



# **The Open Geospatial Consortium and its participatory process - Open standards for Geo-Information**

**GIN Congress 2011, 30. Nov / 01. Dec 2011**

**Athina Trakas**  
**Open Geospatial Consortium**  
**Director European Services**  
[atrakas@opengeospatial.org](mailto:atrakas@opengeospatial.org)  
<http://www.opengeospatial.org>

# Agenda

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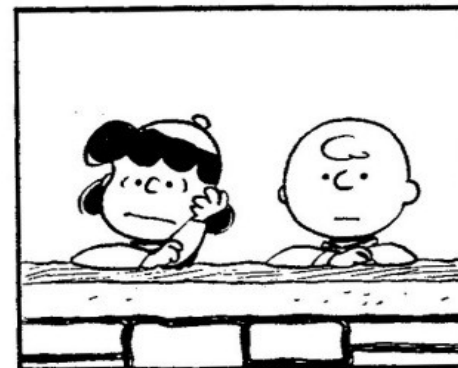


- **A few words about the OGC**
- **Interoperability and open standards**
- **OGC programs**
- **OGC standards in use around the world**
- **Participation in the OGC**

# View on standards...



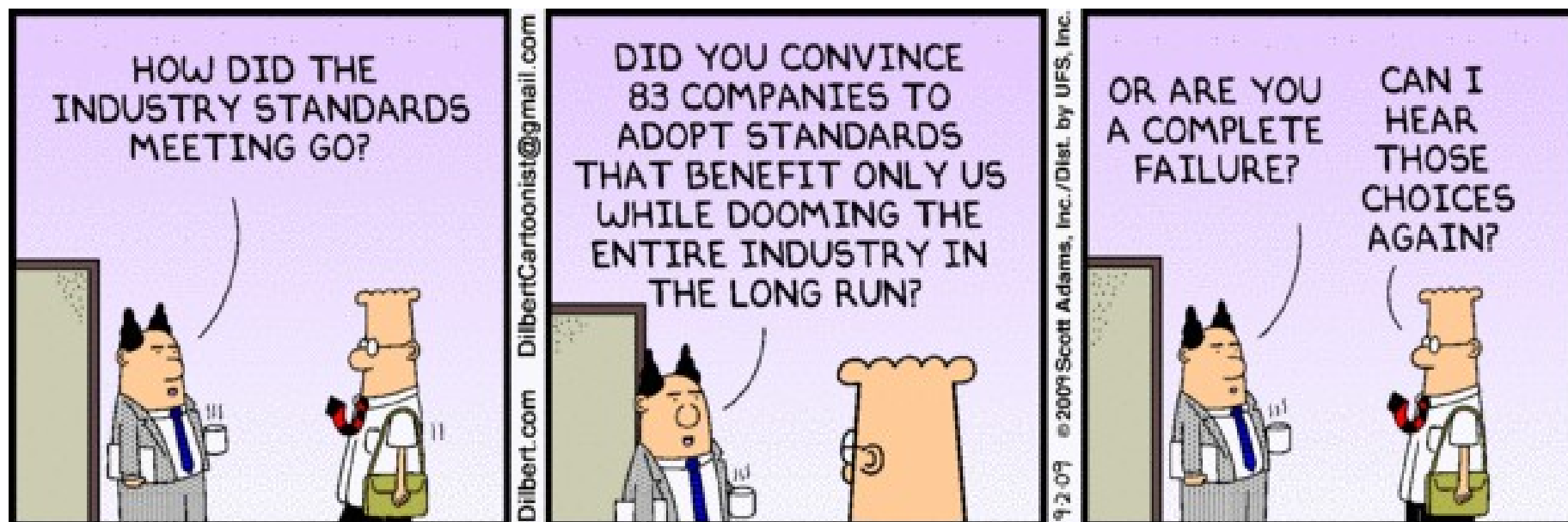
Standards development is boring...



Source:

<http://www.littlestuffedbull.com/images/comics/whereislucy/lucy-boring.jpg>

Or how others see them...



Source: <http://www.dilbert.com/strips/comic/2009-09-02/>

# Reality check



“... the annual cost of waste due to inadequate interoperability among computer-aided design, engineering, and software systems in the construction industry to be \$15.8 billion <in the US alone>.”

