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# Closing Plenary

109th OGC Technical Committee

Charlotte, NC USA

Scott Simmons

13 December 2018

# Agenda

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- Thanks to Sponsors and Hosts
- Quorum confirmation
- Presentations
  - Geospatial Data Provenance: James Gambale
- TC Member presentations
  - PipelineML: John Tisdale
  - OGC Web Services Security Standard and Data-Centric Security: Andreas Matheus
  - MetOcean Workshop summary: Steve Olson
- TC Motions
  - GeoPackage Related Tables Extension: Jeff Yutzler
  - Features and Geometries: John Herring
  - QoSE DWG report and motions
- OGC e-Learning initiative: Gobe Hobona
- Upcoming TC Meetings
- TC Chair announcements and motions
- Working Group reports with motions: Z to 3
- “Important Things” discussion



# Thanks to our sponsor and host

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# Thanks to OGC staff

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- Greg Buehler
- Gobe Hobona
- Mark Reichardt
- George Percivall
- Trevor Taylor
- Denise McKenzie
- Luis Bermudez
- Terry Idol
- Lew Leinenweber



James Gambale

# Geospatial Data Provenance



# TC Member Presentations



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# PipelineML SWG

109th OGC Technical Committee

Charlotte, NC USA

John Tisdale and Jan Stuckens

13 December 2018

# Does PipelineML Compete with PODS?



- No more than cars compete with gas!
- PipelineML and PODS work together harmoniously.
- PODS is a relational database model upon which vendors build asset management operational systems.
- PipelineML is a GML Application Schema used to take point-in-time snapshots of asset information and share it across disparate platforms, systems, and devices.
- If someone were using software built on PODS and wanted to select a section of pipe for remediation, PipelineML would be the perfect way to share the asset and location information with a vendor as part of a rehabilitation dig package.

# Unique Modeling Requirements

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- Unique operating characteristics of pipeline industry
  - Highly volatile oil and gas product
  - High pressures (gas)
  - Difficult to access underground infrastructure
- Major concerns
  - Assess and mitigate risks to public, property, and environment
  - The consequences of an event on an oil and gas pipeline system tend to be more severe than with other utility infrastructures
- Modeling requirements
  - Precise identification of components, attributes, and weld locations
  - Data structure mimics pipeline component structure

# How We Defined Our Candidate Standard



- Narrow scope based on two critical business use cases facing pipeline industry:
  - 1. New construction survey data interchange**
  - 2. Pipeline rehabilitation survey data interchange**
- Capture accurate information while pipeline components are uncovered/exposed (beginning of lifecycle)
- Address most critical interchange needs of industry
- Design a modularized schema model
- Avoiding unnecessary overlap with other OGC standards efforts



# Use Case Categorization



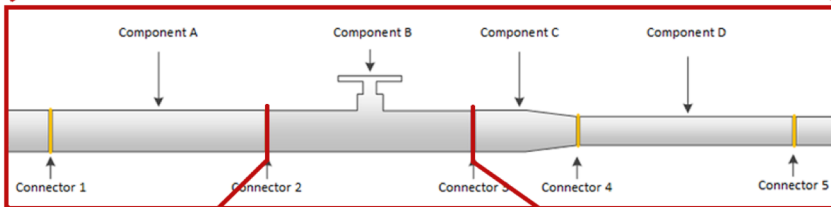
Three broad categories:



## Centerline Use Cases

Work toward harmonization with other OGC infrastructure work groups.

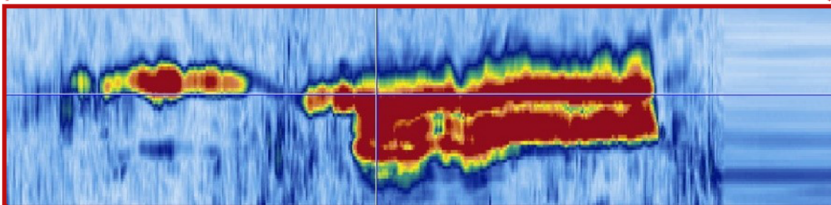
**Out of Scope**



## Component Use Cases

Specific needs of pipeline industry require definition of components schema.

**In Scope for 1.0**



## Anomaly Use Cases

Specific needs of pipeline industry require definition of anomalies schema.

