# Global Spatial Data Infrastructure (GSDI)

## Encouraging SDI Development Internationally

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# Encouraging SDI Development Internationally

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# Global Spatial Data Infrastructure
## What do we want to talk about today?

- What is the Global Spatial Data Infrastructure (GSDI) Association?
  - So What?
  - How did it get started?
  - Who is involved?
  - What are some accomplishments?
  - Where to from here?

# Why do we use GI Systems and Technologies?

- track changes in the landscape, weather, vegetation, and water resources
- inventory and manage the physical facilities of utilities and city governments
- navigate and track automobiles, truck fleets and emergency vehicles
- crime mapping and analysis
- profile and target consumer preferences
- ...

# Reduce Losses From Natural & Human-Induced Disasters

Afflict all regions of the world
- Significant loss of life and property

What if...
- We had access to all our systems?
  - Research and operational
- Results in more precise assessment of current phenomena
- Better models
- More accurate forecasts

Desired Outcome
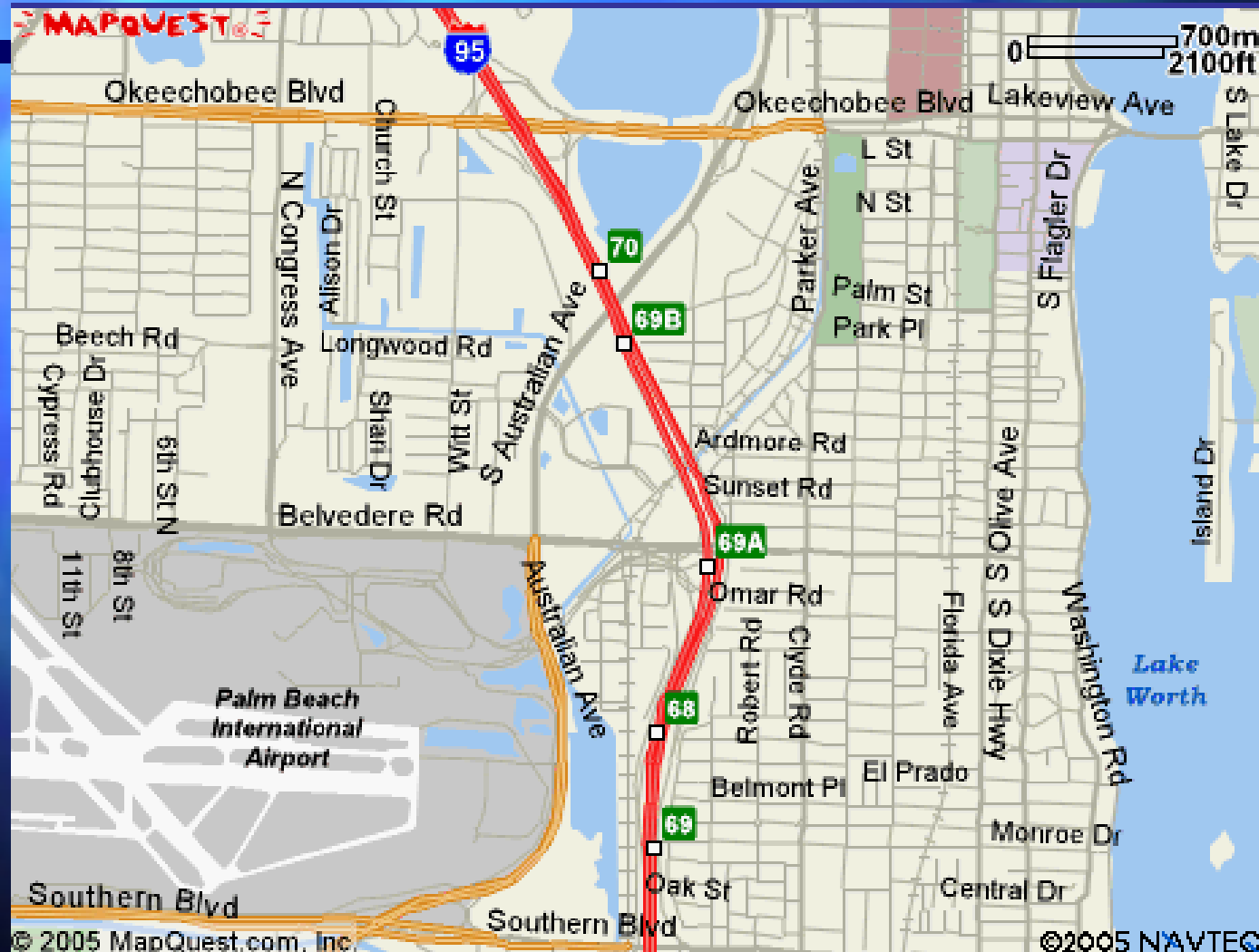- Global disaster reduction & warning system

