OGC Standards

EGOWS 2010 ECWMF, Reading, 2010/06/1-4

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OGC Co-Chair Meteorology & Oceanography Domain Working Group

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Apologies & Disclaimers

I speak too fast

No pictures

I was involved in international standards

- ISO
- WMO

View of the OGC ‘landscape’

- ‘Valleys & hills’
- NOT ‘Turn 3rd left after pub’

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Structure of Talk

- Some Background
- Why OGC?
- Standards
- Issues for Meteorology

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OGC Standards

Some Background

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OGC Met Ocean DWG

2007: ECMWF 11th Workshop on Meteorological Operational Systems

- recommended:

2008: ECMWF-OGC Workshop on Use of GIS/OGC Standards in Meteorology

- recommended:
  - Establish OGC Met Domain WG
  - Establish WMO-OGC Memorandum of Understanding
  - Develop WMS meteorological profile
  - Develop core models and registries
  - Interoperability test beds for met. data & visualization OGC web services

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OGC Who?

- Open Geospatial Consortium http://opengeospatial.org
- Non-profit making
- Standards setting http://opengeospatial.org/standards
- Global
- >400 members http://opengeospatial.org/members
    - Industry
    - Government bodies
    - Academia
    - Individuals

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OGC How?

TC - Technical Conference, 4 days every 3 months

- Darmstadt Sept 2009 EUMETSAT
- Mountainview Dec 2009 Google
- Frascati Mar 2010 ESA

SWG - Standards Working Groups, ~24,

- Fast track to ISO, short lived, ‘vertical’

DWG - Domain Working Groups, ~27

- Cross-cutting, longer lived, ‘horizontal’

IE – Interoperability Experiments

- 6 monthly cycle

Management structure, OAB, open & closed

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OGC What?

OGC Engineering Reports, Discussion papers

OGC Best Practices

OGC Standards :

- GML Geographical Mark-up Language
- WFS Web Feature Service
- WMS Web Map Service
- Etc

Then ISO Standards:

- 191xx
- Etc

Then WMO can use them, willing or not (Inspire)

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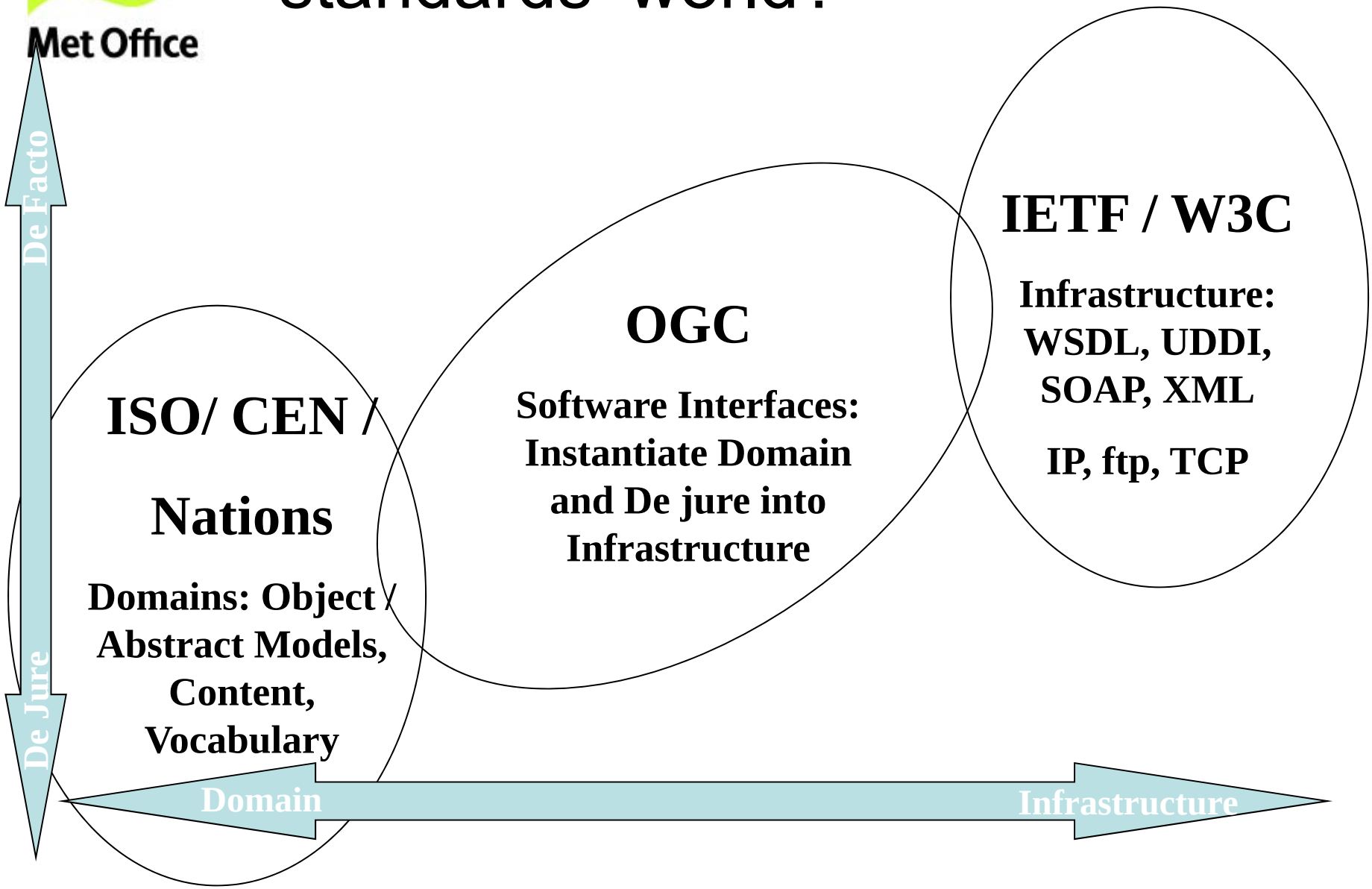
Where does OGC fit in the ‘standards’ world?