2004 NIST report titled "Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry,"

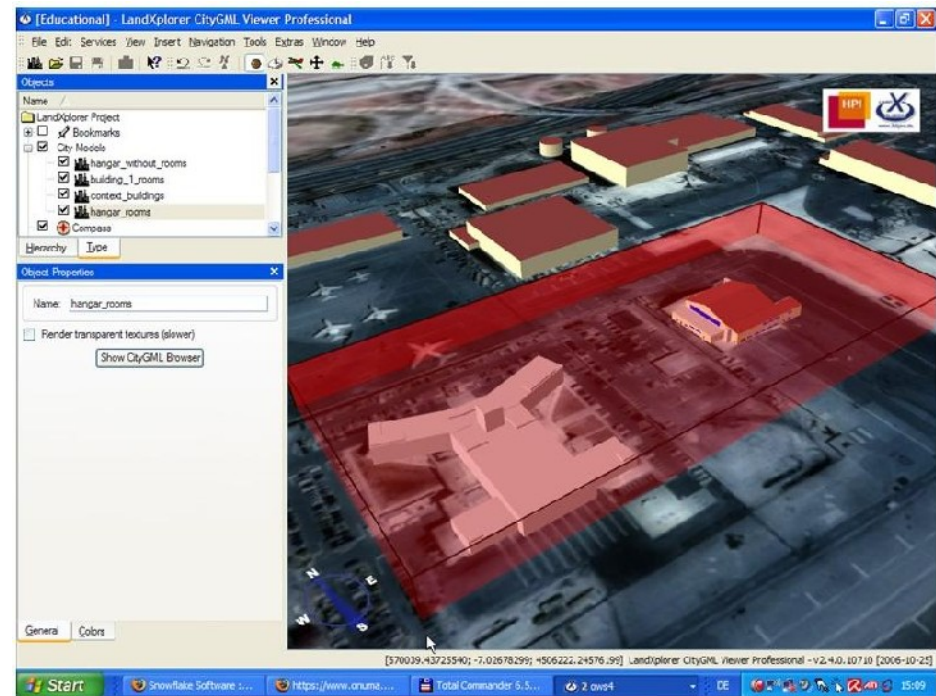


Image from OGC Web Services 4 Test Bed



# A few words about the OGC

# OGC at a Glance

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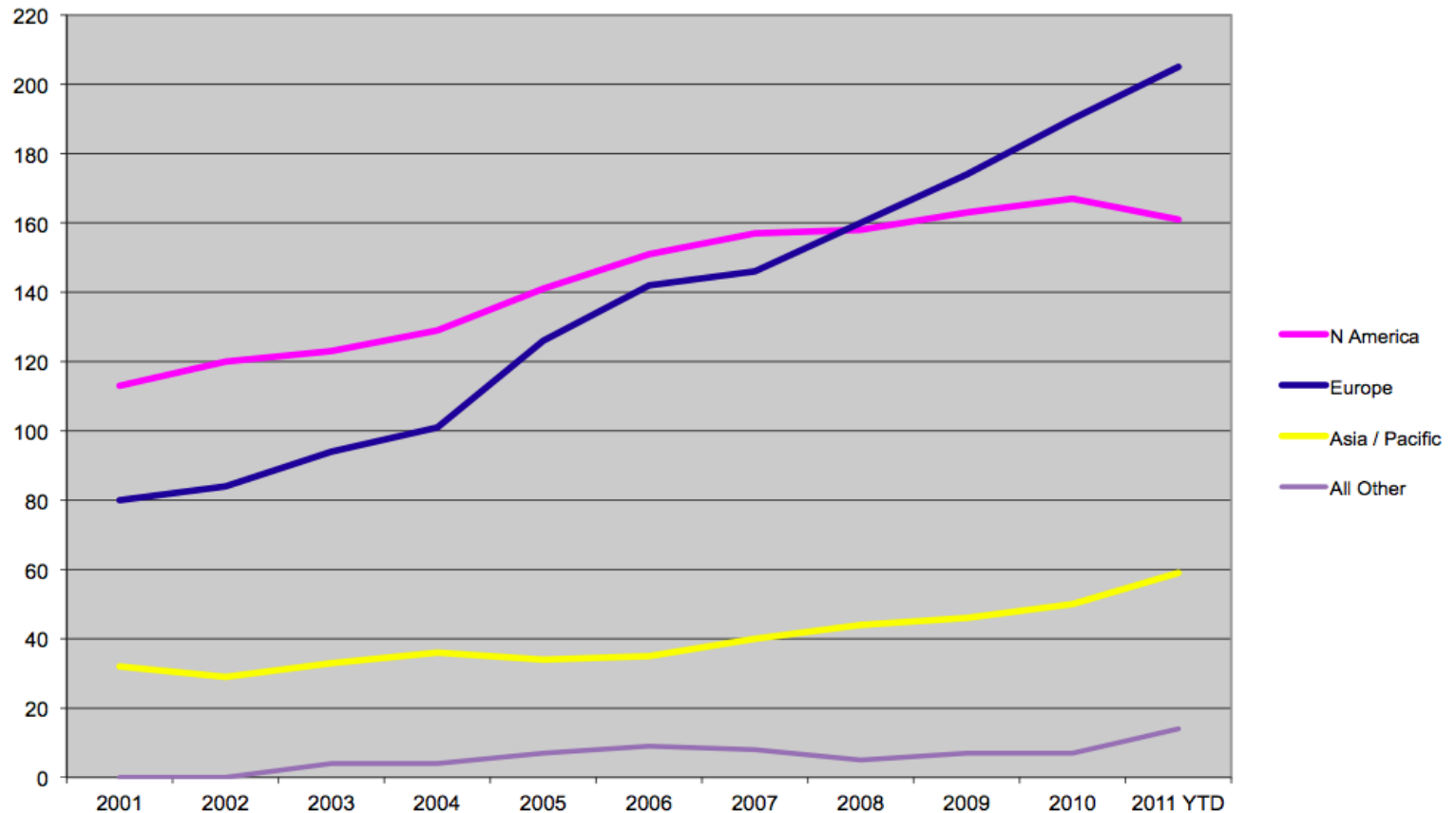


- Founded in 1994, not for profit, consensus based and voluntary
- 440+ member organisations (industry, government, academia) (Nov. 2011) <http://www.opengeospatial.org/ogc/members>
- 30+ adopted OGC Standards (some are ISO Standards) <http://www.opengeospatial.org/standards>
- Several hundred software products, implementing OGC standards <http://www.opengeospatial.org/resource/products>
- Cooperation with other standards organisations, foundations and projects <http://www.opengeospatial.org/ogc/alliancepartners>

