de informação geográfica

Disponibilização de dados LIDAR das zonas costeiras de Portugal Continental.

A Direcção-Geral do Território (DGT) no âmbito das suas atribuições tem a responsabilidade de constituir

TudoServiço.png

Mostrar todos os downloads...

11:53 16/06/2013

# Japão : 1995



|        |          |             |         |      |           |       |
|--------|----------|-------------|---------|------|-----------|-------|
| 地理院ホーム | 国土地理院の紹介 | 基準点・測地観測データ | 地図・空中写真 | 防災関連 | GIS・国土の情報 | 申請・承認 |
|--------|----------|-------------|---------|------|-----------|-------|

▶ 組織から情報を探す

キーワード検索:

検索

## 災害関連情報

### 国土地理院の紹介

国土地理院の概要

測量法  
測量士国家試験・登録  
測量成果の複製・使用  
基本測量  
公共測量

地理空間情報活用推進  
基本法

研究開発  
国際協力

地球地図  
地震予知連絡会

地方測量部のページ

ご意見・ご質問

### 新着・更新情報

- 平成25年6月の地殻変動について(7月8日) **NEW**
- 国土地理院(一般職 大卒程度 行政)官庁訪問について(7月4日) **NEW**
- 国土地理院(一般職 大卒程度 技術)官庁訪問について(7月4日) **NEW**
- 平成25年測量士試験に係る電卓使用等について(7月3日) **NEW**
- 企画展『富士山』を開催(7月1日)
- 平成25年度官庁業務合同説明会(一般職)について(7月1日)
- 地震・火山噴火の調査研究を目的に、観測を強化している地域の地殻変動を紹介するページを新設しました。(7月1日)
- 第42回国土地理院報告会の発表資料を追加しました(6月28日)
- 福島第一原子力発電所周辺における基準点測量成果の改定について(6月27日)
- 地球地図によるインド・ウッタラカンド州周辺の地図の公開について(6月26日)
- 国土地理院広報第540号を掲載(6月24日)

### 国土地理院からのお知らせ

- 報道発表資料
- 広報誌
- 刊行物・資料
- 契約・入札情報
- 情報公開
- 発注者細紀保持について
- 個人情報保護法について
- パブリックコメント



# CP-IDEA



# CP-IDEA



Iniciativa para la construcción de la Infraestructura de Datos Espaciales de la Comunidad Andina, IDECAN.

Creación del Comité Permanente sobre el Catastro en Iberoamérica (CPCI), acordado en mayo de 2006 en Cartagena, Colombia.

Iniciativa Chilena para la construcción del Mapa Global de las Américas.

Desarrollo del proyecto del Sistema de Referencia Geocéntrico para las Américas (SIRGAS).

La iniciativa GeoSUR: datos espaciales y mapas interactivos nacionales y regionales de Suramérica



- **Estabelecer e coordenar as políticas e normas técnicas** para o desenvolvimento de uma infraestrutura regional de dados geoespaciais para as Américas
- **Promover o estabelecimento e desenvolvimento de IDE nacionais** para cada um dos países membros do CP-IDEA
- **Fomentar o intercâmbio de IG** entre todos os membros da comunidade das Américas, respeitando sua autonomia, conforme suas leis e políticas nacionais
- **Estimular a cooperação, investigação, complementação e intercâmbio de experiências** em áreas de conhecimento relacionadas com matéria geoespacial
- **Definir diretrizes e estratégias** para apoiar as nações membros no desenvolvimento da informação cadastral, tendo em conta as necessidades individuais de cada país.



# GGIM

## IDE – Iniciativa Global

### GGIM - United Nations Initiative on Global Geospatial Information

Estabelecimento de  
normas globais  
relacionadas à IG

Desenvolvimento de  
ferramentas comuns

Consideração da IG no  
estabelecimento de  
políticas globais





UN-GGIM | United Nations Initiative on  
Global Geospatial Information Management

#### PARTNERS

Countries  
International Organizations  
UN Agencies

#### UN-GGIM FREQUENTLY ASKED QUESTIONS

#### PROJECTS WITH MEMBER STATES

##### UN Map

A global multi-scale geospatial dataset for rapid map production and web mapping in support to the Security Council and the Secretariat including UN field missions...

[more](#)

##### Global Map

An international cooperation initiative, aiming to develop a digital geo-information framework ensuring spatial resolution at 1 km...

[more](#)

##### UN International Boundaries

A GIS-based UN International Boundary Information System (UNIBIS) that provides a knowledgebase of international boundary issues with treaties...

##### UN-SALB

A dataset project, providing a working platform for the sharing of data down to the second administrative level...

[more](#)

##### UN Gazetteer

A global place name database and search engine in support to the Security Council and the Secretariat including UN field missions...

[more](#)

##### WGS 84

A reference frame for the earth, for use in cartography, geodesy and navigation...

[more](#)

##### GEOPortal

A web interface for accessing GEOSS data, information, imagery, services and applications...