**Future Extension**

# How We Defined Our Candidate Standard

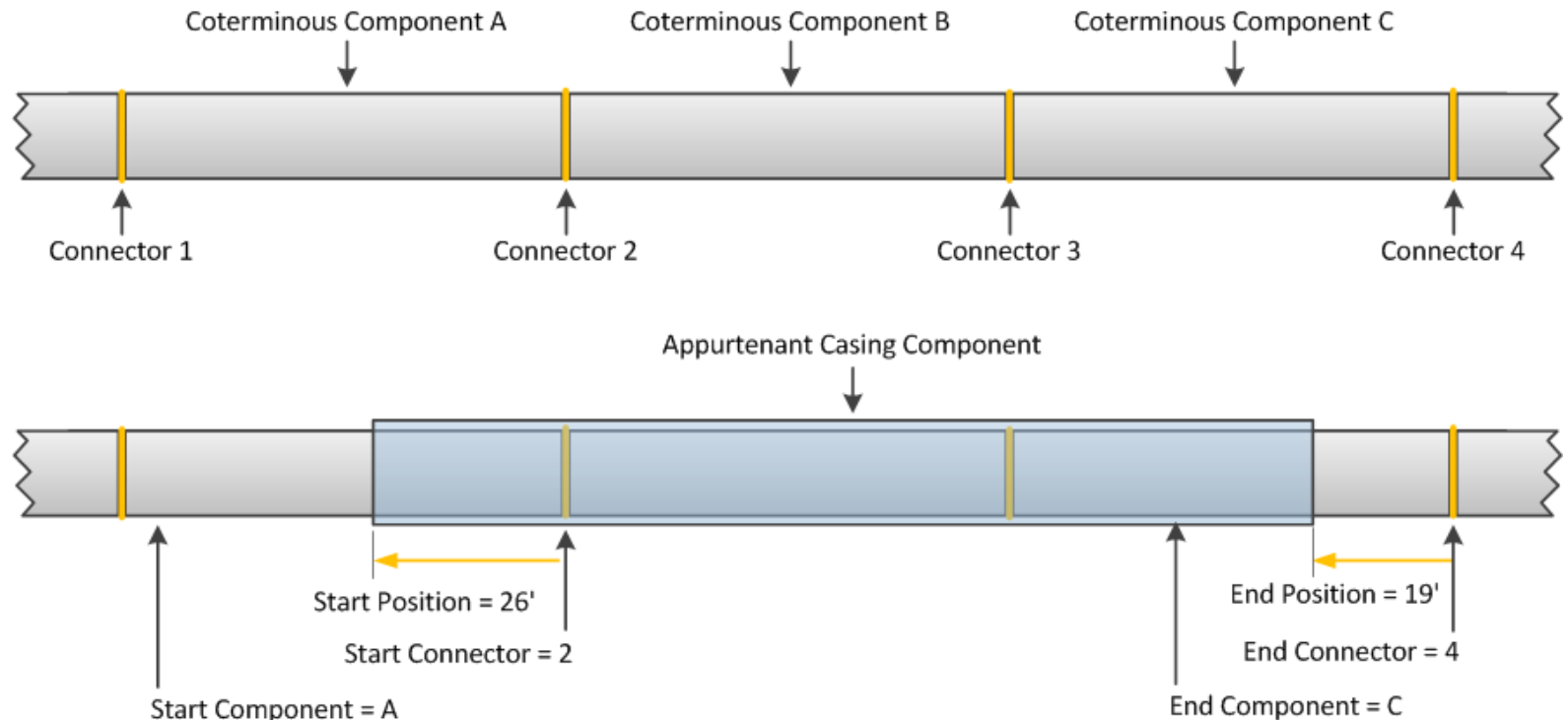


- We created detailed set of realistic sample pipeline data using non-proprietary public information:
  - Facilitate joint SWG member discussion, design, and prototyping
- Rapid lifecycle prototyping:
  - Prototyped data exports from this sample database
  - Used this information to inform our UML model design
  - Converted Sparx UML model to schema using ShapeChange (thanks to Johannes Echterhoff for technical assistance)
  - Validated sample data exports against schema and analyzed delta points
  - Redesigned our UML model and our data export routines
  - Rinse and repeat - 54 major lifecycle revisions, hundreds of minor revisions over 4 year period

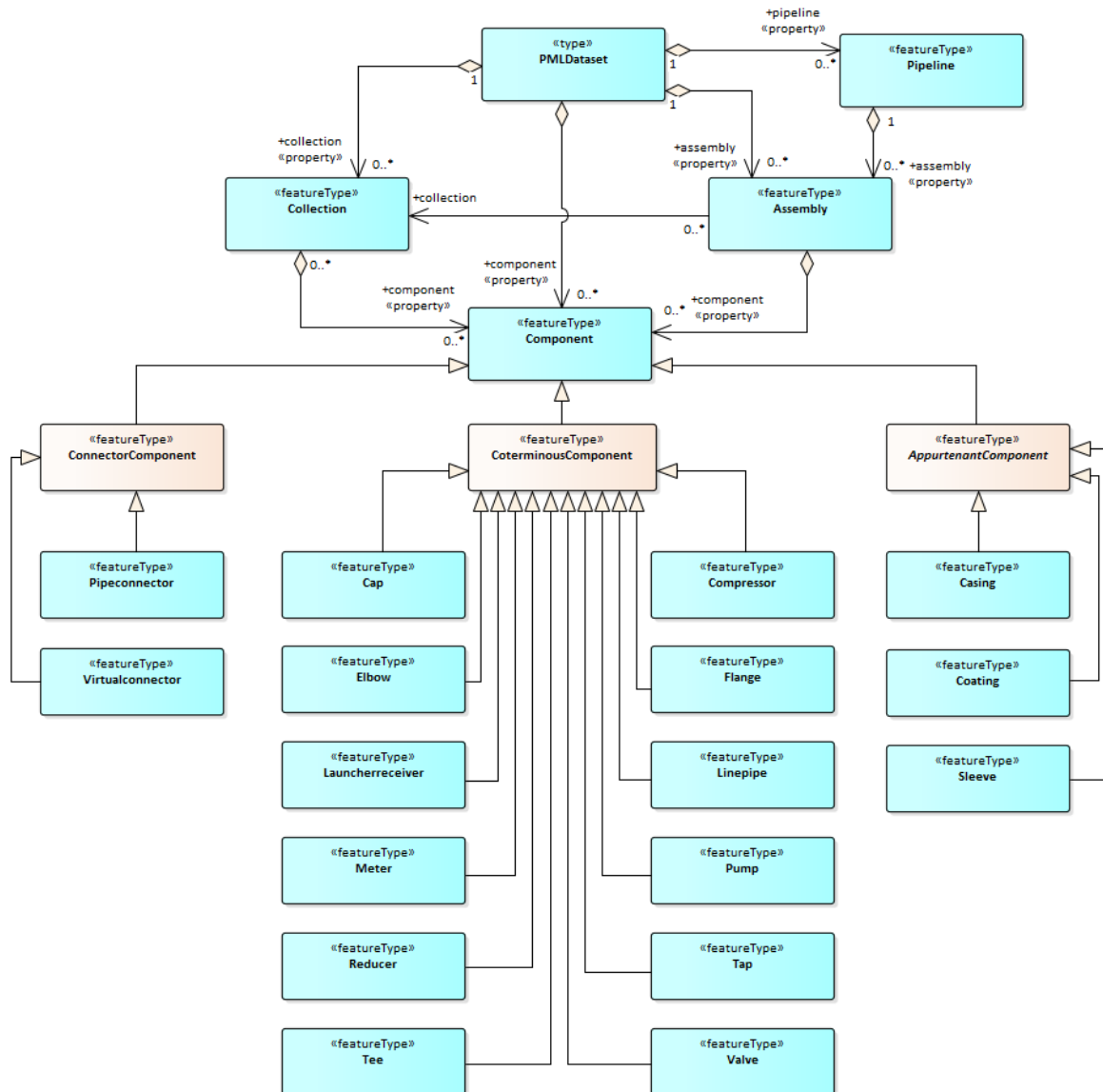
# 3 Major Feature Classes



1. Coterminal Components
2. Connector Components
3. Appurtenant Components



# PipelineML UML Model





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# **OGC Web Services Security Standard and Data-Centric Security**