# So what's the issue........???

Having the data to make these decisions is critical, but…

*Not being able to integrate it vertically and horizontally is another disaster*

# So why do we need standards?

# Let's change the situation....

- Emergency vehicle going to an accident or health care facility
- Fire hydrants
- Gas main shut off valves
- Electrical substations
- Subway entrances or air vents

# Realities among data…

- Relevant data is often hard to find.
- It is frequently in incompatible forms.
- Information describing data is often non-existent.
- Framework data does not exist for broad geographic areas.
- Data sharing across organizations is inconsistent.

# So What do we need???

- Common language
- Common reference system
- Common framework
- Spatial Data Infrastructure (SDI)

*... a National Spatial Data Infrastructure*

# What is a Spatial Data Infrastructure (SDI)?

…supports ready access to geographic data and information. This is achieved through the coordinated actions of nations and organizations that promote awareness and implementation of Complimentary policies, common standards and effective mechanisms for the development and availability of interoperable digital geographic data and technologies to support decision making at all scales for multiple purposes."

# What is a National Spatial Data Infrastructure (NSDI) .........?

To encourage the collection, processing, archiving, integrating, and sharing of geospatial data and information using common standards and interoperable systems and techniques

..... and accessible via the web

# What do NSDI advocates do......?

Builds alliances to:

- Identify institutional barriers
- Identify and develop policy changes
- Identify most effective ways to collect, maintain and distribute data
- Designate data stewards
- Reach consensus on framework

# What do NASI advocates do...?

Builds alliances to:

- Encourage metadata creation
- Clearinghouse development
- Encourage the use common standards and participation in national and international standards committees
- Seek new partners
- Develop incentives for participants
- Etc.......

# What is a National Spatial Data Infrastructure (NSDI) ..........?

To encourage the collection, processing, archiving, integrating, and sharing of geospatial data and information using common standards and interoperable systems and techniques

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# What is the Global Spatial Data Infrastructure (GSDI) ..........?

To encourage the collection, processing, archiving, integrating, and sharing of geospatial data and information using common standards and interoperable systems and techniques

..... and accessible via the web

# GSDI – An idea at the cusp Vision..........

**Foster SDI development** locally to globally

- Access data at a variety of scales and from multiple sources
- Common standards an interoperable systems and techniques
- Heavy reliance on partners world-wide

# Global Spatial Data Infrastructure
## GSDI conferences……

GSDI 1 Bonn, Germany Sept 1996

GSDI 2 Chapel Hill, NC October 1997

GSDI 3 Canberra, Australia Nov. 1998

GSDI 4 Capetown, So. Africa Mar. 2000

GSDI 5 Cartagena, Colombia May 2001

GSDI 6 Budapest, Hungary Sept. 2002

# Global Spatial Data Infrastructure
## GSDI conferences......

GSDI 7 Bangalore, India February 2004

GSDI 8 Cairo, Egypt April 2005
(with FIG)

GSDI 9 Santiago, Chile Nov. 2006

GSDI 10 Asia & Pacific ??? (Feb. 2008)

GSDI 11 Europe???? (May 2009)