# OGC at a Glance

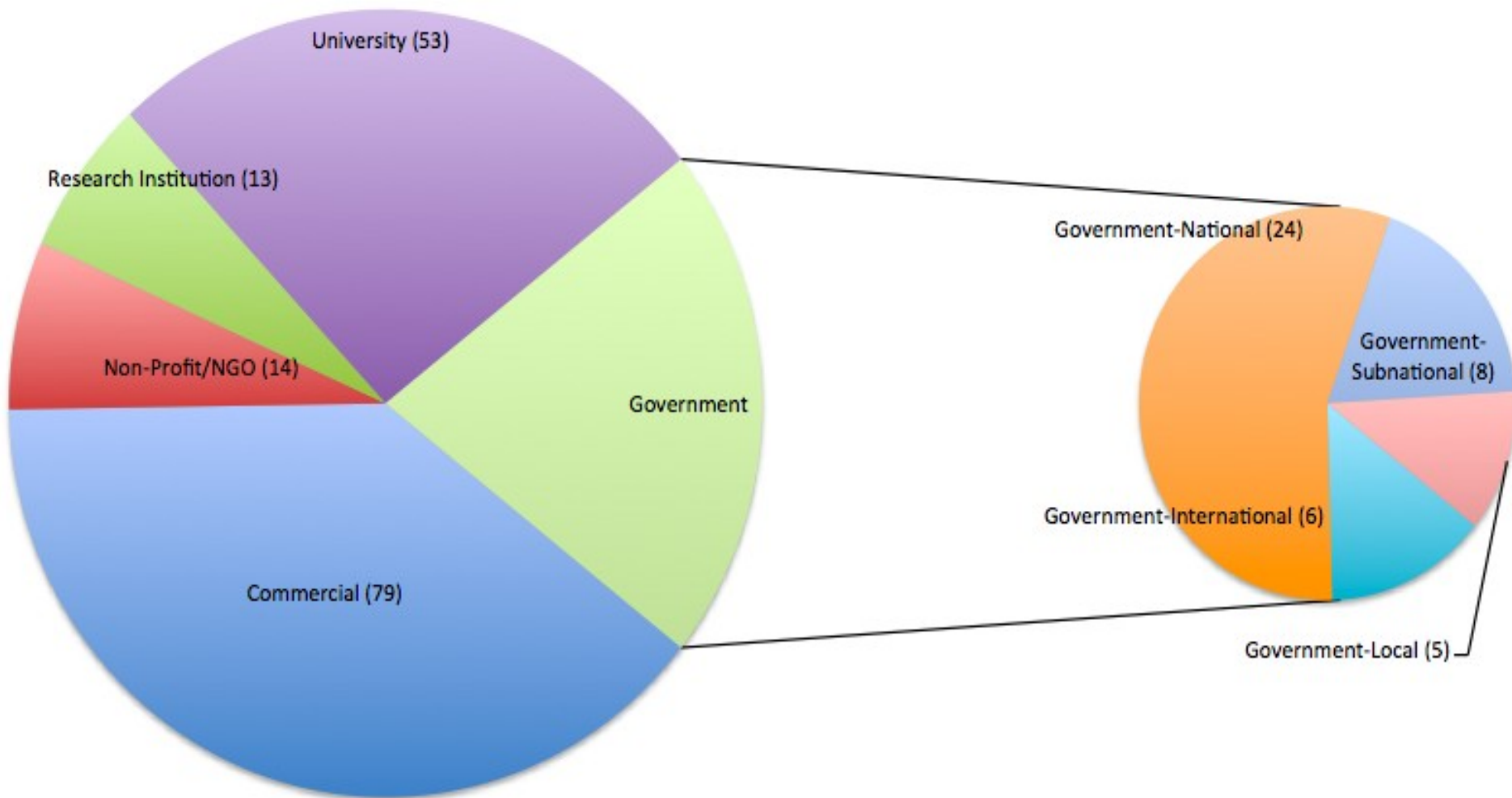


Member Census (Unit Count) by Region by Year



**Europe: 205, North America: 162, Asia/Pacific: 59,  
Middle East 7, Africa 4, South America 2**

# OGC at a Glance – Membership by type (Europe)





# Dutch OGC Members

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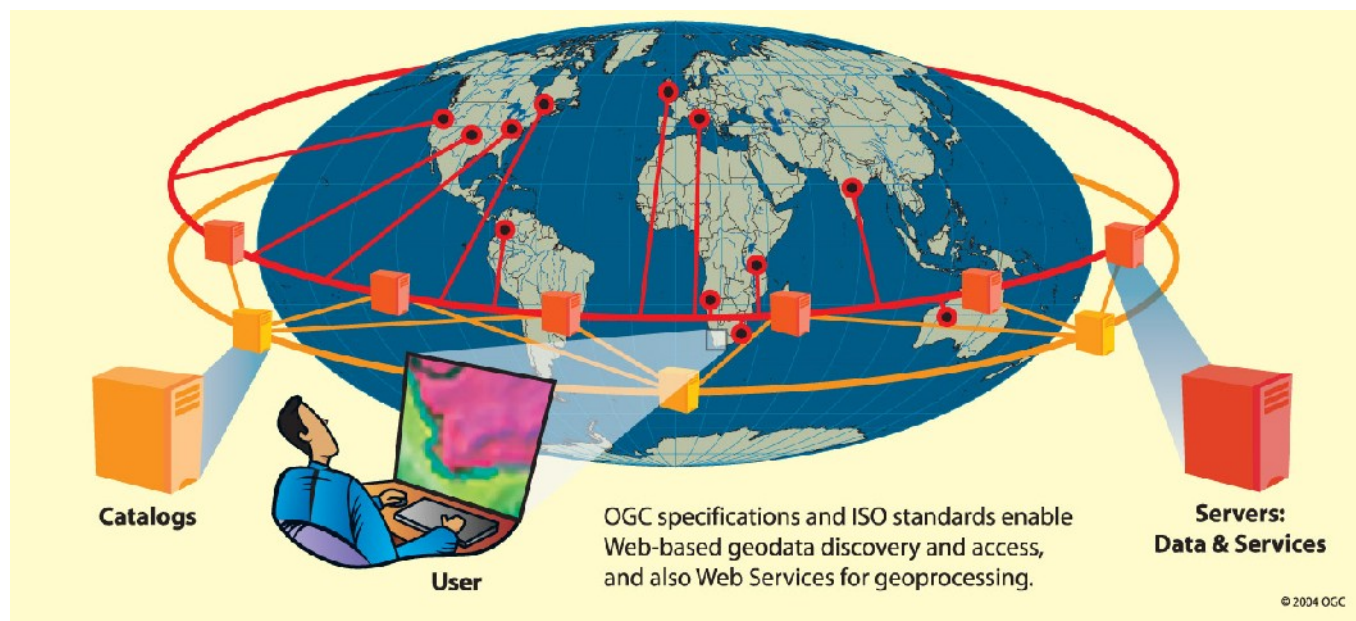


- Center for Geo-Information, Wageningen University
- Delft University of Technology
- Geodan Holding BV
- Geonovum
- ITC, University of Twente
- Logica
- Ministry of Transport, Public Works & Water Management
- Stichting Deltares (former Delft Hydraulics)
- UNIGIS International Association (UIA)

# The OGC Mission



To serve as a global forum for and lead the *development, promotion and harmonization of open and freely available geospatial standards.*

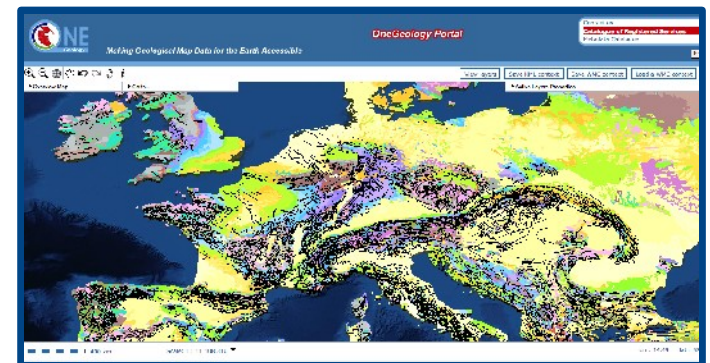


# Improving Knowledge Sharing and Transfer



We are addressing critical issues, that need cooperation:

- Growth in urban centers and coastal areas
- Emergency planning, preparedness & response
- Climate Change, Environmental Monitoring
- Water Resource availability and quality
- Aviation Safety
- ... and many more



General example: OneGeology  
<http://www.onegeology.org>

# Standards Development is not easy!



- Requires understanding of differences
- Requires cooperation on a global basis
- Requires consensus by many organizations
- Requires give and take
- Requires certified, repeatable process