OGC Standards

The Standards

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>27 OGC Public Standards

Geography Mark-up Language (GML, ISO19136:2007) / GML in JPEG 2000 / KML
CityGML
Geospatial eXtensible Access Control Mark-up Language (GeoXACML)
Catalogue Service (CSW) / Cat: ebRIM App Profile: Earth Observation Products
Filter Encoding
Location Services (OpenLS)
Observations and Measurements (O&M)
Sensor Model Language (SML)
Transducer Model Language (TML)
Sensor Observation Service (SOS)
Sensor Planning Service (SPS)
Web Feature Service (WFS)
Simple Features / CORBA / OLE/COM / SQL
Web Coverage Service / Web Coverage Processing Service / Grid Coverage Service
Web Map Service (WMS) / Web Map Context / Web Map Tile Service (WMTS)
Styled Layer Descriptor / Symbology Encoding (SLD/SE) / Geographic Objects
Web Processing Service (WPS)
Web Service Common (OWS Common)
Coordinate Transformation

OGC Standards classes

Conceptual / Abstract reference models

- 18 topics
- Many shared with ISO

Protocols/Interfaces

- Tightly coupled (Client/Server APIs)
- Loosely coupled (Web Services)
- Data / portrayal / catalogue / processing / other
- Application profiles

Encodings

- Profiles
- Application schemas

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Abstract Specifications

Reference models to develop OGC Implementation Specs

Feature Geometry	OpenGIS Service Architecture
Spatial Referencing by Coordinates	Catalog Services
Locational Geometry Structures	Semantics & Information Communities
Stored Functions and Interpolation	Image Exploitation Services
Features	Image Coordinate Transform Services
Coverage Type	Location-based Mobile Services
Earth Imagery	Geospatial DRM Reference Model
Relationships between Features	Topic Domain Models 1 - Telecomms
Feature Collections	
Metadata	

Tightly Coupled Interface Standards

- Simple Feature Access
  - SF Common 1.2
  - SF SQL 1.2
  - SF OLE/COM 1.1
  - SF CORBA 1.1
- Gridded Coverages 1.0
- Coordinate Transformation (CT 1.1)
- GeoSpatial Objects 1.0

Loosely Coupled Interface Standards

OWS Common Specification 1.1

Catalogue (CAT 2.0.2)

- CSW ISO 19115/19119 Application Profile 1.0

Web Map Service (WMS 1.3) (WMS 1.1.1 widely implemented)