# GSDI-8 in Cairo, Egypt
# April 16-21

http://www.fig.net/pub/cairo/techprogramme.htm

Joint meeting with FIG

- 900+ attendees
- 88 countries

**FIG Working Week 2005 and GSDI-8**
**From Pharaohs to Geoinformatics**

Intercontinental Semiramis, Cairo, Egypt, 16–21 April 2005

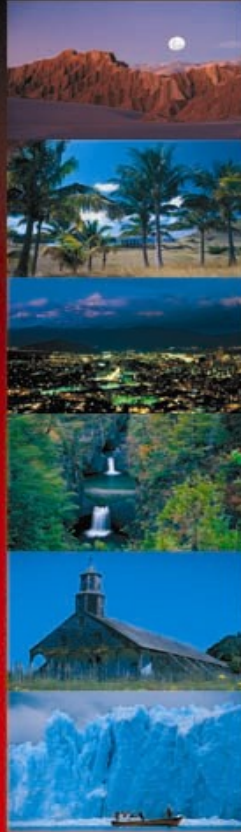| | Fri April 15 | Sat April 16 | Sun April 17 | Mon April 18 | Tue April 19 | Wed April 20 | Thu April 21 |
|---|---|---|---|---|---|---|---|
| 08:30–17:30 | | Registration | Registration | Registration | Registration | Registration | Registration |
| 09:00–10:30 | FIG Council Meeting<br>GSDI Executive Committee | Pre-Conference Workshops (4)<br>FIG ACCO Meeting<br>GSDI Board Meeting | Pre-Conference Workshops (2) (Corporate Members)<br>FIG General Assembly (09:00-13:00)<br>GSDI Committee Meetings (3) (09:00-13:00)<br>ISCGM Annual Meeting (08:00-13:00) | Plenary Session<br>Opening of the Exhibition (10:30) | Plenary Session | Plenary Session | Parallel Sessions (2 + 1 for ISCGM) TS46-TS48<br>FIG President's Meeting (08:30-10:30) |
| 11:00–12:30 | FIG Council Meeting (-13:00)<br>GSDI Executive Committee (-13:00) | Pre-Conference Workshops (2)<br>FIG ACCO Meeting (- 13:00)<br>GSDI Board Meeting (- 13:00) | Pre-Conference Workshops (2) (Corporate Members)<br>FIG General Assembly (09:00-13:00)<br>GSDI Committee Meetings (3) (09:00-13:00)<br>ISCGM Annual Meeting (08:00-13:00) | Parallel Sessions (5) TS1-TS5<br>Exhibition | Parallel Sessions (5) TS16-TS20<br>Exhibition (10:30- )<br>Technical Tours (10:30- ) | Parallel Sessions (5) TS 31-TS35<br>Exhibition (10:30-14:00)<br>Technical Tours (10:30- ) | Parallel Sessions (2 + 1 for ISCGM) TS49-TS51<br>FIG General Assembly (11:00-14:00) |
| | nce (4)<br>eeting<br>Meeting | Pre-Conference Workshops (2) (Corporate Members)<br>FIG Commission Annual Meetings (10) (14:00-16:30)<br>GSDI Council Meeting (13:00-16:30) | Parallel Sessions (5) TS6-TS10<br>Exhibition | Parallel Sessions (5) TS21-TS25<br>Exhibition<br>Technical Tours | Parallel Sessions (5) TS36-TS40<br>Technical Tours | Closing Ceremony (14:30-16:30) |
| | nce (4)<br>eeting<br>Meeting | Pre-Conference Workshops (2) (Corporate Members) (- 16:30)<br>FIG Commission Annual Meetings (14:00-16:30)<br>GSDI Council Meeting (13:00-16:30)<br>Opening Ceremony (17:00-19:00) | Parallel Sessions (5) TS11-TS15<br>Exhibition | Parallel Sessions (5) TS26-TS30<br>Exhibition<br>Technical Tours | Parallel Sessions (5) TS46-TS50<br>Technical Tours | GSDI Board Meeting (17:00-20:00) |
| 19.00– | FIG Council Dinner<br>GSDI Executive Committee Dinner | FIG ACCO Dinner | Welcome Reception | Egyptian Evening / FIG Foundation Dinner | Free | Gala Dinner | |
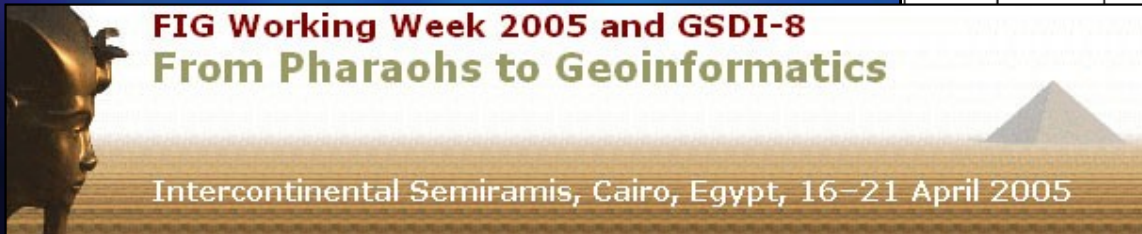
# The GSDI:
# Where are we now…?