# And does not exist in isolation

## A Critical Resource for Advancing Standards



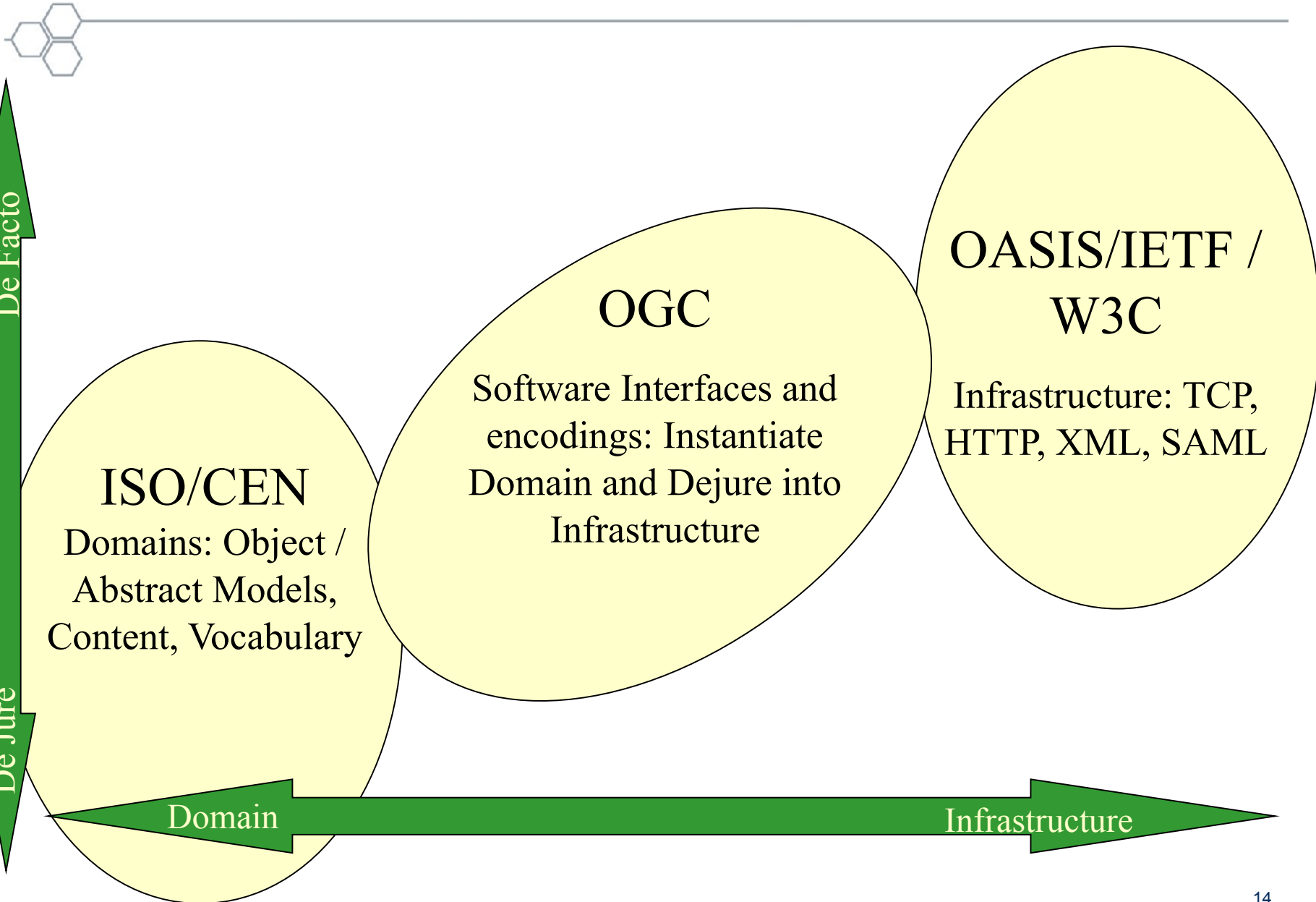
... and others

[www.opengeospatial.org/ogc/alliancepartners](http://www.opengeospatial.org/ogc/alliancepartners)





# Where does OGC fit in the 'standards' world?





# **Interoperability and open standards**

# Interoperability and Standards



Availability of geo data is crucial for the administration, businesses and citizens alike.

But how to share data?

Key factor for accessibility is standardisation. It is the definition of common interfaces to enable interoperability.

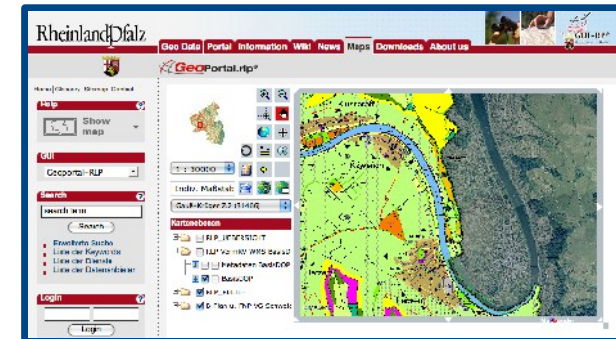


# OGC Interoperability – What the members say



## OGC members identify interoperability problems:

- „We can't share maps on the Web.“
- „We can't deliver data to different systems easily.“
- „We don't have a common language to speak about our geospatial data or our services.“
- „We can't find and pull together data from our automated sensors.“



GeoPortal.RLP – <http://www.geoportal.rlp.de>

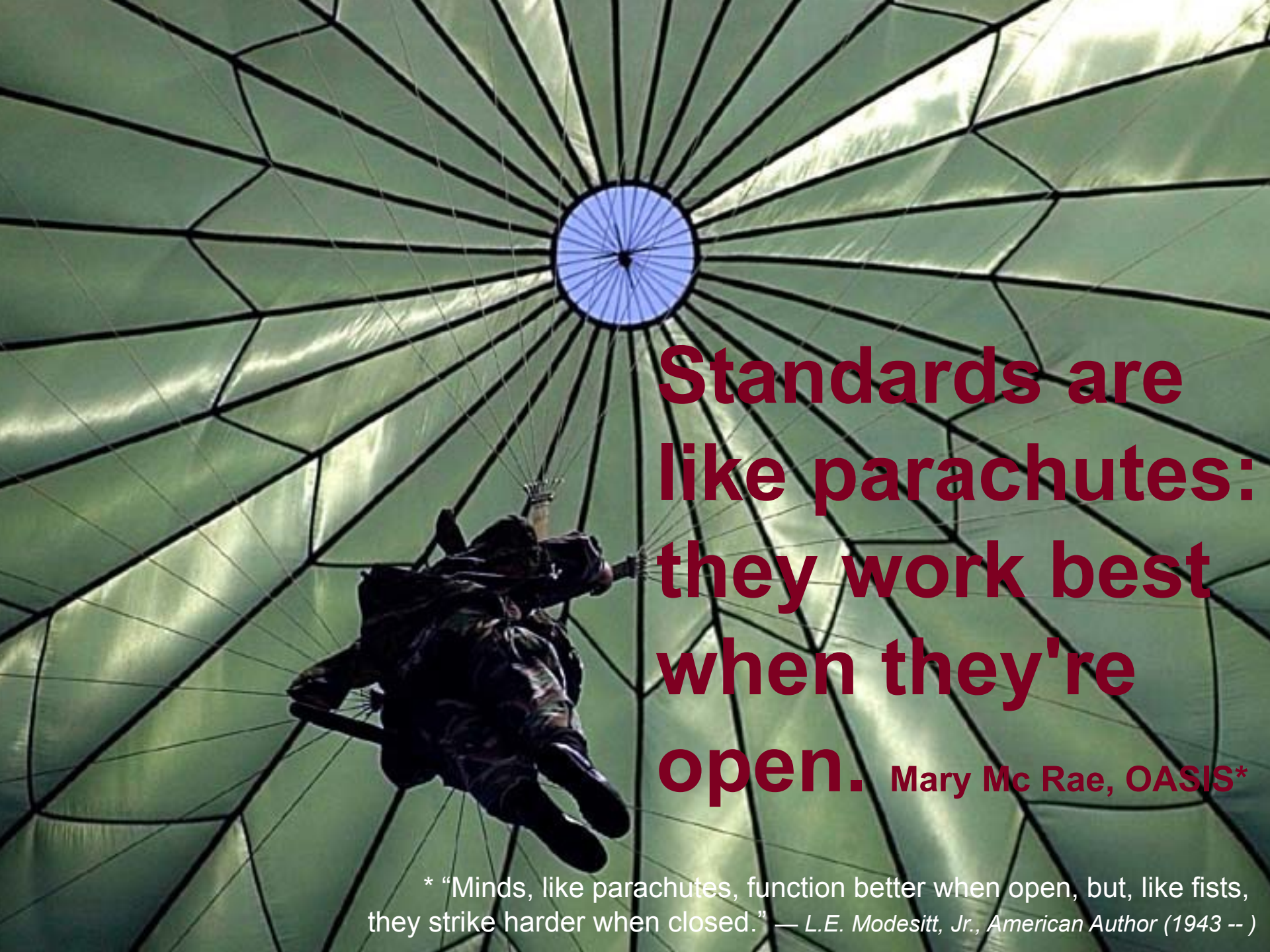
# Why Open Standards?



