

Report on 62nd OGC Technical Committee meeting Boulder, Colorado, USA

Paul Townend
University of Leeds

Brief summary

In terms of security development, not much was discussed at OGC TC 62: the Security WG did not meet, and the only major security-related meetings were the GeoXACML RWG, which looked at modifications to the GeoXACML discussion paper (mostly minor technical clarifications), as well as some conformance class definitions, and the Geo-RM RWG, which primarily focussed on discussion of license encoding. The Architecture WG also had some discussion of interest to the security domain, specifically a discussion on wrapping GET and POST services with SOAP (which will allow the application of GeoRM and other SOAP technologies to existing services without changing them).

Of particular interest was the momentum behind using the REST (REpresentational State Transfer) approach for accessing Geo services and data, as opposed to SOAP/WSDL. There was a lot of interest in REST, and I'll summarise some of the discussion below, as well as some notes from the REST sub-committee meeting.

In terms of workflow, the GPW thread of OWS-5 had some discussion; another discussion of interest was held during the Decision Support WG (about the Conflation Workflow Architecture). Again, more detail is below.

No discussion on geolinking, as far as I'm aware, happened at the meeting....

University presence at OGC-62 was very limited. I attended the University WG on the final day, and was one of only six people who initially attended; the meeting acknowledged that European participation in the OGC is far more prevalent at University level than American (relevant OGC statistics are: 95 university members, 20 of whom are US, and only 4 US people turn up regularly). I did my best to publicise our (University of Leeds / EDINA / NCeSS) involvement with the OGC.

One big announcement was that Google are developing an open source C++ implementation of KML, due in 2008.

Of interest: International journal of geographic information science has special issue on distributed geospatial info processing - topics include grid / cyberinfrastructure, etc.

After the following themed notes, the raw notes I took during the meeting are listed.

(continued)

Interoperable data (may be of some use to e-science/social-science projects):

- EPSG dataset is now available as an online datastore and is available for beta-test. Should be declared operation in about a month or so.
- It is a structured dataset of Coordinate Reference Systems and Coordinate Transformations
- Project undertaken by 15 oil companies.
- <http://www.epsg-registry.org> (although at the time of writing, this website is down...)
- Data stored as GML 3.2.0 entities and is queryable via both a browser user interface or a WRS service interface.
- Geographic coverage of this data is worldwide.
- Should be freely accessible - so may be of interest for NCESS projects...

Workflow:

- The Geo-Processing Workflow (GPW) thread of OWS-5 aims to develop and demonstrate interoperability among geo-processes through service chaining, workflow and web services.
- Emphasis is on the Web Processing Service (WPS) and SOAP bindings.
- Not focussing on much tech development right now - just how to compose things.
- Little bit of catalog work has been done (ebRIM implementation, and new item: Data View... a mashed up view of information. So if you're searching for transportation in a catalog, it'll give you back a rolled-up view of roads, ferry lines, etc. You don't have to search separately)

Conflation Workflow Architecture - Michael Werling

- Objective: develop and demonstrate interoperability among geo-processes through service chaining, workflow and web services with emphasis on Web Processing Service (WPS) and SOAP bindings.
- Architecture based on systems and capabilities from participants and work done in OWS-4.
- Using Conflation as a scenario to determine required technology and service chaining.
- Standards - BPEL, WSDL, SOAP, WFS 1.1.0, HTTP, WPS 1.0.0
- Issues: data provided too small. So although they're working to design an architecture that supports asynchronous processes, their actual workflow for conflation might not require it.
- They have plans to update the process engine to support asynchronous workflows, integrate all services into workflow, and determine what, if any, additional workflows can be created (e.g. re-use Data Reduction workflow from OWS-4)

Web Service standards - REST

- The OGC have formed a REST subcommittee.
- They started by addressing various functions (GetCapabilities etc.) that had to be implemented for REST.
- That was a RPC/Hybrid type thing.
- They've now created SOAP functions based on those things.
- Now they're looking at a RESTful implementation using ROA.
- Why? They're now involved in a group on Earth Observations (blog.geobliki.com)