- A formal organisation with officers
  - President – Harlan Onsrud (USA)
  - President Elect – Jarmo Ratia (Finland)
  - Past President – Mukund Rao (India)
- Council and Board
- Bylaws
- Strategic and Implementation Plans
- Incorporated as a US Non-Profit

# Board of Directors
(18 – most elected)

- Officers - President, President-elect, Past President
- Sectors – Industry, Government, Academia, Non-Profit
- Regions – Africa, Asia/Pacific, Europe, N. America, S. America
- Permanent Regional Committees – Europe, Africa, Americas, etc.
- International & Global Organizations - International Geographic Org., GSDI Related Global Initiative, International Industry Org.
- Ex-Officio Members

# GSDI – An idea at the cusp Goals……….

1. Promote and develop awareness and exchanges
2. Facilitate data access/discovery via clearinghouse, portal web services
3. Stimulate & conduct capacity building
4. Conduct and sponsor SDI development research
5. Engage partners to help

# Regional Spatial Data Infrastructures

*European Umbrella Organization for Geographic Information*

*Permanent Committee on GIS Information for the Americas*

*Permanent Committee on GIS Infrastructure for Asia and the Pacific*

*Permanent Committee on GIS Infrastructure for Africa*

# Members

- Addis Ababa University, Ethiopia
- Atlantic Institute, US, Canada
- CIESIN - Columbia University, US
- UN Committee on Development Information (CODI)-Geo
- Delft University of Technology, Netherlands
- Department of Science and Technology, India
- EIS-AFRICA, South Africa
- ESRI, Commercial
- Eurogeographics, Europe
- European Umbrella Organization for Geographic Information (EUROGI)
- Federal Geographic Data Committee (FGDC), US
- GISPOL - National Land Information System Users Association, Poland

# Members

- Hungarian Association for Geo-information (HUNAGI)
- Indian Space Research Organisation Headquarters
- Institut Cartografic de Catalunya (Associate), Spain
- Intergraph Mapping and GeoSpatial Solutions, Commercial
- International Society on Digital Earth, China/Int'l
- ITC International Institute for Geo-Information Science and Earth Observation, Netherlands
- IGM (Military Geographic Institute of Chile)
- Leica Geosystems, Commercial
- National Geographic Information Infrastructure Programme, Survey Department, Nepal
- National Geospatial-Intelligence Agency, US
- National Land Survey of Finland
- National Resources Canada
- National Space Research and Development Agency (NASRDA), Nigeria

# Members

- National Spatial Data Centre, Malawi
- National University of Lesotho
- Open Geospatial Consortium, Int'l
- Pan American Institute of Geography and History (PAIGH)
- Regional Centre for Training In Aerospace Surveys (RECTAS), Nigeria
- Spatialnetworks Pvt. ltd. (Associate), India
- State Bureau of Surveying and Mapping of China (SBSM), China
- University College of Lands and Architectural Studies (UCLAS), Tanzania
- University Consortium for Geographic Information Science (UCGIS), US
- University of Zimbabwe

# Working Groups

- **Technical Working Group**
  - Chair: Doug Nebert
- **Legal and Economic Working group**
  - Chair: Bas Kok, Kate Lance
- **Communications Committee**
  - Chair: Mark Reichardt
- **Membership**
  - Chair: Harlan Onsrud
- **Special Projects**
  - Chair: C.J. Cote
- **Conference Planning Committee**
  - Chair: Alan Stevens

# Some accomplishments......

- Membership
  - 26 Charter members
    - Commercial, Government, NGOs, etc
  - 26 Individual members
- 8 successful Global Forums
  - 250-400 participants
  - 50+ countries
- Multiple training experiences
- Collaboration with multiple partners