- **Prevents a single, self-interested party from controlling a standard**
- **Lower systems and life cycle costs**
- **Encourage market competition**
  - Choose based on functionality desired
  - Avoid “lock in” to a proprietary architecture
- **Stimulates innovation beyond the standard by companies that seek to differentiate themselves.**

„What OGC brings to the table is...everyone has confidence we won't take advantage of the format or change it in a way that will harm anyone”

**Michael Weiss-Malik,**  
Google KML product  
manager



**Standards are  
like parachutes:  
they work best  
when they're  
open.** Mary Mc Rae, OASIS\*

\* "Minds, like parachutes, function better when open, but, like fists, they strike harder when closed." — L.E. Modesitt, Jr., *American Author* (1943 -- )

# What is an OGC Standard?



- A document, established by consensus, approved by the OGC membership (balance of interest, all members have an equal vote)
- Provides, rules, guidelines or characteristics
- Implementable in software
- Open standards does not mean open source software (Free Software). OGC/OSGeo Paper on Open Source Software and Open Standards: [http://wiki.osgeo.org/wiki/Open\\_Source\\_and\\_Open\\_Standards](http://wiki.osgeo.org/wiki/Open_Source_and_Open_Standards)
- OGC standards are **Open Standards**
  - Freely and publicly available
  - No license fees
  - Vendor neutral

„People want the government to be transparent, so why shouldn't the technology be?“

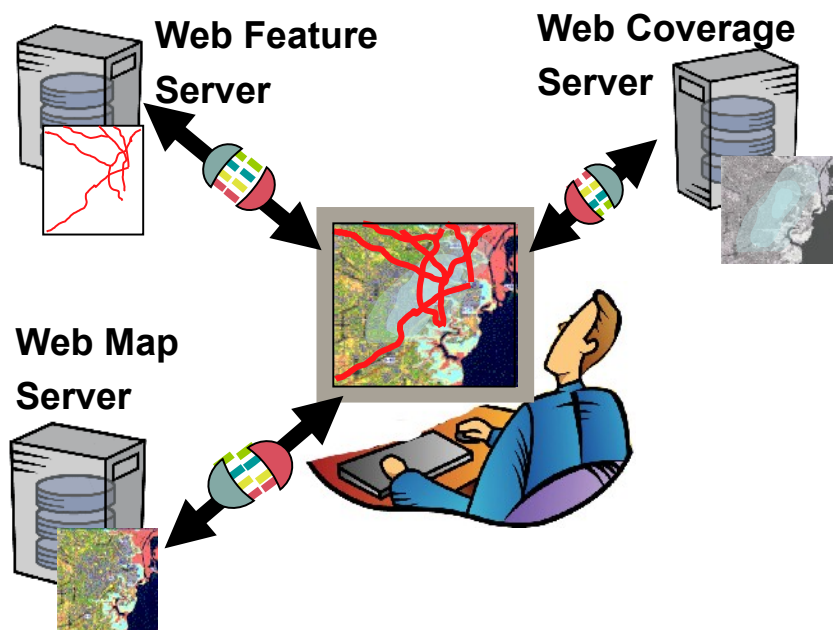
**Jim Willis, Director of e-Government at  
theRhode Island Secretary of State  
Office**



# What are OGC Web Services (OWS)?



Just as `http://` is the dial tone of the World Wide Web, and `html` / `xml` are the standard encodings, the geospatial web is enabled by OGC standards:



Web Map Service (WMS)

Web Feature Service (WFS)

Web Coverage Service (WCS)

CityGML

Geography Markup Language (GML)

Web Map Context (WMC)

OGC KML

Sensor Web Enablement (SWE)

Others...

Relevant to geospatial information applications:

Cadastral Information, Critical Infrastructure, Environment, Weather, Climate, Water, Homeland Security, Defense & Intelligence and others



# OGC Programs

# How does OGC work?

<http://www.opengeospatial.org/projects>

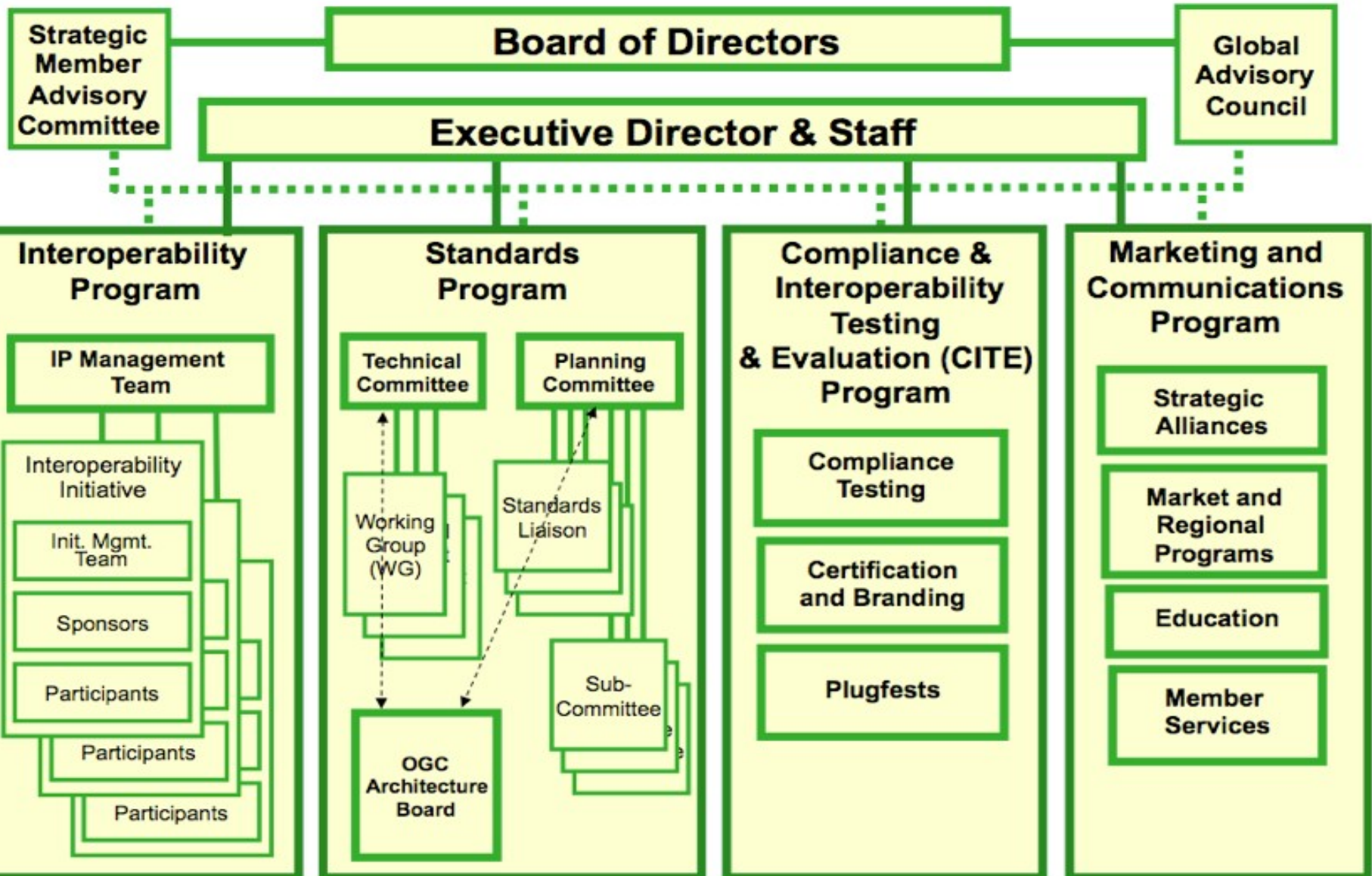
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- **Consensus process** – that is reflecting a common understanding of requirements and a membership driven process.
- **Formalized standards development process** – based on commonly agreed, structured and well defined policies and processes (→ Standards Program <http://www.opengeospatial.org/standards>).
- Making use of **innovative processes** – for testing, verifying and documenting user requirements (→ Interoperability Program <http://www.opengeospatial.org/ogc/programs/ip>).