Web Feature Service (WFS 1.1) (WFS 1.2 Joint Work item ISO)

Filter 1.1 (1.2 Joint Work item with ISO)

Web Coverage Service (WCS 1.1)

Web Map Context 1.1

Location Service Core Interface Standards (OLS 1.2)

Sensor Web Enablement Standards

- Sensor Planning Service (SPS 1.0)
- Sensor Observation Service (SOS 1.0)

Encoding Standards

Geography Markup Language (GML 3.1.1 and 3.2.1)

- GML in JPEG 2000 for Geographic Imagery Encoding Specification 1.0 (In revision)
- GML Simple Features Profile 1.0

Style Layer Descriptors (SLD 1.1)

Symbology Encoding (SE 1.1)

Sensor Web Enablement Standards

- SensorML 1.0
- TransducerML (TML 1.0)

OWS Common Specification 1.1

Specifies many of the aspects that are, or should be, common to all, or multiple, OGC Web Service interface Implementation Specifications.

These currently include:

- Web Map Service (WMS),
- Web Feature Service (WFS),
- Web Coverage Service (WCS).

Common aspects include:

- Operation request & response contents;
- Parameters included in operation requests & responses;
- Encoding of operation requests & responses.

Coordinate Reference System (CRS)

Used in all OGC interface specifications

A common & consistent way to define interfaces & interface content (parameters, KVPs, etc) for general positioning, coordinate systems, & coordinate transformations.

- Grounded in ISO TC 211 work as the abstract model.

Currently using EPSG as the authority for CRS parameters.

- Defines thousands of reference systems
- normative reference for the EPSG database is www.ihsenergy.com/Epsg_v61.zip.

An OGC CRS Registry: http://crs.opengis.org/crsportal/index.html

- GML 3 encoding of the entire EPSG v6.1 CRS database

The SWE Standards

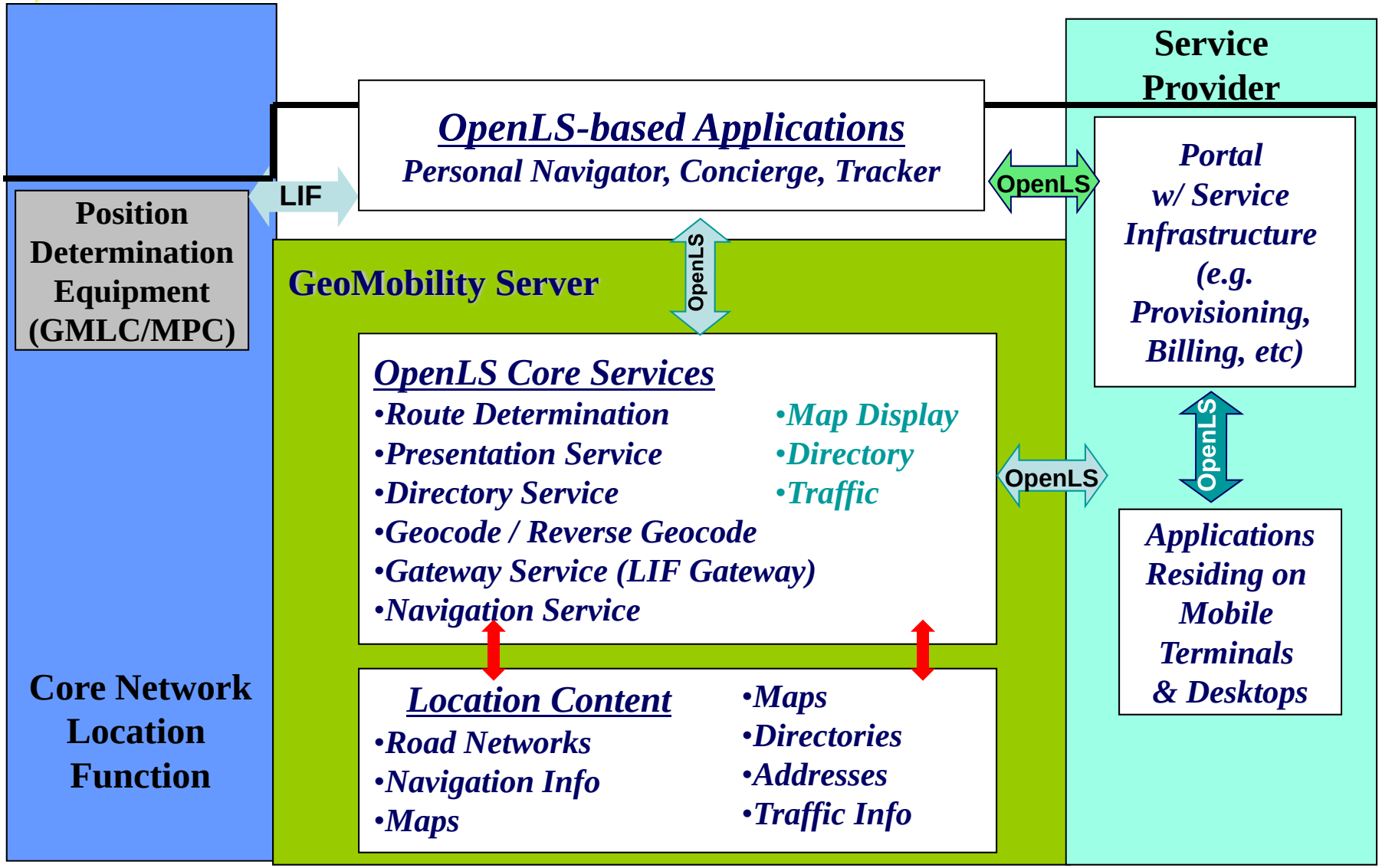
Models and Schemas:

- Observations and Measurements (O&M)
- SensorML
- TransducerML

Interfaces:

- Sensor Observation Service (SOS)
- Sensor Planning Service (SPS)
- Sensor Alert Service
- Web Notification Service (long duration async)

OpenLS Core Services



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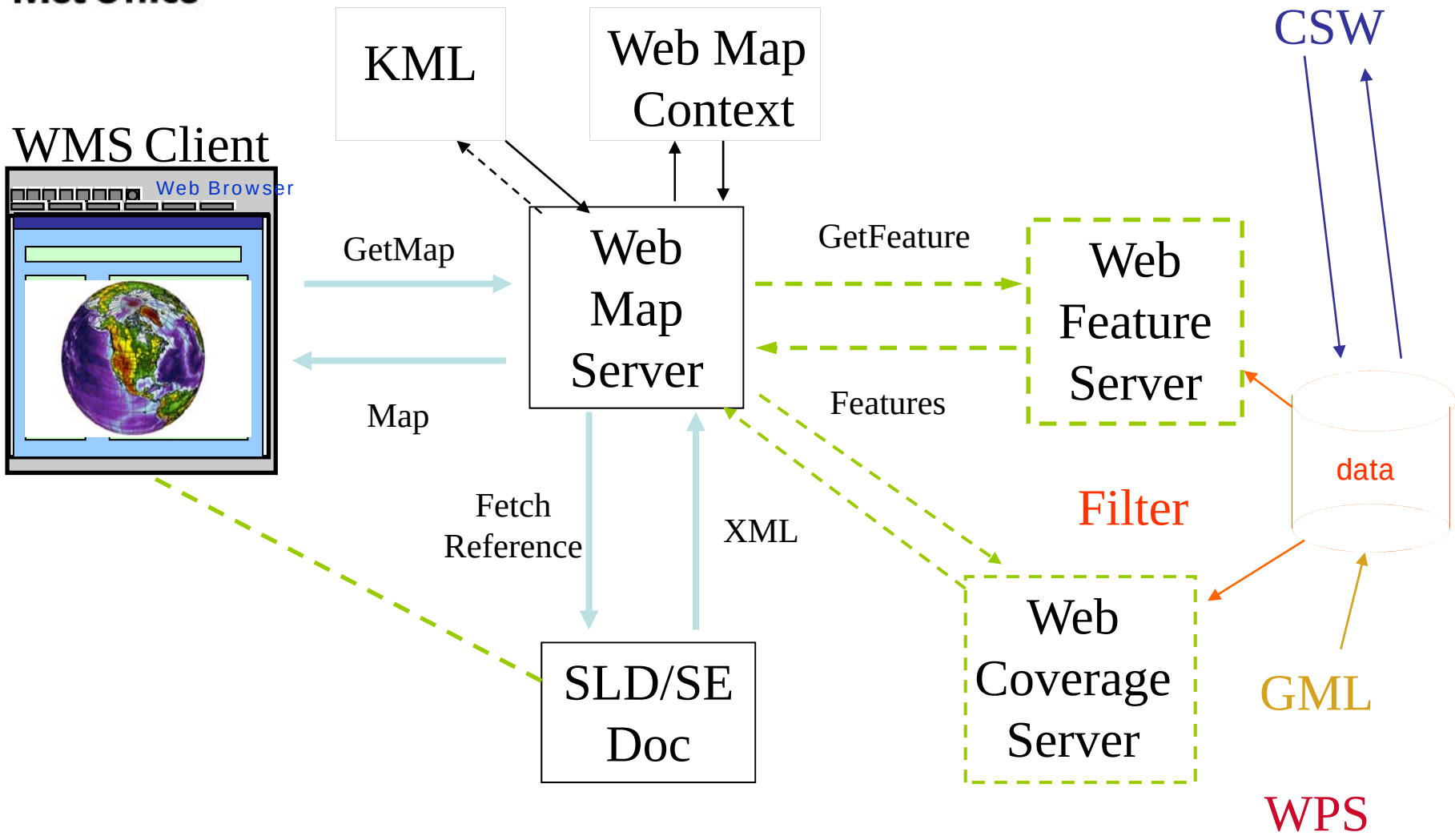
My understanding of an Architecture