#### ABOUT UN-GGIM

##### AIMS AND OBJECTIVES

The United Nations initiative on Global Geospatial Information Management (UN-GGIM) aims at playing a leading role in setting the agenda for the development of global geospatial information and to promote its use to address key global challenges. It provides a forum to liaise and coordinate among Member States, and between Member States and international organizations.

[more](#)

#### THIRD SESSION OF THE UNITED NATIONS COMMITTEE OF EXPERTS ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT, UNITED KINGDOM (2013)

From 24 - 26 July 2013, more than 250 geospatial experts from across the globe attended the Third Session of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) at the Corn Exchange Building, Cambridge City Centre, United Kingdom. [more...](#)

#### CHENGDU FORUM ON UNITED NATIONS GLOBAL GEOSPATIAL INFORMATION MANAGEMENT, 15-17 OCTOBER 2013, CHENGDU, CHINA

##### NOTE CHANGE OF DATE!! Now 15-17 October 2013.

The Secretariat of the United Nations initiative on Global Geospatial Information Management (UN-GGIM) and the National Administration of Surveying, Mapping and Geo-information (NASG) of China are pleased to announce that the Chengdu Forum on UN-GGIM has been rescheduled and will be held in Chengdu, Sichuan Province, China from 15-17 October 2013. [more...](#)

#### SECOND HIGH LEVEL FORUM ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT, DOHA, QATAR

The Second High Level Forum on Global Geospatial Information Management (GGIM) was held in Doha, Qatar from 4-6 February, 2013 at the Qatar National Convention Centre.

The Secretariat of the United Nations initiative on Global Geospatial Information Management (UN-GGIM), in collaboration with the Government of Qatar, Statistics Authority, successfully convened the Second High Level Forum. [more...](#)

#### UN-GGIM AT RIO +20 UNITED NATIONS CONFERENCE ON SUSTAINABLE DEVELOPMENT, RIO DE JANEIRO, BRAZIL, 20-22 JUNE 2012



The United Nations Conference on Sustainable Development (or Rio +20) was held from 20 to 22 June 2012 at the RioCentro Convention Center in Rio de Janeiro, Brazil. This global event saw world leaders debate about and make decisions on how we can reduce poverty, advance social equity and ensure environmental protection on an increasingly crowded planet in order to determine the future we want.

The United Nations initiative on Global Geospatial Information Management (UN-GGIM) had a presence at two side events during the main Rio+20 conference period to demonstrate the importance of geospatial information and location in monitoring sustainable development. [more...](#)

#### GEOSPATIAL INITIATIVES

##### UNEGN

United Nations Group of  
Experts on Geographical Names

##### UNRCC

United Nations  
Regional Cartographic Conferences

##### GGIM

Knowledge Base

##### Country reports

#### PAST EVENTS

##### NEWS

##### UN press release on Third Session (24 July 2013)

United Kingdom to Host Meeting of United Nations Committee of Experts on Global Geospatial Information Management, 24-26 July. More than 280 to Participate in Joint Special Session with Cambridge Conference.

##### 2013 CGA Conference, Harvard University (2-3 May 2013)

Presentation on UN-Global Geospatial Information Management (UN-GGIM): Legal and Policy Challenges (Greg Scott, GGIM Secretariat and Statistics Division)



Video

[Archived news](#)

#### MEDIA & PHOTO COVERAGE

##### Photo Gallery...

##### Ordnance Survey

Expert committee to outline the future trends in digital mapping  
22 July 2013

[Photo Gallery](#)

[Archived articles](#)

# GGIM



## Benefícios do GGIM



O estabelecimento de uma estrutura formal permite aos Estados-membro:

- Desenvolver estratégias e padrões no gerenciamento da IG de forma coordenada
- Contribuir de uma forma organizada para o compartilhamento de IG, em especial para endereçar os grande desafios globais



- Contribuir para a integração da IG com a informação estatística (IE) e as de outra natureza
- Constituir uma comunidade que adota boas práticas



 International Steering Committee for Global Mapping

|                               |                               |  |
|-------------------------------|-------------------------------|--|
| <a href="#">Top page</a>      | <a href="#">ISCGM Summary</a> |  |
| <a href="#">News Archives</a> |                               |  |
| <a href="#">Summary</a>       |                               |  |

Arabic Chinese French Russian Spanish

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**News Archives**

## Summary

Schedule

## About Us

### Participants

### What is Global Map

| Sample data |
|-------------|
|-------------|

Download

Screenshot

### Application

Documentation

## History

Newsletter

FAQ

Links to

Participating

Organizations only

**Sitemap**

ISCGM/Summary

### Summary of Global Map

### What is Global Map?

Digital geographic information in 1 km resolution covering the earth's surface with standardized specifications and available to everyone at marginal cost.

### How Many Layers are there in Global Map?

Global Map data have 8 layers: Boundaries, Drainage, Transportation, Population Centers, Elevation, Land Cover, Land Use, and Vegetation.