109th OGC Technical Committee

Charlotte, NC USA

Andreas Matheus

13 December 2018

# Data-Centric Security



**Are you in  
data-centric  
business?**

**Then you need data-  
centric security!**

**It's an approach to fit  
the protection measures  
to the use of the assets – the data**

# Data-Centric Security

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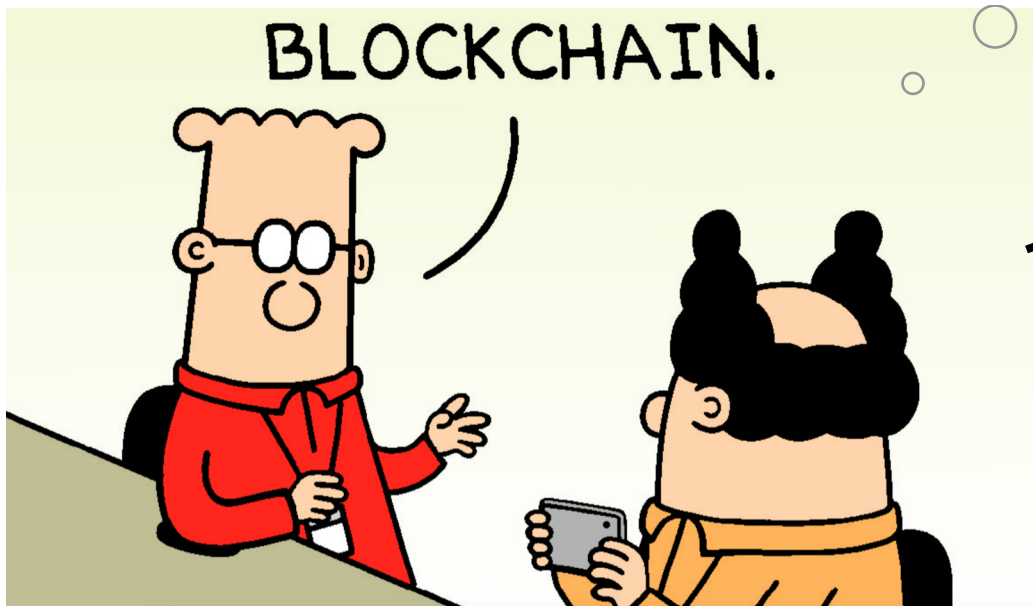
- Perhaps daring questions that need to be answered:
  - Where is all the data that needs to be protected?\*
  - Who is accessing data with what applications?\*
  - Does current access and data use adhere to regulations?\*
  - Are data protections appropriate, and is data risk remaining at acceptable levels?\*
- And also since May 25th, 2018:
  - GDPR - What's about the purpose of personal data collection, storage and processing?

\*: [https://www.informatica.com/content/dam/informatica-com/global/amer/us/collateral/white-paper/data-centric-security\\_white-paper\\_3429en.pdf](https://www.informatica.com/content/dam/informatica-com/global/amer/us/collateral/white-paper/data-centric-security_white-paper_3429en.pdf)

# Blockchain and Data-Centric Security?



**What about  
PoW, PoS, DPoS,  
PoA, PoWeight,  
BZT, DAGs, ...?**



source: <https://www.coindesk.com/dilbert-comic-strips-lampoon-blockchain-and-initial-coin-offerings>



# Use of Encryption



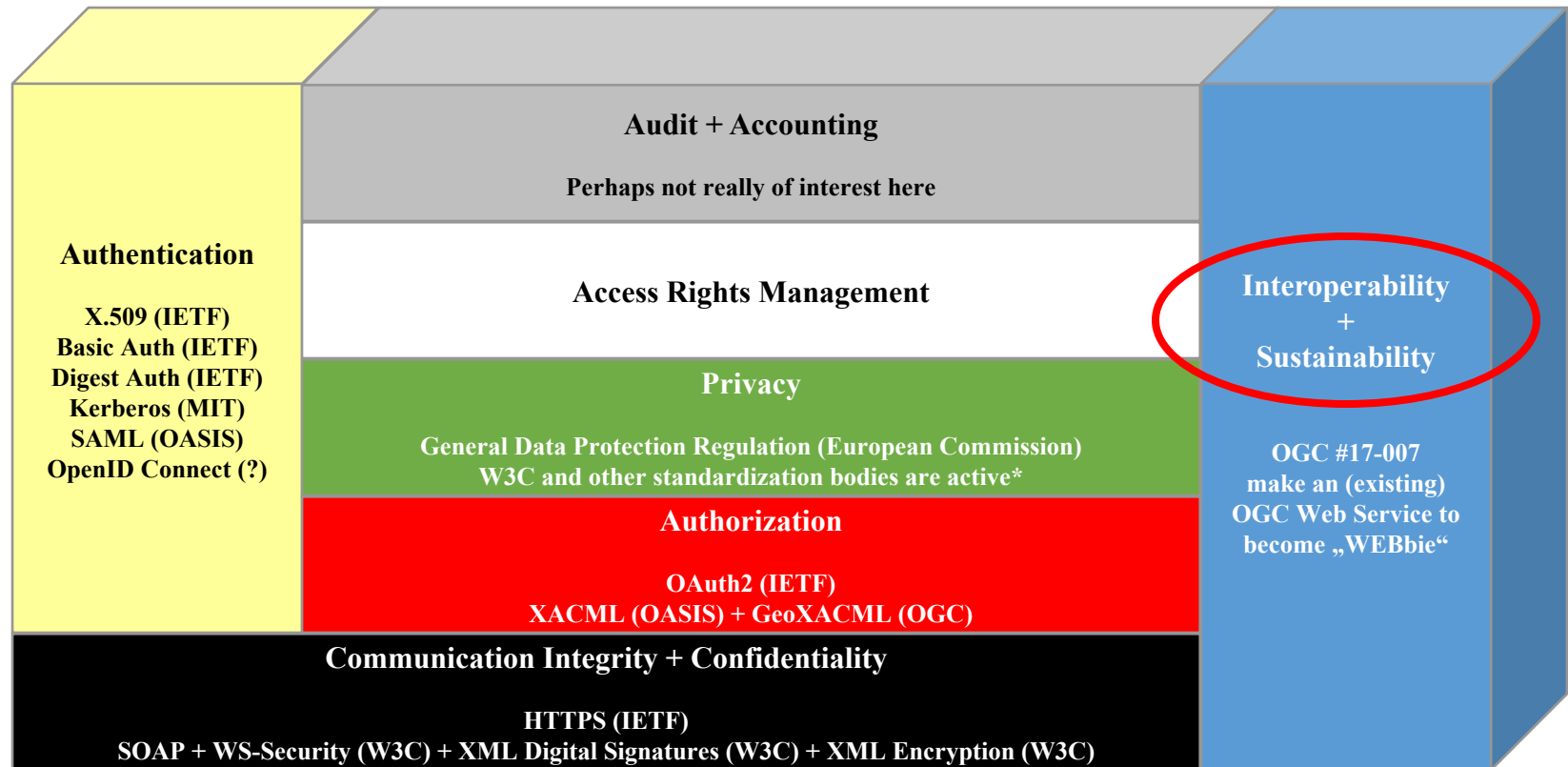
**Encryption does make your data assets save;  
independent from the computing environment and  
context but implies a proper key management.**