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OGC Where?

Public

OGC Portal http://www.opengeospatial.org

Standards http://www.opengeospatial.org/standards

Requests for change
http://www.opengeospatial.org/standards/cr

Private

Pending/discussion

http://www.opengeospatial.org/standards

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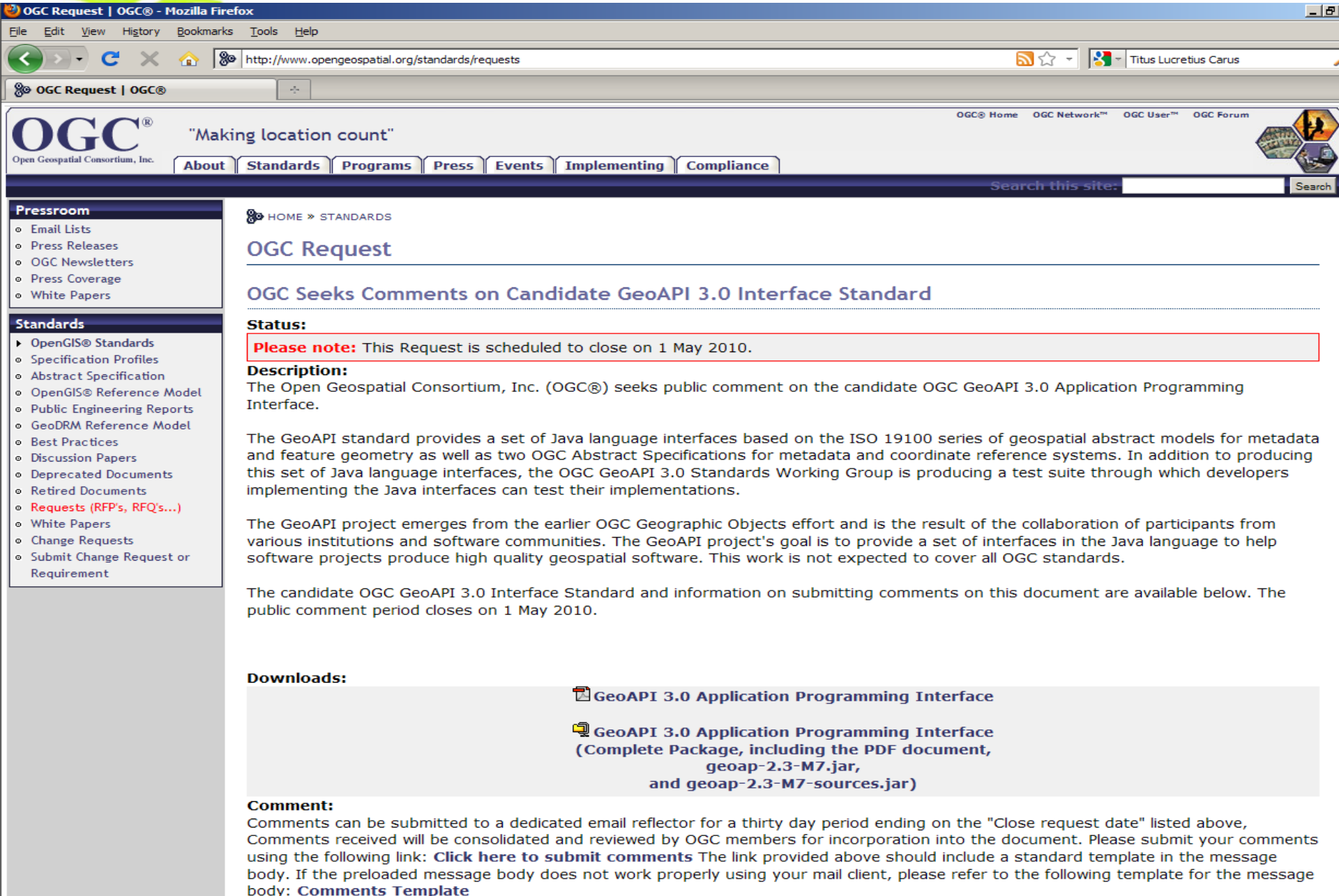
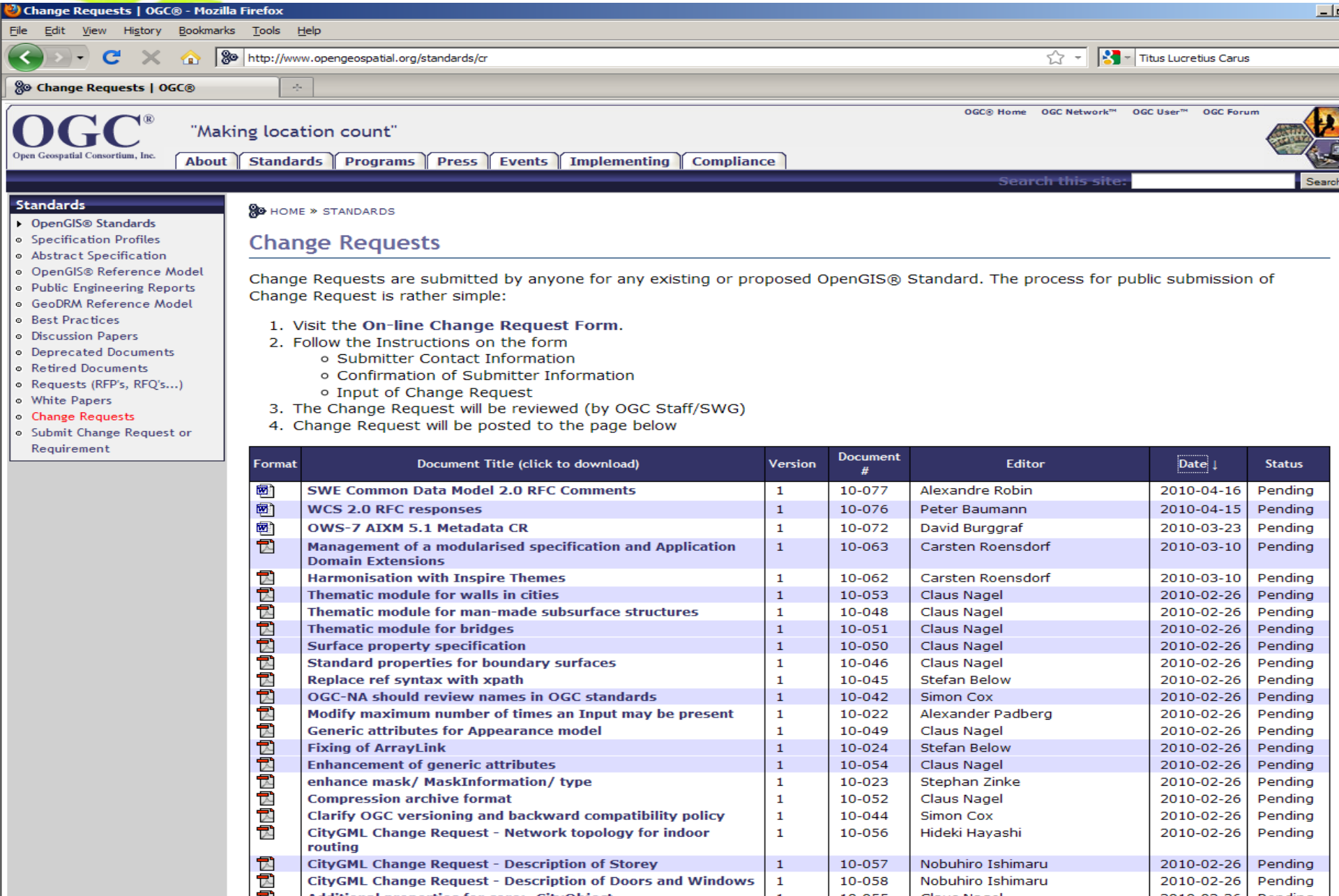
OGC Portal http://www.opengeospatial.org/ogc