- They push RSS feeds to manufacture to allow users to see maps of wildfires, etc.
- Eventually, user will get alert saying they've got data, then KML feed overlays on top of Google Earth to see the fire.
- Their problem is that they're dealing with many organisations but have scarce resources (money, time, etc.) and a lot of the people don't know SOAP, etc.
- But they need all the OGC services.
- So: they're claiming REST and SOAP address a different market. SOAP people are big IT infrastructure types, whilst REST is more non-IT people. Very quick, cheap, with most capabilities (not all).
- They want to go to 80% solution with REST in 10% time and 10% cost with low risk.
- Listed the technical differences between REST and SOAP:
- Language is HTML/javascript/ruby, etc. (as opposed to Java, .NET, C++ etc.)
- Using Ruby-on-Rails as the framework example (with SOAP you're more likely to use Websphere etc.).
- WSDL is for SOAP, REST can use WADL using a APP service document
- Loads more schemas with SOAP (165 schemas at the moment for SOAP I think)
- They believe we have a unique opportunity to implement ROA services now.
- Recommend reading the RESTful Web Services by O'Reilly
- Technologies for successful ROA: RESTful resources, GeoRSS, KML, Atom Publishing Protocol (APP), etc.
- RESTful approach for resources is all about collections. So for example
 - GET /recipies (retrieve all available recipies)
 - GET /recipies/{id} (retrieve specific recipe, etc.)
- APP is an application-level protocol for publishing and editing web resources using HTTP and XML 1.0. Supports creation of collections, services and editing.
- Google GData is the tech used for extending the atom feed.
- Opensearch description document (opensearch.org)
- ROA Goal for OGC Services is a consistent user experience across all OGC web services.
- So what OGC services are they wanting to refactor?
 - WfCS, SPS, WPS, WCTS, WFS, WNS, SOS, WCS
- One question is - what is the 20% of the capabilities that you can't do in REST for each of these services? They're not sure right now, but it'll be in the final report.

OGC Architecture WG (Security related discussion)

- Wrapping GET and POST Services with SOAP
Rudiger Gartmann, Institute for Geoinformatics, University of Munster
- Many mainstream WS standards focus on SOAP, but SOAP is not yet established in OGC.
- 1000s of GET and POST installations are up and running
- Existing demand for securing / rights managing / current installations
- In theory in OWS-4, GeoRM-enable SOAP clients and services by applying a proxy pattern
- In practice in OWS-4, no SOAP clients and services available - proxies wrapped GET services and clients (WMS)
- The idea came up to generalise this approach for all existing GET and POST services
- This would allow to build generic proxies being able to wrap and GET and PSOT client and service

- This would allow to apply GeoRM (and other SOAP tech) to existing services without changing them
- This does *not* substitute definition of proper SOAP bindings in the future
- This is *not* a general guideline on how to define SOAP bindings
- it's only about backwards compatability
- So Bernard Snyers proposed a schema to wrap KVP stuff into SOAP
- They can then put GeoRM tokens into the requests, etc.
- Open issues: metadata for Gatekeeper, modifications of Capabilities, what the WSDL should look like, and seperation of SOAP-wrapped and native SOAP services
- Goals: answer open questions, document that properly and prove applicability in OWS-5 and maybe go for a best practice paper to have a common guideline

(raw notes overleaf)

Raw notes from meetings attended

17/09/2007

Open Plenary

OGC Architecture Board is developing a standards document "compliance" checklist. Standards Working Groups (SWGs) can be formed at any time but need at least three members to be "charter" members.

* OGP and CRS registry update

EPSG dataset is now available as an online datastore and is available for beta-test. Should be declared operation in about a month or so.

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Project undertaken by 15 oil companies.

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* OWS-5 - Raj Singh

OWS-5 Update

Sensor Web Enablement (SWE) - Shayne Urbanowski

GPW: Lew Leinenweber

Agile Geography: Raj Singh

CITE: Jen Marcus

GPW: Working on chaining services... workflows, SOAP/WSDL/BPEL.

Not much tech development - just how to compose things

GML Application schemas

Little bit of catalog work (ebRIM implementation, and new item: Data View... a mashed up view of information? So if you're searching for transportation in a catalog, it'll give you back a rolled-up view of roads, ferry lines, etc. You don't have to search separately)

Agile Geography: big thing they're working on is KML. Investigating KML as the digital map. Looking at harmonising with WM-Context (KML serves same purpose, you see).

Looking at enhancements: attributes, metadata, service access.

SWE: Identified area's of interest (AOI) for the test-bed and demo. Establishing geo-referencable workflow clients (IFGI-Browser based JPIP client, WPS, CS/W, etc.)

Working on two design issues to be discussed in the WGs at the TC. GML vs SensorML in WCS, and Common Pub/Sub mechanism.

Identified workflow components

CITE: Building tests for sensor observation and SPS versions. Updating CSW to 2.0.2, WCS goes to 1.1, WFS is getting XLink tests.