**Just applying encryption  
doesn't make a weak  
system safe – you also  
need to think about the  
back door!**

**Security is much more  
than encryption.**



# Data Centric Security - Building Blocks

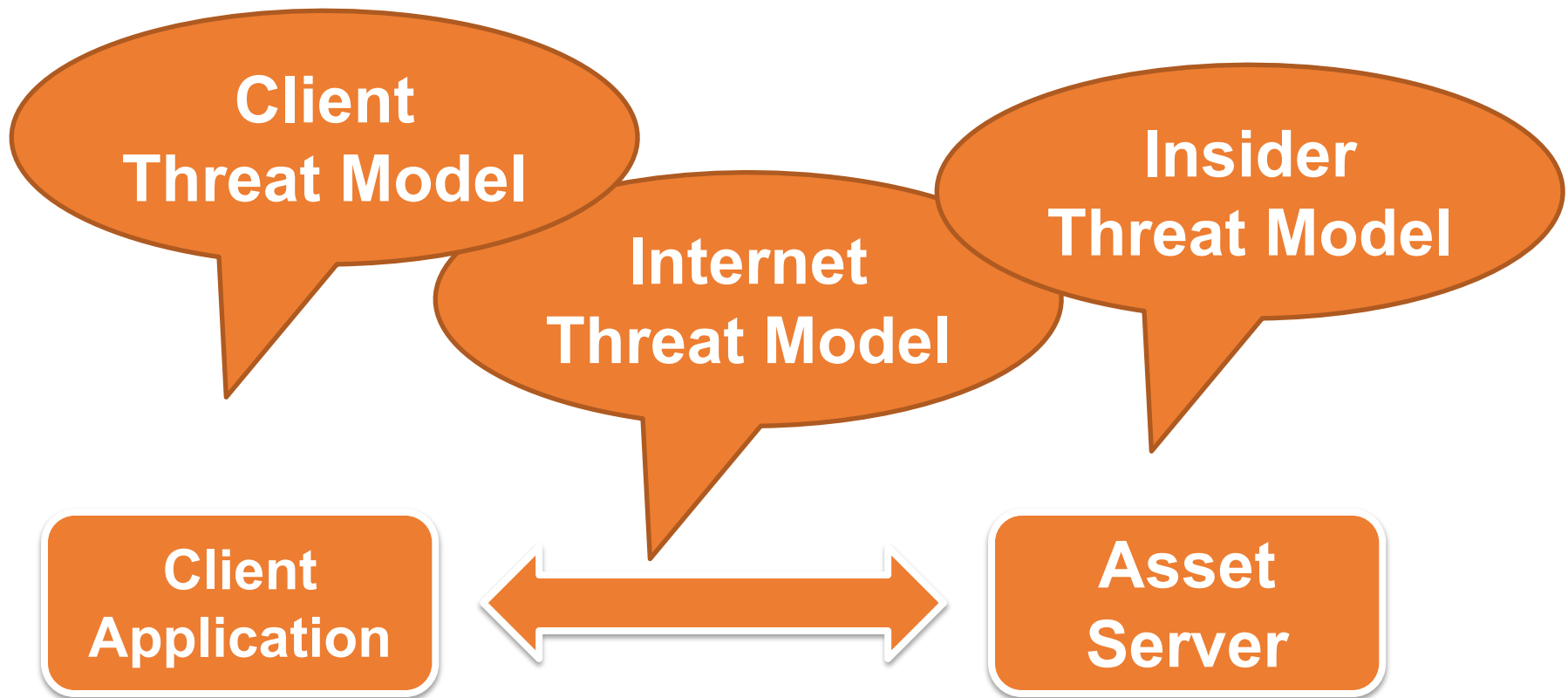


\*: <https://www.w3.org/Privacy/permissions-ws-2018/cfp.html>

# The Influence of the Threat Models



**Calculate the appropriate assurance level requires to  
also consider the threat model...**



# OGC Standards and Data-Centric Security



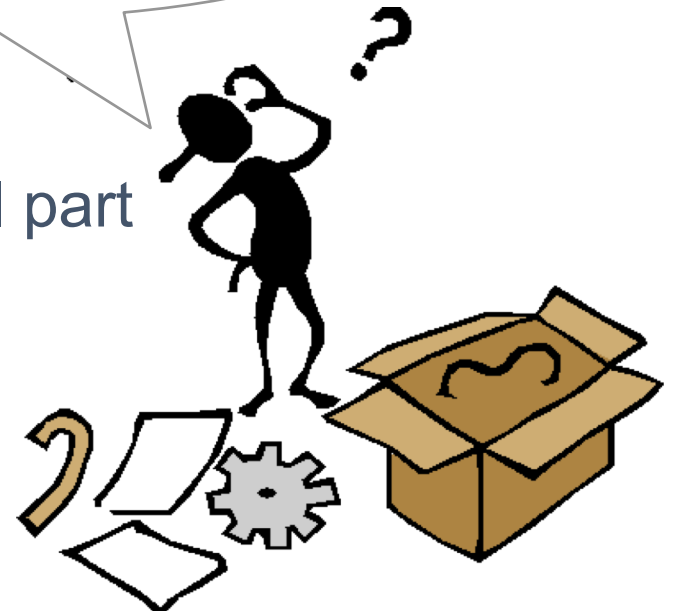
**With applying the recently approved  
OGC Web Services Security Standard  
#17-007  
you are able to  
declare data protection controls  
for establishing a GDPR compliant  
Data-Centric security solution by  
maintaining existing interoperability  
for systems with already deployed  
OGC Web Services**