# How does OGC work?

<http://www.opengeospatial.org/projects>





# OGC Activities Driven by Community Needs



Education & Research



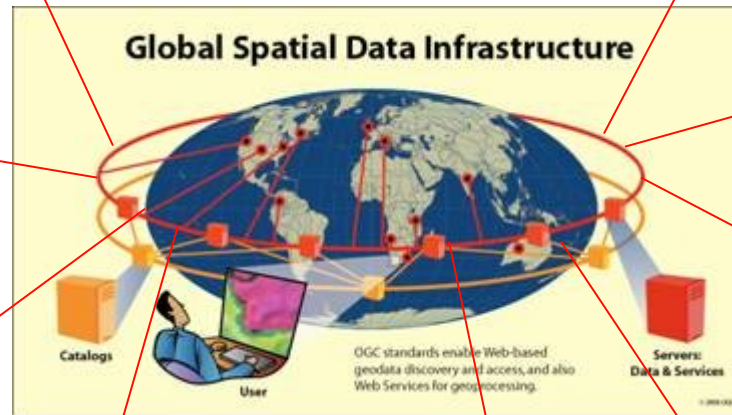
Sustainable Development



Utilities



Health



E -Government



Energy



Consumer Services,  
Real Time  
Information



Geosciences:  
land, sea, air information



# ... lead to Domain Working Groups

<http://www.opengeospatial.org/projects/groups/wg>



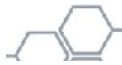
## Domain Working Groups

Domain Working Groups (DWG or WG) provide a forum for discussion of key interoperability requirements and issues, discussion and review of implementation specifications, and presentations on key technology areas relevant to solving geospatial interoperability issues.

Name	Lead **
3DIM DWG (3DIM DWG)	Scott Simmons, CACI International Inc.
Architecture DWG (Arch DWG)	Doug Nebert, US Geological Survey (USGS)
Aviation DWG (Aviation DWG)	Navin Vembar, FAA System Operations Airspace and AIM Office
Catalog DWG (Cat DWG)	Doug Nebert, US Geological Survey (USGS)
Coordinate Reference System DWG (CRS DWG)	Victor Minor, Blue Marble Geographics
Coverages DWG (Cover DWG)	Peter Baumann, FORWISS (Bavarian Research Centre for Knowledge-Based Systems)
Data Preservation DWG (PreservDWG)	Steve Morris, North Carolina State University
Data Quality DWG (DQ DWG)	Matt Beare, 1Spatial Group Ltd.
Decision Support DWG (DS DWG)	Stan Tillman, Intergraph Corporation
Defense and Intelligence DWG (D and I DWG)	Lucio Colaiaicomo, European Union Satellite Centre
Earth Systems Science DWG (ESS WG)	Phillip Dibner, Ecosystem Research
Emergency & Disaster Management DWG (EDM DWG)	Lewis Leinenweber, SE Solutions, Inc.
Geo Rights Management (GeoRM) DWG (GeoRM DWG)	Roland Wagner, BHT-Berlin (Beuth Hochschule für Technik Berlin)
Geography Markup Language (GML) DWG (GML DWG)	Ron Lake, Galdos Systems Inc.
Geometry DWG (GeometryDWG)	John Herring, Oracle USA
Geosemantics DWG (Semantics)	Joshua Lieberman, Deloitte Financial Advisory Services, LLP
Hydrology DWG (Hydrology DWG)	David Lemon, CSIRO
Location Services DWG (LS DWG)	Marwa Mabrouk, Esri
Mass Market DWG (MassMarket DWG)	Ed Parsons, Google
Metadata DWG (Metadata DWG)	David Danko, Esri
Meteorology & Oceanography DWG (Met Ocean DWG)	Chris Little, UK Met Office
Oblique Imagery DWG (ObliqueImageryD)	Shayne Urbanowski, Lockheed Martin

# ... and Standards Working Groups

<http://www.opengeospatial.org/projects/groups/swg>



## Standards Working Groups

Standards Working Groups (SWG) have specific charter of working on a candidate standard prior to approval as an OGC standard or on making revisions to an existing OGC standard.

Name	Lead **
ARML 2.0 SWG (ARML 2.0 SWG)	Martin Lechner, Wikitude GmbH.
Catalogue Services 3.0 SWG (Cat 3.0 SWG)	Doug Nebert, US Geological Survey (USGS)
CF-NetCDF 1.0 SWG (CF-NetCDF1.0SWG)	Ben Domenico, University Corporation for Atmospheric Research (UCAR)
CityGML SWG (CityGML SWG)	Carsten Roensdorf, Ordnance Survey
ebRIM AP of CSW SWG (ebRIM AP of CSW)	Frédéric Houbie, Intergraph Corporation
ebXML RegRep SWG (ebXMLRegRepSWG)	Frédéric Houbie, Intergraph Corporation
GeoAPI 3.0 SWG (GeoAPI 3.0 SWG)	Martin Desruisseaux, GEOMATYS
Geographic Linkage Service 1.0 SWG (GLS 1.0 SWG)	Peter Schut, GeoConnections - Natural Resources Canada
GeoServices Rest SWG (GServRestSWG)	Satish Sankaran, Esri
GeoSPARQL SWG (GeoSPARQL SWG)	Carl Reed III, Open Geospatial Consortium, Inc.
GeoSynchronization 1.0 SWG (Geosync SWG)	Panagiotis (Peter) A. Vretanos, CubeWerx
GeoXACML SWG (GeoXACML SWG)	Jan Herrmann, Technische Universität München, Dept. of Informatics
GML 3.3 SWG (GML 3.3 SWG)	Clemens Portele, interactive instruments GmbH
GMLJP2 1.1 SWG (GMLJP2-1.1SWG)	David Burggraf, Galdos Systems Inc.
KML 2.3 SWG (KML SWG)	David Burggraf, Galdos Systems Inc.
OB&M 2.0 SWG (OM 2.0 SWG)	Simon Cox, CSIRO
OLS 1.3 SWG (OLS 1.3 SWG)	Carl Stephen Smyth, MAGIC Services Forum
Open GeoSMS SWG (Open GeoSMS SWG)	Kuo-Yu Chuang, Industrial Technology Research Institute



# **OGC standards in use around the world**



# OGC-based Policy Positions



- European Union INSPIRE Directive emphasizing ISO and OGC standards for improved interoperability.
- Ordnance Survey GB distributes its MasterMap product using OGC standards.
- Dutch Policy on Open Standards and Open Source Software  
([http://geostandards.geonovum.nl/index.php/1.1.3\\_What\\_are\\_open\\_standards%3F](http://geostandards.geonovum.nl/index.php/1.1.3_What_are_open_standards%3F))
- Canadian, Australian, US, Indian and other national Spatial Data programs recommend OGC standards as best practice for interoperability.