# Still more accomplishments?

- GSDI Small Grants --2003 - 05
  - 10 grants per year for $2.5k USD each
- Newsletters
  - Original traditional
  - Africa 2002-03
  - Americas & Asia and the Pacific (2004-05 with PAIGH)
    - Published electronically on a monthly basis

# Stimulate and conduct capacity building...

- GM/GSDI/ESRI $9M (USD) grant program
  - www.esri.com/sdigrant
  - Over 180 applications
  - 110 grants awarded

- Intergraph $5.5M interoperability grant program

**Developing Spatial Data Infrastructures:**
# The SDI Cookbook

## Version 2.0
### 2004

Release for Review at the Fourth Global Spatial Data Infrastructure Conference, Cape Town, South Africa

Editor: Douglas D. Nebert, Technical Working Group Chair, GSDI

*Disclaimer: This draft represents a work-in-progress that has been compiled from numerous contributions and available online documents contributing organisations. Full acknowledgement of contributions and citations will be provided in the initial public draft.*

Document Available At:

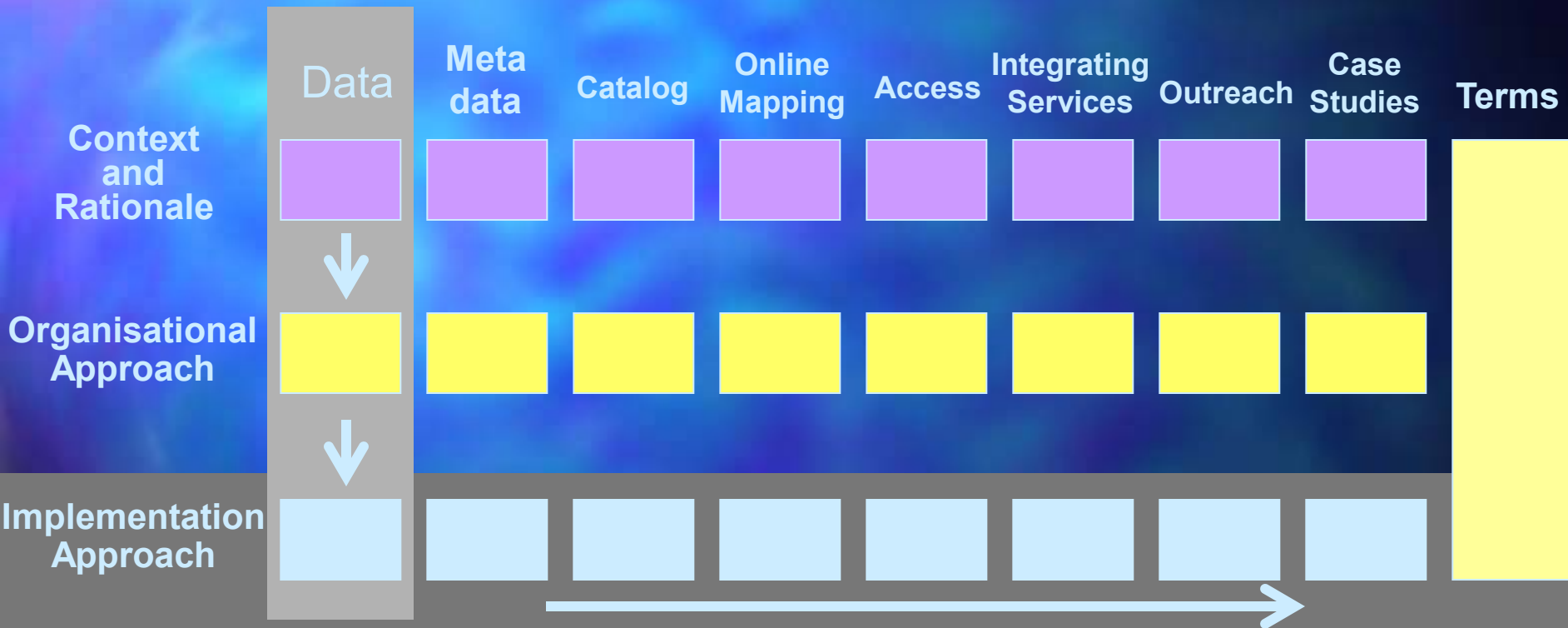http://www.gsdi.org

# FGDC & GSDI Secretariat
Success stories………

## Cookbook – announcing version 2.0:

- Doug Nebert; Editor in Chief
- It contains contributions from many nations
- FGDC/GSDI will maintain it and make it available on the GSDI website
- It is a living document