GPW - Architecture WG 3-5pm today. Wrapping services in SOAP/WSDL

SWE WG have a REST pub/sub mechanism presentation

* OGC, REST, etc.

Formed a REST subcommittee.

Presentation by Cappelaere

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So he believes we have a unique opportunity to implement ROA services now.

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Technologies for successful ROA: RESTful resources, GeorSS, KML, Atom Publishing Protocol (APP), etc.

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OGC Architecture WG

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Future Recommendations for SOAP/WSDL

Bastian Schaffer, Institute for Geoinformatics, University of Munster

Originates from OWS-5, and the Geoprocessing Workflow Thread
BPEL Engines require (SOAP/)WSDL
They want to target WS-I compliance (four profiles)
 Targetting WS-I Basic Profile 1.2 (only draft now, but MTOM and HTTP Get/Post support)
They want to use WSDL 1.1. References WS-BPEL 2.0, and is compliant with WS-I Basic Profile 1.2.
Also, current tools have limited support for WSDL 2.0
They want to use SOAP 1.2 due to MTOM and also WS-I Basic Profile 1.2
 Message Transmission Optimization Mechanism
One master WSDL vs several WSDLs?
How can security be addressed? Could use WS-Policy (attached to WSDL file) to describe Preconditions

Reference model for the ORCHESTRA Architecture (RM-OA)

Aims to provide Open SOA for improving interoperability for (geo-spatial) applications
Application of OGC Architectural Principles
 systematic documentation according to ISO RM-ODP
 focus on generic specifications
 usage of UML
 etc.
Just a standard overview of ORCHESTRA

Summary of OGC Web Services

Passes

OGC Metadata WG

Mission to promote the use of metadata in data and services
Investigate new methods and technologies for collecting, handling, exchanging and applying data
So the agenda is to go over the metadata standards at work in ISO and a review about ISO

19115-2

ISO 19115

designed to support geographic information, unlike Dublin Core (designed from bottom up)

Established in 2003.

It's very comprehensive and covers all aspects of metadata you need for discovery, etc. of geo information

Fairly good relationship compared to Dublin Core

ISO 19139

Defines geographic metadata XML encoding (gmdXML)

Takes advantage of GML and other XML encodings

Supports clauses defining things like cultural and linguistic support, dataset and aggregate dataset metadata, etc.

ISO TC 211

Standards for imagery and gridded data

ISO 19115-2

Extends ISO 19115 but extends metadata

Defines additional schema for imagery and gridded data

Action will be to comment on 19115-2 when it comes out in a few days time...

18/09/2007

Decision Support WG

Old business: In Paris, one of the actions was a discussion paper on Orchestra Project. A change request for SE and WMS have been done and are in Pending Documents. The guy can't make it to Boulder, but will present in December.

Conflation Workflow Architecture - Michael Werling (?)

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WFS-G RWF Update

WFS Gazetteer allows the use of a set of location instances to be used as a Spatial Reference System. This is a direct implementation of ISO 19112.

Issues: ISO 19112 redefines feature type catalog concept - unclear what to do here, so not part of profile

ISO 19115 does not have a normative GML 3.1 implementation... move to 3.2? OGC publish 3.1 version?
Traversal of hierarchical gazetteers - possible with repeated queries, or possibly defining a function?

GeoRM Domain WG

GeoRM Activities in OWS-5:

License encoding

Licenses - should be able to contain any (non-empty) subset of:

- Access Rights
- Usage rights
- Legal text
- Validity constraints
- Identities of licensee and licensor
- ?

A license is a modular construct

License is a SAML assertions containing statements

In OWS-5, XACML policy / policy set (as defined by OASIS: SAML 2.0 Profile for XACML)

License broker: not yet contracted!

Initial thoughts: maintenance of license templates

Negotiation, not legally binding

License conclusion and creation

Some comment from the audience - they're reinventing some ISO standards.

They want two groups - the main WG operating under the original charter, and the SWG.
Temporary chair is Graham Vowles (Ordnance Survey)

GeoRM Standards WG ad hoc

They want to form a GeoRM Standards Working Group (SWG)

They want to talk about the scope of the work to be done, and start working on the charter (for all intents and purposes, a statement of work)

They aim to have some discussions about the charter for the SWG today, and then develop the charter via email and teleconferencing in order to form the group as soon as possible.

They need to discuss the IPR Policy for the SWG but want to keep it out of the discussion for now
Are there too many topics? You'd have to break it down into multiple standards.

How about a standard for rights-management enabling services?