# OGC Web Services Security Standard



- When you need to ensure interoperability with OGC Web Services implementing assurance controls?
  - Apply the “007” standard = OGC Web Services Security Standard
  - Have your service instance service HTTPS endpoints and return 007-compliant Capabilities
- For the auditing part
  - Authentication
- For the data controls / access control part
  - Authorization
- For the use of security with SOAP
  - WS-Security Policy

**eager to hear  
more?**



# The Motivation and a Short History



- Studying the OGC Web Services Standards unveiled
  - NO support to use HTTP**S**
  - If you would host an OGC Web Service with https:// and there is no interoperability – e.g. with the client application => **bad luck**
- OGC Web Services Security Standard (OGC #17-007) fixes that shortcoming with https://
- Work on this topic started in OGC Testbed #11, was continued in #12, #13 and finally #14.
  - [OGC® Testbed 11 Engineering Report: Implementing Common Security Across the OGC Suite of Service Standards](#)
  - [Testbed-12 OWS Common Security Extension ER](#)
  - [OGC Testbed-13: Security Engineering Report](#)
  - OGC Testbed-14: Secure Client Engineering Report

# The Basic Principle for being Compliant



- Compliance can be achieved for each service operation
- If you host an OGC Web Service entirely (all operations) on **https://** => there is nothing else you need to do. The service instance is automatically compliant with #17-007 REQUIREMENT: The service Capabilities shall list all service operations with protocol scheme https

```
<GetCapabilities>
  <Format>application/vnd.ogc.wms_xml</Format>
  <Format>text/xml</Format>
  <DCPType>
    <HTTP>
      <Get>
        <OnlineResource xmlns:xlink="http://www.w3.org/1999/xlink" xlink:type="simple"
          xlink:href="https://myservice/geoserver/wms?SERVICE=WMS&"; />
      </Get>
      <Post>
        <OnlineResource xmlns:xlink="http://www.w3.org/1999/xlink" xlink:type="simple"
          xlink:href="https://myservice/geoserver/wms?SERVICE=WMS&"; />
      </Post>
    </HTTP>
  </DCPType>
</GetCapabilities>
```

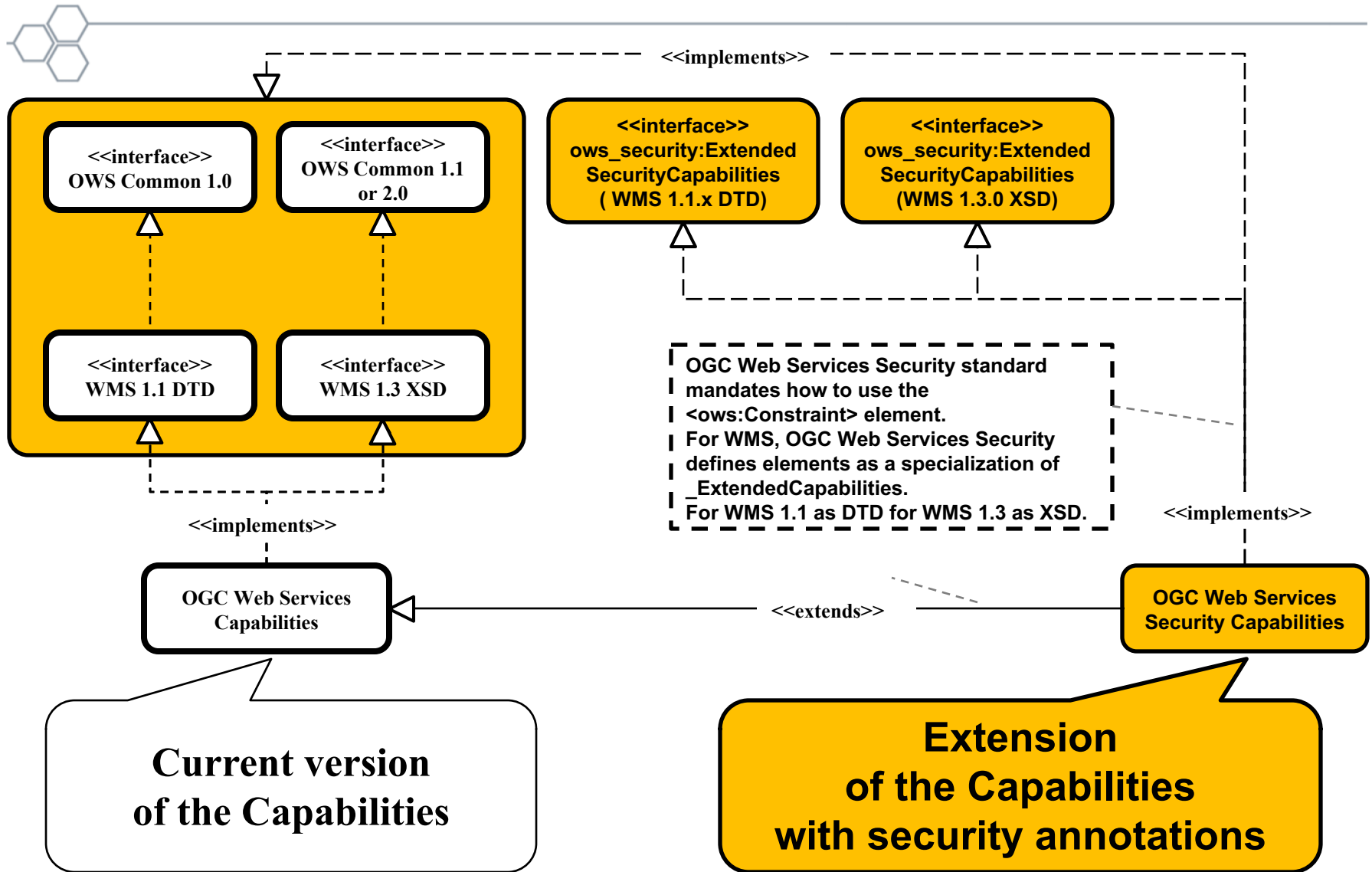
# The Advanced Compliance Options



- In addition to HTTPS ... any OGC Web Service can declare existence of Assurance Controls and security features in the Capabilities
  - Use of existing <ows:Constraint> element ensures backwards compatibility
- **Purpose of Assurance Controls** is typically to manage access to the services' operation
  - Authentication / Authorization
- **Purpose of Security Features** is to support modern Web-Applications and security to be used with existing OWS
  - CORS (Cross Origin Resource Sharing)
  - Overwrite OWS Exception Handling by returning HTTP status codes to support the use of modern Web security libraries