OGC Requests for Change



Change Requests | OGC® - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.opengeospatial.org/standards/cr

Titus Lucretius Carus

Change Requests | OGC®

OGC® Home OGC Network™ OGC User™ OGC Forum

OGC® Open Geospatial Consortium, Inc.

"Making location count"

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Standards

- OpenGIS® Standards
- Specification Profiles
- Abstract Specification
- OpenGIS® Reference Model
- Public Engineering Reports
- GeoDRM Reference Model
- Best Practices
- Discussion Papers
- Deprecated Documents
- Retired Documents
- Requests (RFP's, RFQ's...)
- White Papers
- Change Requests
- Submit Change Request or Requirement

HOME » STANDARDS

Change Requests

Change Requests are submitted by anyone for any existing or proposed OpenGIS® Standard. The process for public submission of Change Request is rather simple:

1. Visit the **On-line Change Request Form**.
2. Follow the Instructions on the form
   - Submitter Contact Information
   - Confirmation of Submitter Information
   - Input of Change Request
3. The Change Request will be reviewed (by OGC Staff/SWG)
4. Change Request will be posted to the page below

Format	Document Title (click to download)	Version	Document #	Editor	Date ↓	Status
	SWE Common Data Model 2.0 RFC Comments	1	10-077	Alexandre Robin	2010-04-16	Pending
	WCS 2.0 RFC responses	1	10-076	Peter Baumann	2010-04-15	Pending
	OWS-7 AIXM 5.1 Metadata CR	1	10-072	David Burggraf	2010-03-23	Pending
	Management of a modularised specification and Application Domain Extensions	1	10-063	Carsten Roensdorf	2010-03-10	Pending
	Harmonisation with Inspire Themes	1	10-062	Carsten Roensdorf	2010-03-10	Pending
	Thematic module for walls in cities	1	10-053	Claus Nagel	2010-02-26	Pending
	Thematic module for man-made subsurface structures	1	10-048	Claus Nagel	2010-02-26	Pending
	Thematic module for bridges	1	10-051	Claus Nagel	2010-02-26	Pending
	Surface property specification	1	10-050	Claus Nagel	2010-02-26	Pending
	Standard properties for boundary surfaces	1	10-046	Claus Nagel	2010-02-26	Pending
	Replace ref syntax with xpath	1	10-045	Stefan Below	2010-02-26	Pending
	OGC-NA should review names in OGC standards	1	10-042	Simon Cox	2010-02-26	Pending
	Modify maximum number of times an Input may be present	1	10-022	Alexander Padberg	2010-02-26	Pending
	Generic attributes for Appearance model	1	10-049	Claus Nagel	2010-02-26	Pending
	Fixing of ArrayLink	1	10-024	Stefan Below	2010-02-26	Pending
	Enhancement of generic attributes	1	10-054	Claus Nagel	2010-02-26	Pending
	enhance mask/ MaskInformation/ type	1	10-023	Stephan Zinke	2010-02-26	Pending
	Compression archive format	1	10-052	Claus Nagel	2010-02-26	Pending
	Clarify OGC versioning and backward compatibility policy	1	10-044	Simon Cox	2010-02-26	Pending
	CityGML Change Request - Network topology for indoor routing	1	10-056	Hideki Hayashi	2010-02-26	Pending
	CityGML Change Request - Description of Storey	1	10-057	Nobuhiro Ishimaru	2010-02-26	Pending
	CityGML Change Request - Description of Doors and Windows	1	10-058	Nobuhiro Ishimaru	2010-02-26	Pending