A standard to enable existing service specifications (WMS, etc.) to be extended to have

RM

Implementation Spec or Abstract Spec? They believe it should be an implementation specification (OGC spec dependent on specific technologies)

Is the standard about access control or rights management? One of the key lessons learnt from previous work is that RM is more than access control

Creating electronic licenses that can move around the system; RM enables some functions which currently are performed by security administrator

So automates transfer of rights

So scope:

- GeoRM enablement of OGC Web Services
- OGC Specification dependent on specific technologies
- Standard will be flexible to enable different ways of sharing information
- Access control and usage control using electronic licenses
- "Core and Extension" or "Base and profile" approach (tbd)
- Advertise restrictions for services (didn't get time to discuss this so removed for

now)

Access control only was discussed but show of hands did not support this.

Encryption is * out of scope *

OGC Mass Market WG

KML

- KML Architecture
- KML feature user requests
- KLM SWG

KLM 2.2 passed as an OGC Best Practice

KML Architecture - Bent Hagemark, Software Engineer, Google Geo

A KML file is a hierarchy of Features

Announcement: in 2008, developing open source implementation of KML, in C++.

Raj Singh then gave a big talk about OWS-5

Final talk is on SLD -> KML mapping

So, things like:

SLD Rule/PolygonSymbolizer to KML NetworkLink/Style/PolyStyle

Then presentation of KML in OGC-Context

Who is using Context? WMS, etc.

Then Carl Reed presented "Geo-tags in HTTP"

Seems to involve doing HTTP Get and attaching a geo-position

WMS RWG

Recommends that the OGC TC approve OpenGIS Tiled WMS Discussion Paper (Keith Pomakis, Cubewerx) for release as an OGC discussion paper.

Moved by Alaine Lapierre, and seconded by Arnold...

Some dissent about how appropriate this is, so it's not being proposed as a best practice paper.

Next version of WMS is 1.3.3 and they'll try to address URL notation for the CRS stuff, and deal with a few change requests (CRs)

19/09/2007

GML RWG

Merging two change requests (CRs) into one

Quite technical: revision lets you have arbitrary spacing in Grids via offset vectors

Motion: That the GML WG endorses CR 07-112 (based on discussions from previous TC meetings) as an implementation of ISO 19123 - CV_ReferenceableGrid in GML and recommends its release as a public change request

OWS-5: Modelling coverage functions in application schemas

Background: ISO 19109 - rules for application schemas does not cover coverages as ISO 19123 was developed later.

For example: a grid-based elevation model. For simplicity, assuming elevation values are discrete.

So discusses several approaches to implementing coverage functions in GML

GML Status / Roadmap discussion:

ISO 19136:2007 was published by ISO on August 23

GML 3.2.1 was adopted by OGC as an Implementation on July 27 and should be published on the OGC website soon

The first change request has been submitted; more will be submitted in the future

Other OGC specifications should be updated to GML 3.2.1 aka ISO 19136:2007 to align with the baseline.

Interpolation of curves (new item)

(David Burggraf)

Wants clarification on how to interpolate, say, LineString, if you happen to have different srs name values on difference pos elements (which is allowed in GML)

So very technical. How do you draw a LineString, etc.

Integrating Earth Sciences and GIS Data Access via Standards-based Web Services (full day seminar - I attended the first few hours...)

Interoperability day introduction

Fluid earth sciences / OGC discussion / get together
Webcast

Jeremy Tnady - Moving Beyond the RAL Feature Workshop

Some format standards are insufficient as no semantics contained therein

Talking about representing lightning flashes in non-OGC XML document... 1-2 days of flashes made up 2Gb XML document

A DOM XML parser typically needs 4x space to parse a document, so you'd need 8Gb RAM for that.

John Caron

THREDDS Data Server
Unidata's Common Data Model
GML way too complex; ambitious, OGC/ISO models are complex / reality is complex / XML schema a disaster
Google KML is an alternative, but visualisation format, not storage format.