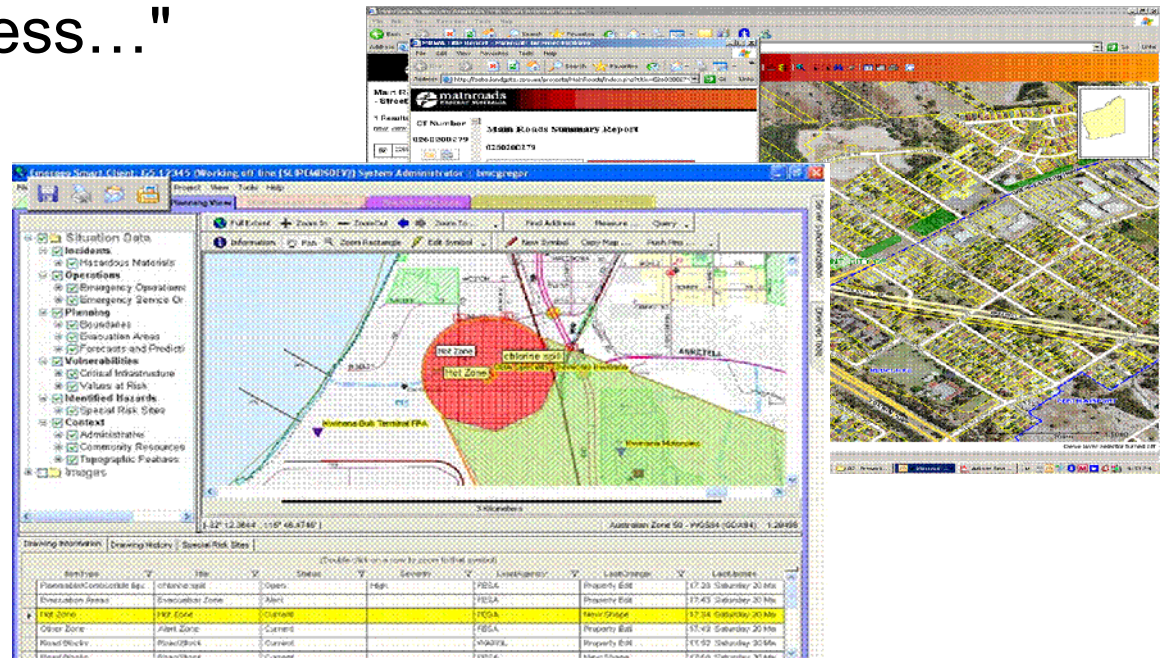
# Landgate Perspective

## Why a common Standards Baseline Matters



"When you are delivering spatial web services on behalf of 20 government agencies to more than a 1000 organisations running their own spatial systems, you need standards. Using the internationally recognised OGC and ISO standards for both the architecture and web services has been essential to our success..."

Kylie Armstrong  
Manager, Business Programs  
Landgate, Western Australia  
SLIP – Shared Land  
Information Platform



# Disaster prediction and Warning

Feng Chia University



“The success of our programs to monitor, detect, warn and respond to emergencies and natural disasters in Taiwan depends heavily on OGC standards.

We use OGC Web Services and Sensor Web Enablement standards to rapidly mobilize monitoring, forecasting and warning networks, and to implement a diversity of sensor assets as part of these systems. This saves time, money and lives.”

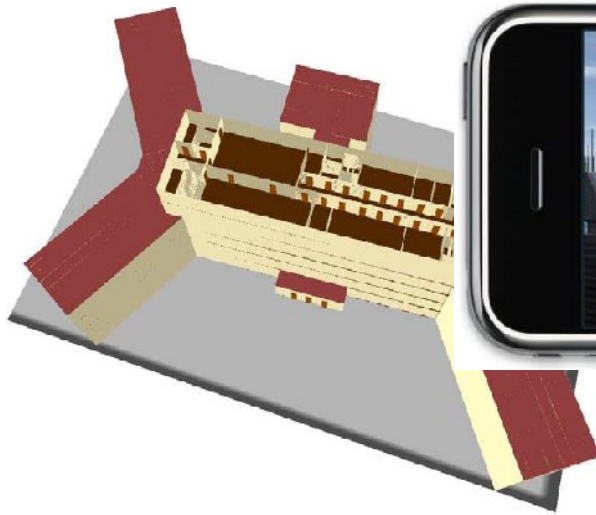
Tien-Yin Chou,  
Director of the GIS Research Center  
Feng Chia University



# Example CityGML and 3D Info Management



- Definition and development of interface and encoding standards to better manage and navigate complex built environments.
- Previously known as CAD-GIS-BIM Integration



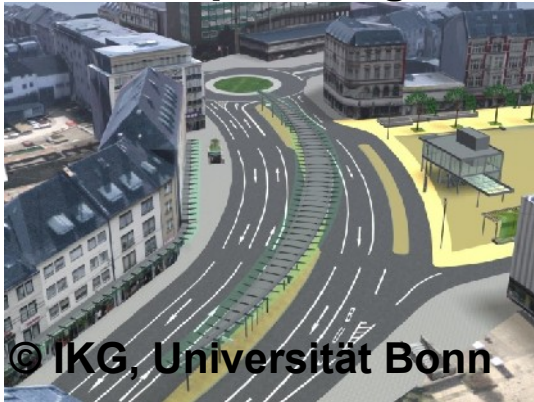
© Rheinmetall Defence Electronics



# Applications of virtual 3D city models: CityGML



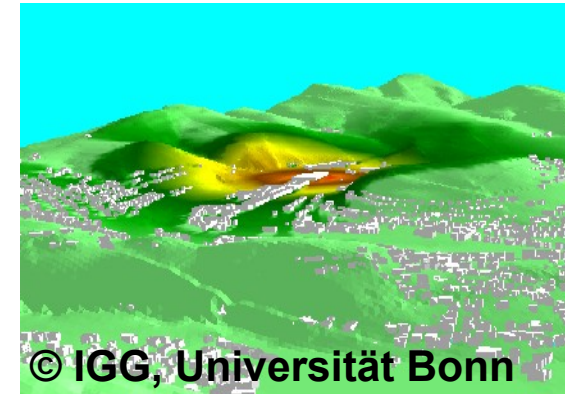
## Urban and Transportation planning



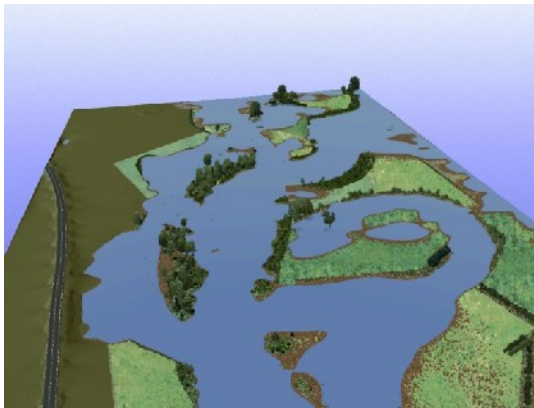
## Mobile network planning



## Noise pollution mapping



## Disaster management



## Training simulators



## 3D-(Indoor) Navigation



# Example CityGML and 3D



→ GovFuture Webinar “How the OGC's CityGML supports 3D Innovation for Business and Government – Examples from the Netherlands and the City of Rotterdam” - January 12<sup>th</sup> 2012

→ OGC 3DIM Award to 3D Pilot NL, a network of over 65 private, public and scientific organizations who worked together to realize this 3D vision in the Netherlands.

The national organizations who organized the collaboration network are the Netherlands Kadaster, Geonovum (the National Spatial Data Infrastructure (NSDI) executive committee in the Netherlands), the Netherlands Geodetic Commission and the Dutch Ministry of Infrastructure and Environment.