# Cookbook Design Concept



*Chapter*

|  | Data | Meta data | Catalog | Online Mapping | Access | Integrating Services | Outreach | Case Studies | Terms |
|---|---|---|---|---|---|---|---|---|---|
| **Context and Rationale** | | | | | | | | | |
| **Organisational Approach** | | | | | | | | | |
| **Implementation Approach** | | | | | | | | | |

# What do we want to keep doing……? …. or do better?

- Expand our membership
- Work with current partners to leverage talents, resources, and impact
- Seek new partners to do same
- Spice-up the Newsletter and expand awareness

# What do we want to keep doing……?
## …. or do better?

- Improve the Cookbook
  - Enhance the case studies
- Small grants …. for '05 and beyond
  - Attract partners to leverage resources
  - Broaden impact
- Provide services
  - Geo-Portal
  - Web -- applications

# Encourage capacity building

- Conduct SDI awareness training
- Facilitate the sharing of information
- Collect case examples of best practices
- Provide on-site support as requested for hands-on work
- Conduct follow-up activities/incentives
- Establish a knowledge infrastructure

# Promote and conduct SDI development research

- Stimulate the academic community to conduct research relating to SDI development
- Maintain an online SDI library of reference material
- Implement a small grant program in support of SDI research
- Facilitate networking of SDI researchers around the world

# What do we want to keep doing……?
.… or do better?

*Be seen as the focal point for Global Spatial Data Infrastructure information and help*

# Additional Information

www.gsdi.org        **Global Spatial Data Infrastructure**

www.erogi.org        **European Umbrella Org. for Geog.**

www.pcgiap.org        **Permanent Comm. for Geog. Info. for Asia and the Pacific**

www.cpidea.org.co        **Perm. Comm. For the Americas**

www.codigeo.org        **Permanent Committee for Africa**

www.opengis.org        **Open GIS Consortium**

www.fgdc.gov        **Federal Geographic Data Committee**
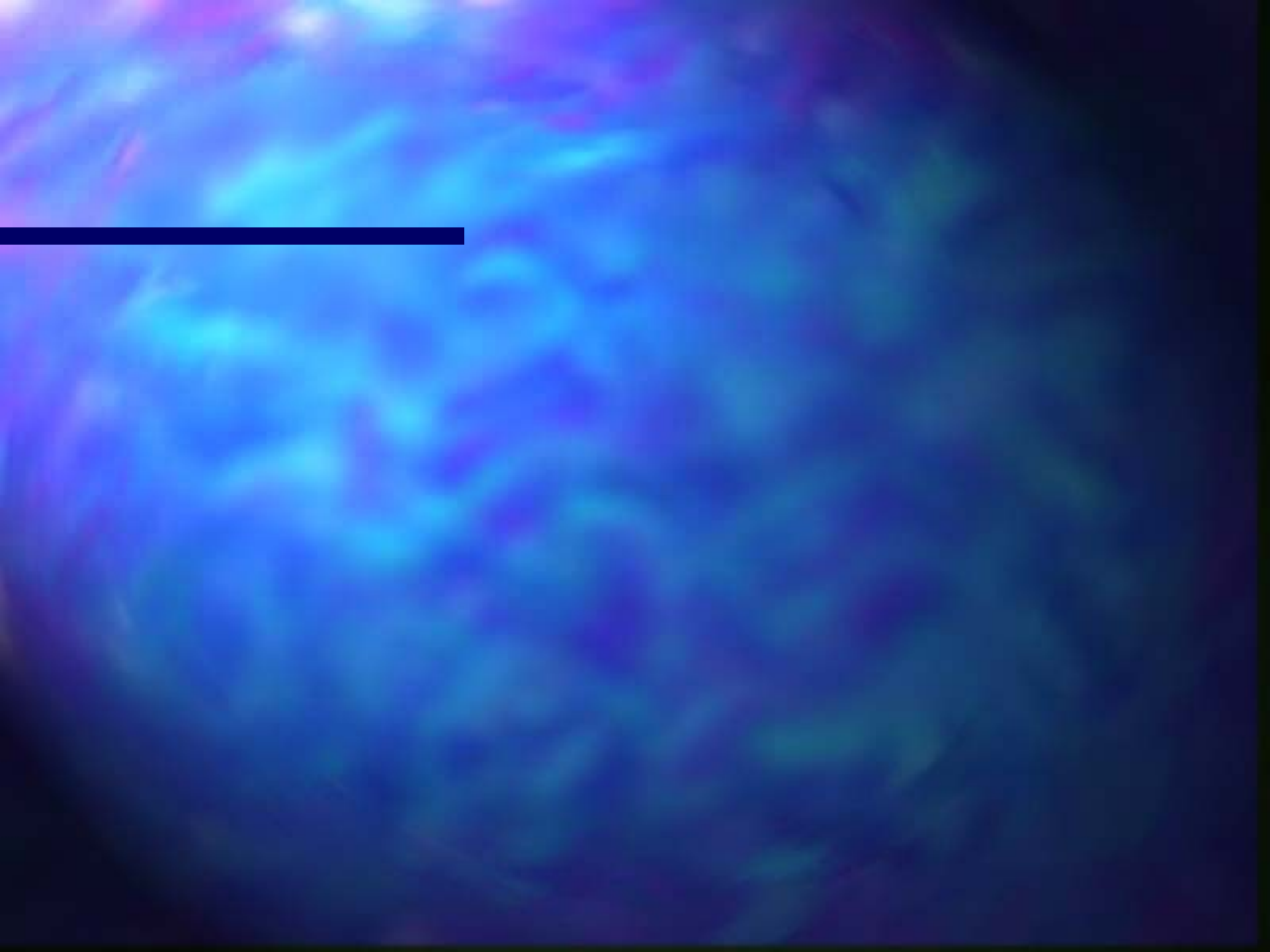
# Core Components of the NSDI