THREDDS is a web service running inside Tomcat or alternative servlet engine.
THREDDS catalog is an XML document delivered over HTTP
Hierarchical listing of online resources
Container for arbitrary search metadata (standard set maps to Dublic Core, GCMD, ADN)
Metadata can be inherited
Design goal: make it easy for data providers

NetCDF subset service - experiment with REST style web service

20/09/2007

University WG

University WG mailing list - I can get on it!
Fairly short session: 6 people (including me) plus chair!
A couple of things they want to cover:

- Increasing University activity
 - Concern: vendor and agency driven
 - Academic representation often sparse
 - Participation in America not as much as the European universities
 - Cyberinfrastructure..
 - They want more bandwidth... talking internet 2 pricing and stuff.. very

US-centric

- 95 university members, 20 in US and only 4 US people turn up regularly
- Feel the Europeans are showing them up ;-)
- Focus WG on cyberinfrastructure?
- Teleconferences

Integrating Ocean Observing Systems - Luis Bermudez

Marine metadata interoperability - building a community
OOSTethys - Oceans Interoperability Experiment
Explore possible enhancements of THREDDS server -os that THREDDS resident data sources might be made available via SOS or WFS
Compare SOS and WFS for ocean data
They want to use standards - OGC, W3C, OASIS
Lessons learned;

- Adopting standards difficult - need experts, but better than reinventing wheel
- Not everyone needs to be an expert in adopted standards
- Create a subgroup to study the standards and to provide best adopting mechanisms

mechanisms

- Involve the publisher of standards as much as possible
- Two wishes: seek a more clear integrated roadmap with other groups
- Would like sharing system designs, source code and vocabularies with similar projects

projects

- Trade off between SOS and WFS

WFS is very general - not one single way to encode time series data. So they're looking at different implementation
In an SOS that would be very straightforward.

OGC-Interoperability Institute - David Arctur, President and CTO

Research agenda and programme:

Why are they doing it?

Lot of competing issues that people aren't coping with - social impacts of science and technology changes, population/urbanisation going up, etc.

They don't really understand how this is going to play out

Purpose: to create an organisation that can influence the development of institutions and policy to enable the widespread use of geospatial information for societal benefit AND to promote the development of a well-defined, coherent, rigorous and persistent methodology and architecture driven by the values and discipline of the research community.

Spin-off company from OGC. Being incubated by OGC (sharing staff, etc.) at moment. They're not a membership organisation.

OGC: keeps up with IT standards, etc. But OGC-II are trying to establish an overarching architecture for what gets done. A unifying information architecture, informed by academic rigour, which governs the essential use of spatial information across the world's information infrastructure.

They really want to engage the university community in the OGC itself.

Foster greater interoperability and processes for scientific SDIs

Support development of government-focused regional, state, national and global spatial data infrastructures (SDIs) particularly to support emergency preparedness, response and mitigation.

One focus is to promote GEOSS (Global Earth Observation System of Systems) and harmonisation of spatio-temporal information.

Nurture knowledge transfer and education in the importance and means of improving interoperability.

Interoperability is not just about technology and best practices - it's about the intellectual perspective each group or individual brings to any project, and how we frame our cognitive needs and expressions. They suggest that the science of interoperability requires integrative study of these fields of inquiry.

Other key research areas: centralised versus federated data stores and workflows.

Security, privacy and rights management

Custodial practices: when to allow data to be shared and published, maintaining persistent infrastructure, managing permanent archival storage and retrieval.

Looking for opportunities to do workshops and so on.

Scientists who collect large amounts of data automatically are usually open to sharing the data, subject to licensing to royalty issues. Scientists who work very hard to collect relatively smaller amounts of data are often unwilling or uninterested in sharing their data. Need to see the value in applying standard metadata, etc.

Call: informal science education (ISE), most commonly awarded to university-museum teams.

Approximately 50 awards totaling \$25 million are expected.

International journal of geographic information science has special issue on distributed geospatial info processing - topics include grid / cyberinfrastrucutre, etc.

public: www.ogcii.org

restricted-access: portal.ogcii.org

REST SC

REST sub-committee - blank slate. No agenda.

What is the role of the REST SC?

Look at REST and ROA and do several things

- define what the OGC means by these

- how to package guidance going forward to better specify our standards so they work in various implementation environments (including REST)

So how do we define REST?

- "Keep simple things simple and make complex things possible"

- RM-ODP approach: how ROA/resources fit into the ORM

- With traditional WS, simple things become very complicated.

 - Someone says REST is loose - like doing things with an HTTP GET

 - Someone else disagrees - we should codify RESTfull architecture to do the things we want to do.

 - Perhaps use definition as specified in the book (O'Reilly RESTful services book)

What are the OGC resources

- SOA is a subset of ROA

- Need to define the resources

- CISC/RISC analogy

Perhaps take the big 3 W*S interfaces and look at the mappings to REST/ROA and see what the issues are...

 - (WCS, WMS, WFS)

Have to consider compatibility with SOAP/WSDL and potentially other patterns.

Signed up a load of people to implement RESTful versions of WMS, WFS/WFS-T, WCS, SOS, WFcS (what is RESTful about executing a workflow?)