# Idea of a Security Extension to Capabilities



# The Authentication CodeList



- To ensure interoperability when expressing existence of authentication controls...
- ... OGC hosts an authoritative list of codes for authentication and their normative meaning
  - OGC is the maintainer for the authentication codelist and a resolver
  - However, you could also establish your own resolver
- Use URN from individual code entry for <ows:Constraint> name attribute (see previous example)
  - Use of URN is meant for comparison at runtime – NOT for lookup of meaning
  - Use the resolver to lookup the meaning of an authentication code
- Additional codes can be requested via Change Request to the OWS Common – Security SWG

# Advanced Usage Example (1/3)



- You have an OGC Web Map Service hosted on HTTPS with OAuth2 Bearer Access Token for GetMap
  - <https://ows.service.com/geoserver>
- You want this service to be used by a Web-Mapping application that is **not** hosted in your domain, e.g.
  - <https://apps.provider.de/web-mapping-client>
- With OWS standards only, which issues are you facing?
  - Issue #1: No HTTPS
  - Issue #2: No support to use OAuth2 Bearer tokens
  - Issue #3: OAuth2 mandates to use HTTP status codes in error cases:
    - E.g. HTTP 401 for requests with **no** or **invalid** access token
    - E.g. HTTP 400 + JSON response body explaining the error
  - Issue #4: JavaScript requests from client to service are cross domain

# Advanced Usage Example (2/3)



- How would you need to apply OGC Web Services Security?
  - Issue #1: Service becomes compliant by hosting **all** operations on HTTPS
    - Nothing to put into Capabilities
  - Issue #2: Authentication - Tell the client that the GetMap operation requires OAuth2 Bearer Access Token
    - Put `<ows:Constraint name="urn:ogc:def:security:1.0:rc:authentication">` element inside the operation GetMap
  - Issue #3: Service must overwrite the regular OWS behavior and not return XML Exceptions but HTTP status codes
    - Put `<ows:Constraint name="urn:ogc:def:security:1.0:rc:http-exception-handling">` element inside the operation GetMap
  - Issue #4: Service supports W3C CORS
    - Put `<ows:Constraint name="urn:ogc:def:security:1.0:rc:cors">` element inside the operation GetMap

# Advanced Usage Example (3/3)



- Capabilities snippet for the GetMap operation

```
<ows:Operation xmlns:ows="http://www.opengis.net/ows/1.1" name="GetMap">
  <ows:DCP>
    <ows:HTTP>
      <ows:Get xmlns:xlink="http://www.w3.org/1999/xlink"
        xlink:href="https://ows.service.com/geoserver/wms?SERVICE=WMS&">
        <ows:Constraint name="urn:ogc:def:security:1.0:rc:authentication">
          <ows:ValuesReference
            reference="urn:ogc:def:security:authentication:ietf:6750:Bearer"/>
          </ows:Constraint>
          <ows:Constraint name="urn:ogc:def:security:1.0:rc:cors">
            <ows:NoValues/>
          </ows:Constraint>
          <ows:Constraint name="urn:ogc:def:security:1.0:rc:http-exception-handling">
            <ows:NoValues/>
          </ows:Constraint>
        </ows:Get>
      </ows:HTTP>
    </ows:DCP>
  </ows:Operation>
```

Issue #1 points to the `xlink:href` attribute.

Issue #2 points to the `xlink:href` attribute.

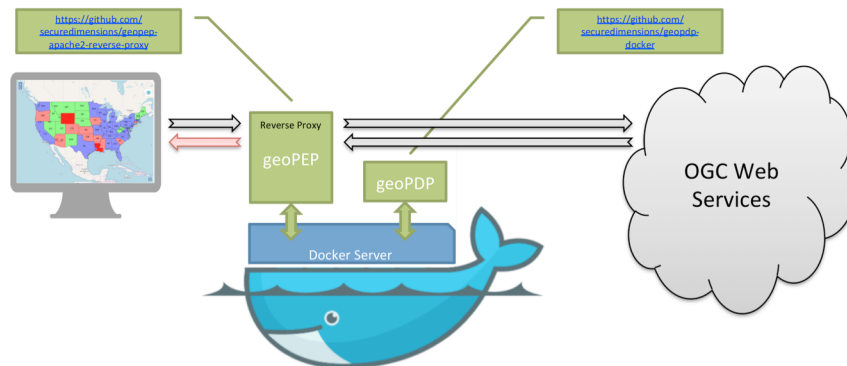
Issue #3 points to the `urn:ogc:def:security:1.0:rc:cors` constraint.

Issue #4 points to the `urn:ogc:def:security:1.0:rc:http-exception-handling` constraint.