### How is Global Map developed?

Under international cooperation, data are developed mainly by National Mapping Organizations participating in Global Mapping Project.

### How is Global Map used for?

To protect the global environment in the 21st century, the Global Map is useful for global change monitoring and environmental analysis.



Adobe Reader is FREE software that allows users to view and print PDF files.

## Background of Global Mapping Project

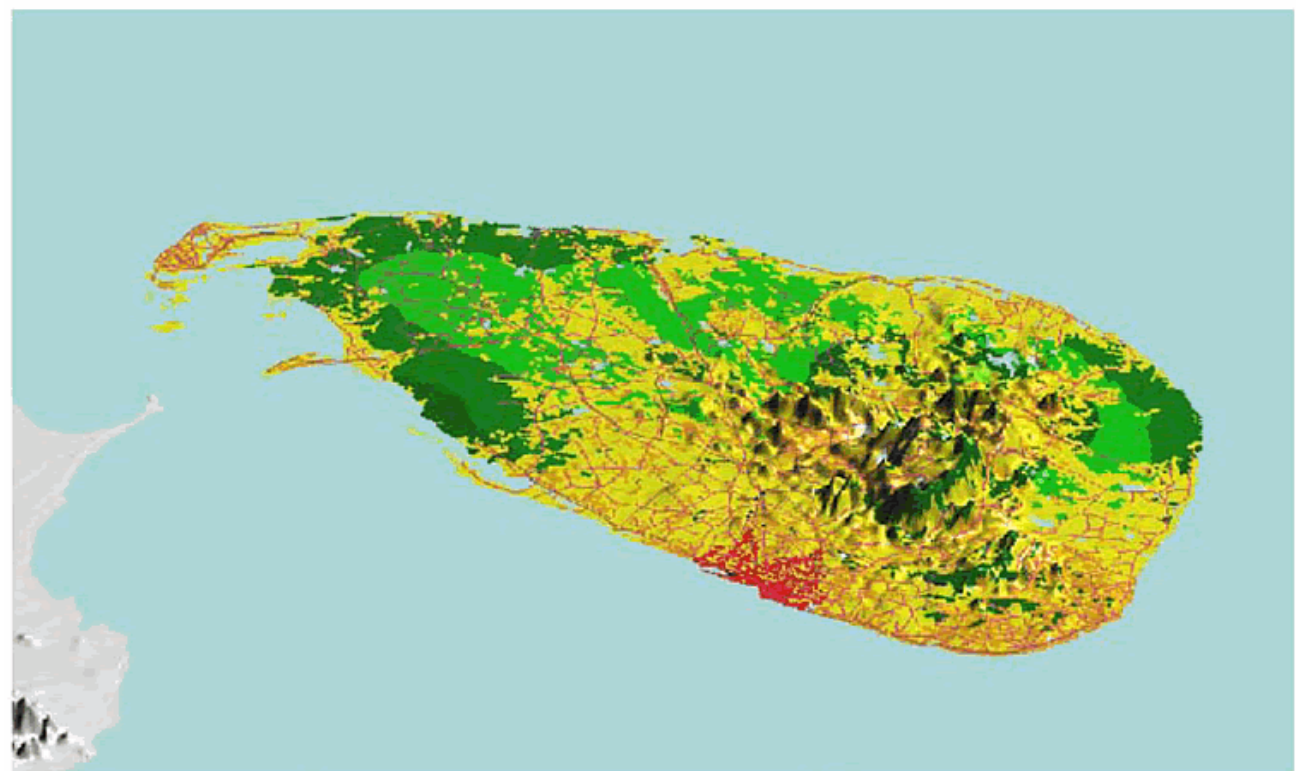
The Ministry of Construction of Japan (present Ministry of Land, Infrastructure, Transport and Tourism) proposed "Global Mapping Project." This is a contribution to global environmental conservation from mapping sector, in response to "Agenda21" adopted at the "Earth Summit" in 1992.

### Prospect for the future

Currently, development of Global Map Version 2 has been underway towards its completion in 2012. The outcome document "The Future We Want" of Rio+20 held in Rio de Janeiro, Brazil in June 2012 clearly states the relevance of global mapping for realizing sustainable development.

ISCGM

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 Secretariat of the International Steering Committee for Global Mapping  
 Comments and Queries: [sec@isccm.org](mailto:sec@isccm.org)



- |                                                                                              |                                                                                                                |                                                                                                                          |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
|  Road     |  Evergreen Broadleaf Forest |  Croplands                          |
|  Railroad |  Deciduous Broadleaf Forest |  Cropland/Natural Vegetation Mosaic |
|                                                                                              |  Mixed Forest               |  Urban and Built-up                 |
|                                                                                              |  Woody Savannas             |                                                                                                                          |

## Global Map - Sri Lanka

Land Cover - Transportation

*Coffee!*



*IS THE PLANET SHAKING  
OR IS IT JUST ME?*