OGS Standards

Issues and Trends

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WMO / Met Ocean DWG Interests

WMS – Currently Proactive

- Time – 4 proposals now documented. IE being planned
- Elevation
- Map Projections
- SLD/SE – Aviation SigWx and standard WMO Plots Use Cases
- Tiling – WMTS now a separate standard – jigsaw edges

Conceptual Modelling - Currently Proactive

- WXXM

WCS/WFS – lots of ‘churn’ - Currently Reactive

- 4D, CRS,
- payload formats,
- vector vs raster

O&M, SWE increasing in importance - Currently Passive

OGC Activity now

WMS1.3 -> 1.4 / 2.0 + WMTS 1.0

WCS 2.0 -> 3.0

CSW 2.0.2 -> 3.0

GML 3.1/3.2 -> 3.3

Lots in O&M, SWE

Lots on validation, controlled vocabularies

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WMO / Met Ocean DWG
NOT Interested ?

GeoXAMCL – security at detailed feature level

CityGML – city and building modelling

OpenLS - Location Services ??

WPS - Web Processing Service ??

Etc

OGC Strategies

Restructuring standards to ‘Core + Extensions’

Moving from KVP Client/Server API to RESTful http based

Service (WFS 1.1)

Keep using Interoperability Experiments and Test Beds

Scenario and Use Case driven

Establishing naming and validation chains

Expanding from US based to European to global

Expanding out of traditional GIS communities

Follow the money!

Some issues for Meteorology

De Facto vs. De Jure standards

Vendor lock-in vs. Ease of implementation/use

RESTful vs. Tightly coupled

Rate of change vs. stability & sustainability

CSW vs. ISO23950+SRU1.2 (WMO standard) vs. OpenSearch

2D map vs. 4D+ hypercube

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Questions & Answers ?

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Challenges for OGC standards in Meteorology

Long history of interoperability at human/paper level
Spatial & Temporal, 2D, 3D, 4+D, constantly changing
Not Mbytes, but GB, TB and PetaBytes.

Irregular time intervals
Timescales: hours,.., seasons,.., centuries, + & -
Multiple Time attributes

'Regular' grids are not always
Continual change of coordinate systems & projecting
Eulerian versus Lagrangian viewpoints

Vertical coordinates
Cross-sections, height-time diagrams, T/φs, etc

Ensembles: probabilistic distributions

Significant 'Objects', features of interest

Met Ocean Domain Working Group

Workshop on the Use of GIS/OGC Standards in Meteorology

- ECMWF, 2008-11-24/26
- Review the use of OGC (Open Geospatial Consortium) standards in geo-sciences in Europe and worldwide
- Promote collaboration between meteorological services in order to define a set of common standards that will enhance interoperability
- Recommended OGC involvement and Met DWG
- Established major theme: Web Map Services interoperability for National Met Services

Meteorology DWG established 2009-03 at OGC Technical Conference, Athens

Met DWG converted to Met Ocean DWG, 2009-09 at OGC TC, Darmstadt

MoU with WMO signed 2009-11

Second Workshop on the Use of GIS/OGC Standards in Meteorology:

- Toulouse, 2009-11-23/25
- Established second major work theme: conceptual modelling

Third Workshop planned, Exeter 2010-11-15/17,

- Propose third major theme: observations

OGC Structures

- Board of Directors (25) , Staff (16) , Members (400)
- Strategic Member Advisory Committee
- OGC Architecture Board (OAB)
- Programmes:
  - Specification
  - Interoperability
  - Outreach & Adoption
- Planning Committee – quarterly, closed
- Technical Committee – quarterly, open conference
- Standing Subcommittees:
  - Documentation,
  - Naming Authority,
  - Compliance Interoperability & Testing Evaluation (CITE)
- SWG Standards Working Groups – ‘vertical’ (24)
  - Short life, for duration of creation/change of standard
- DWG Domain Working Groups – ‘horizontal’ (27)
  - Met Ocean
  - Hydrology
  - Aviation
- Regional and National Forums