# Participation in the OGC

# GovFuture - Membership Level for Local and Subnational Government

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- Membership option for local and state/provincial governments agencies
  - Worldwide and for a very small fee (200US\$/500US\$)
  - Reflects OGC's increased emphasis on knowledge transfer
- 
- learn about new developments in geospatial technology
  - benefit from those developments
  - understand and address legal and policy issues
  - liaise with other levels of government

**More information at**

**<http://www.opengeospatial.org/ogc/join/levels#associate>**  
**and**

**<http://www.opengeospatial.org/pressroom/pressreleases/1322>**

# OGC Business Value Committee

from data, to re-use and added value – translating interoperability



- Understand the advantages of developing and using OGC standards
- Enable the wider community of stakeholders to leverage business value as a tool to foster investment and implementation
- Help policy and decision makers to address the following:
  - Is the activity for public benefit? (Measure and record value)
  - What is the business driver? (Internal efficiency, customer satisfaction)
  - Does a capability already exist? (Enable reuse, avoid duplication)
- <http://www.opengeospatial.org/projects/groups/businessvalue>  
<https://lists.opengeospatial.org/mailman/listinfo/business.value>
- **Survey on Business Value of OGC Standards (closes 18<sup>th</sup> Dec. 2011)**  
<http://www.opengeospatial.org/pressroom/pressreleases/1496>  
*"(...) membre OGC ou non, néophyte ou averti des standards OGC, utilisateur de logiciels interopérables ou non, fournisseur ou utilisateur final de services géospatiaux, etc..."*



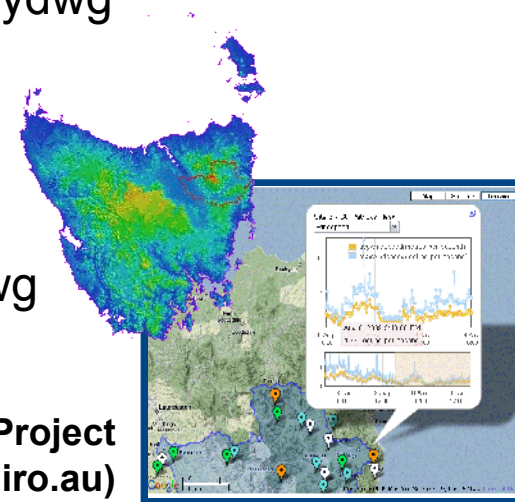
# Avenues for Public Input



## Public Domain Working Groups (DWG)

Offer a forum for discussion and documentation of interoperability requirements for a given information or user community, informal presentations and discussions about the market use of adopted OGC Standards (<http://www.opengeospatial.org/projects/groups/wg>)

- Aviation DWG  
<http://www.opengeospatial.org/projects/groups/aviationdwg>
- Hydrology DWG  
<http://www.opengeospatial.org/projects/groups/hydrologydwg>
- Early Warning and Disaster Management  
<http://www.opengeospatial.org/projects/groups/edmdwg>
- Meteorology and Oceans DWG  
<http://www.opengeospatial.org/projects/groups/meteodwg>



**General example: Tasmanian Hydrological Sensor Web Project**  
(source: CSIRO - <http://www.csiro.au>)

# Other (Re-)Sources



- **Change Requests and New Requirements**

<http://www.opengeospatial.org/standards/requests>

[http://portal.opengeospatial.org/public\\_ogc/change\\_request.php](http://portal.opengeospatial.org/public_ogc/change_request.php)

- **Fast track process**

<http://www.opengeospatial.org/pressroom/newsletters/201006/#C3>

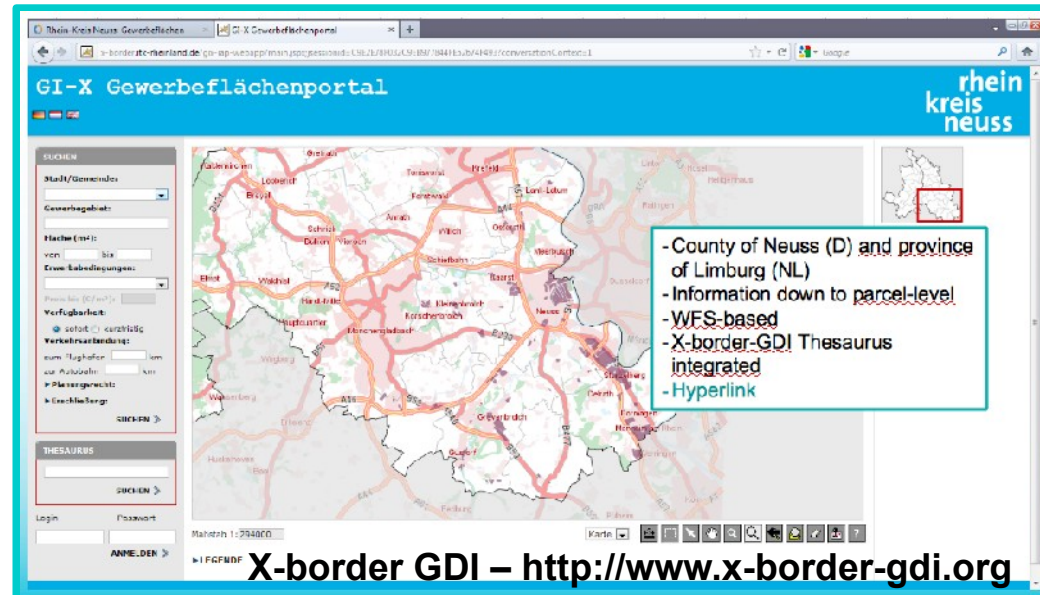
- **Requests for Information**

- **Requests for Comment**

- **Call For Participation**

- **OGC Network**

<http://www.ogcnetwork.net/>



# Some closing thoughts



- “The conventional view serves to protect us from the painful job of thinking.” - *John Kenneth Galbraith, economist*
- Contribute and work together – participate in the international standardisation process:  
“Get involved to help shaping standards for (urban) SDIs!” presentation M-L. Vautier & E. Devys (IGN France – at ICC 2011 in Paris)
- Avoid „consuming attitude.“ - don't re-invent the wheel and avoid duplication of work and efforts.
- If you need to share data, why not also share your experiences.

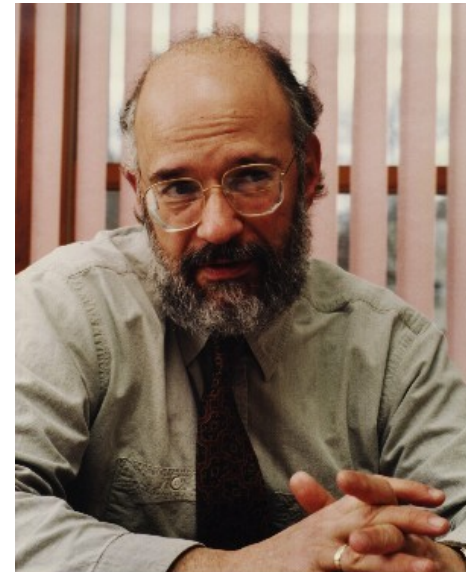


# Some last thoughts...



“Interoperability seems to be about the integration of information. What it’s really about is the coordination of organizational behavior.”

***David Schell***  
***Chairman and Founder***  
***OGC***



# Questions? Get involved!

**Athina Trakas**

**Director European Service  
OpenGeospatial Consortium**

**Heerstr. 162  
53111 Bonn**

**Tel.: +49 – 228 – 54 88 99 42**

**Mobil: +49 – 173 – 211 2623**

**eMail: [atrakas@opengeospatial.org](mailto:atrakas@opengeospatial.org)**

**web: <http://www.opengeospatial.org>**