# OGC Web Services Standard Implementation



- Secure Dimensions implemented the Secure Proxy Pattern approach to a default Geoserver to demonstrate #17-007
  - <https://ogc.secure-dimensions.com/geoserver/web>
  - Capabilities return information about **Authentication, Authorization, Exception Handling** according to OGC Web Services Security
- Web-Mapping application to show dynamic map redaction
  - <https://ogc.secure-dimensions.com/ogc-app>
- A “dockerized” version is available on public Github



<https://github.com/securedimensions/geoep-apache2-reverse-proxy>

<https://github.com/securedimensions/geopdp-docker>

# The Web of Data-Centric Security



**Authen-  
tication**

**Rights  
Mngmt.**

**Encryp-  
tion**

**Audit &  
Accounting**

**Access  
Control**

**Privacy**

**How do the building  
blocks belong / fit  
together?**

# Future Work Challenge







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# MetOcean DWG Group Report


109th OGC Technical Committee

Charlotte, NC USA

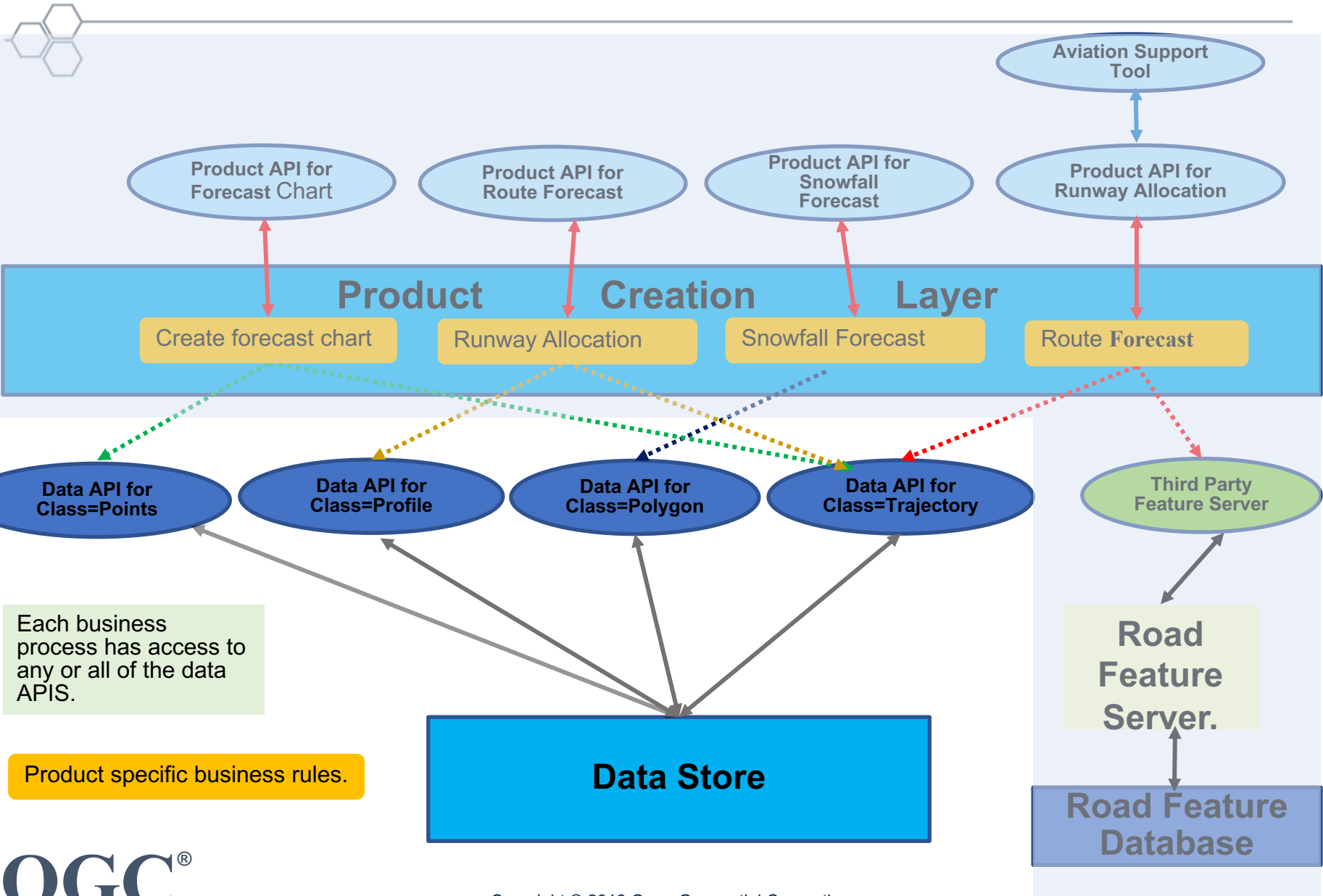
Steve Olson, Chris Little

13 December 2018

# The most important thing for this WG is...

-  MetOcean DWG with OGC held a workshop/hackathon 4-6 Dec 2018.
- Goal of workshop was to lower the barrier for access to global weather, climate and ocean information.
- Agreed framework is to follow the guiding principles of OGC OpenAPI specification and WFS3.0.
- Objectives:
  - Suite of 'user convenience' APIs and data access patterns
  - Wider and more implementations, targetting global usage
  - Continue with API using demonstration/agile approach
  - Development of conformance classes/test suite at same time as the design of the OpenAPI specifications
- Achieved:
  - Agreed on the global vision!
  - Vanilla WFS3.0 client accessing MetOcean metadata resources!

# The relationship between “items” and products.



# MetOcean Extraction Patterns



<b>Point Features</b>	Point	PointCollection	PointTimeSeries	PointCollectionTimeSeries
<b>Profile Features</b>	Profile	ProfileCollection	ProfileTimeSeries	ProfileCollection TimeSeries
<b>Section Features</b>	Section	SectionTime		
<b>Grid Features</b>	Grid	GridLayer	GridLayerTimeSeries	
<b>Polygon Features</b>	Polygon	PolygonCollection	PolygonTimeSeries	
<b>Trajectory Features</b>	2D Trajectory	2D TrajectoryTime	3D Trajectory	3D TrajectoryTime

# Define Conformance Classes for Vendors



Conformance Class Number (Level)	Conformance Class Component Name	Supported Output	Comments
0	Core (x,y, current time)	JSON	What's what? Use CRS 4326
1	Spatial (x,y,z)	TWKB, WKB, WKT, GML, GeoJSON, vendor extras	Where? <b>Required</b>
2	Weather/Ocean parameters		What? <b>Required</b>
3	Temporal	MetOcean, GRIB2, NetCDF	When? <b>Required</b>
4	Measurement	GRIB2, NetCDF	Range? <b>Required</b>
5	Interpolation		How? <b>Optional</b>
6	Return		
7	Vendor Extensions		Up to vendor