Clearinghouse/Portal

Metadata

Framework    GEOdata

Standards

*Partnerships*

# What is the Federal Geographic Data Committee?

Really two answers….

- Body of people facilitating the creation of the NSDI within the US
- Committee of many federal, state, academic agencies and the private sector working to actually build the NSDI

# The Federal Geographic Data Committee

- Chartered in the early 1990s
- Federal – 20 cabinet level agencies & offices
- Many states, regional, & local governments participate
- Along with the private sector, NGOs, and Academia

# FGDC Steering Committee
## Cabinet Officers and Agencies:

- Interior (Vice Chair)
- Agriculture
- Defense
- Energy
- HHS
- HUD
- Justice
- State
- Transportation
- FCC

- EPA
- Emergency Mgt
- Library of Congress
- NASA
- Archives
- OMB (Vice Chair)
- Commerce
- NSF
- TVA
- GSA

# Federal Geographic Data Steering Committee

- It's not just federal…….
  - States
  - Counties
  - Municipalities
  - Non-Governmental Organisations
  - Industry

# NSDI ... so where are we today?
## Strong high-level political federal support

- FGDC starts early 1990s
- High level political support
  - OMB Circular A-16
  - NSDI Presidential Executive Order 1994
  - Secretarial involvement in the FGDC
- Extensive partnerships established
- Standards -- nationally, internationally
- Clearinghouse network
- Open policy for federal spatial data

# The Federal Geographic Data Committee …. what's new?

- Major focus within the Federal Government
- An effort to reach into states and communities
- Need a sustained effort to drive the concept and application to the states and local governments

# FGDC/NSDI Future Directions

## VISION:

*Current and accurate geospatial data will be available to contribute locally, nationally, and globally to economic growth, environmental quality, and stability, and social progress*

# FGDC/NSDI Future Directions

1. Forging partnerships with a purpose

*Expand the governance model*

# FGDC/NSDI Future Directions

## 2. Making framework real

*...generating framework data themes that will include collection, documentation, access, and utilization of data.*

# FGDC/NSDI Future Directions

## 3. Communicating the Message

*…recognized across the nation as the primary source for the availability and use of reliable spatial data*

# Additional Information

**www.fgdc.gov**    **Federal Geographic Data Committee**

**www.gsdi.org**    **Global Spatial Data Infrastructure**

**www.opengis.org**    **Open GIS Consortium**