# Mapping of conformance classes to geometries



Query Input	Single	Collection	Collection with time	Collection with Pressure Elevation
Point	0 (current time)	0, 1	0, 1, 2	0, 1, 2, 3
Polygon	0, 1	0, 1	0, 1, 2	0, 1, 2, 3
Profile	0	0, 1	0, 1, 2	0, 1, 2, 3
Corridor	x	x	0, 1, 2	0, 1, 2, 3
Trajectory	x	x	0, 1, 2	0, 1, 2, 3

# Activity Summary



- Discussion topics

- Restful APIs
- Conformance classes
- Encodings

- Upcoming deliverables

- Met Ocean API Engineering Report
- OpenAPI specs for Met Ocean
- 3D Portrayal in Pending

- Coordination (ongoing & planned)

- Github repo for API
- Separate repo for implementations
- Major National Met services
- Geospatial developers – OGC, Open source
- NASA (plugfests?)
- WMO

- Future meetings

- weekly
- next TC Meetings
- AMS socializing & advertising

# Key activities

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- WCS 2.1 SWG vote on Met Ocean AP and Extensions
- Met Ocean API !
- Engineering Report
- APIs are progressing!
- Further workshops, dates TBD





# TC Motions



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# **GeoPackage Related Tables Extension (GPKG-RTE)**

109th OGC Technical Committee

Charlotte, NC USA

Jeff Yutzler and/or Tracey Birch

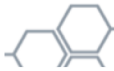
13 December 2018

# Introducing a New GeoPackage Extension



- A proposed extension to the OGC GeoPackage Encoding Standard (**OGC 12-128r15**)
- For associating rows in different tables, “base table” (e.g., features) and “related table”, one of:
  - simple attributes
  - multimedia objects (including but not limited to videos, pictures, and PDF files)
  - other features
- Supports *one-to-many*, *many-to-one*, and *many-to-many* relationships (unlike the GeoPackage *attributes* option)

# GPKG-RTE Design

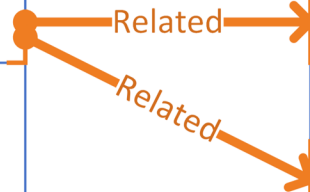


Base Table

(Primary Key)				
PK <sub>1</sub>				

Related Table

(Primary Key)				
PK <sub>2</sub>				
PK <sub>3</sub>				



base_id	related_id
PK <sub>1</sub>	PK <sub>2</sub>
PK <sub>1</sub>	PK <sub>3</sub>

Mapping Table

# GPKG-RTE Timeline



- June 2017 – Compusult briefed a candidate approach to related tables to the GeoPackage SWG
- late 2017 – August 2018: Interoperability Experiment, ER (OGC 17-093r1) published
- July 2018: GeoPackage SWG Motion
- August 2018: OAB Review
- September 2018: Open Comment Period
- October 2018: Comment adjudication
- November 2018: Final SWG Motion
- ***December 2018 – TC Vote***



**We are here**

# Request of an electronic vote



- The GeoPackage SWG recommends that the OGC Technical Committee approve an electronic vote to approve release of [OGC 18-000] “OGC GeoPackage Related Tables Extension” as an OGC Adopted Standard.
  - Pending any final edits and review by OGC staff
  - Add two additional conformance classes for attributes and tiles (additional options that would not break other conformance classes)
  - There was no objection to unanimous consent



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# **GeoPackage SWG Working Group Report**

109th OGC Technical Committee

Charlotte, NC USA

Jeff Yutzler and/or Tracey Birch

13 December 2018

# The most important thing for this WG is...

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The GeoPackage Related Tables Extension  
(18-000) is ready for adoption by the TC.



# Agenda

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- GeoPackage status
- Related Tables Extension
- Vector Tiles Pilot
- CDB
- Marine DWG

# Electronic Vote Request

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- The GeoPackage SWG recommends that the OGC Technical Committee hold an electronic vote to approve release of 18-074 “GeoPackage Vector Tiles Extensions Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent



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# **Features and Geometry replacing Simple Features**

109th OGC Technical Committee

Charlotte, NC USA

John R. Herring

13 December 2018

# History & Status of Simple Features



- Simple Features Revision Working Group Creation
  - RWG Created: September 19, 1997 (OGC 97-035)
  - First Draft: 8 September 1997 (unnumbered document)
  - Participating Companies:
    - Laser-Scan, Informix, Camber, Autometric, Smallworld,
    - Oracle, ESRI, Intergraph (Hexagon), SHL Vision, IBM,
    - Bentley, SNI, Microsoft, Sylvan Ascent, MapInfo
- Standards 1999 (OGC versions) to 2004 (ISO version)
- Current versions in OGC, ISO TC 211 as ISO 19125, and ISO-IEC/JTC1 as SQL/MM: Part 3 Spatial (SF-SQL)
- SQL/MM does most of ISO 19107: Spatial schema
  - Abstract Specification for geometry (new version very soon)
- **GIS implementors defining a basic GIS implementation**

# Requirements Changes



- Model shifts

- Old: Map Model - Euclidean geometry (implicit)
- Now: Earth Model - Ellipsoidal geometry
  - Geodesy, Differential Geometry, Possible Issues on Dynamic Datums
- Old (curve:1, surface:1)
- ISO 19107:2019(8?) (originally 2003)
  - ~ 20 Requirement Classes for Geometry types (same as 2003) (points, line, surfaces, solids)
  - Uses CAD/CAM formula but "variable geometry metrics" (non-Euclidean, geodesy, differential geometry)
  - Topology (?)
- Feature type models
  - Original "Application schemata" consistent with UML "conceptual model"
  - Now data schemata including SQL and NoSQL databases, and Big Data formats (e.g. key-value pairs, dynamic objects models, JSON, YMAL)

# Basic Schema Replacements (part 1)



- Taxonomy  $\approx$  Thesaurus  $\approx$  Controlled Vocabulary ( $\sim$  RDL)
  - Lists of "type names" for features, properties, associations, etc.
- Ontologies = Taxonomies + Constraints. ( $\sim$  RDF/OWL)
- - Application schema. ( $\sim$  UML)
  - e.g. ISO 19109 Rules for application schema
- A single object can subsume any/several "type" and/or any property (semantically consistency)
- Current usage
  - Big Data – Key-Value pairs formats
  - JavaScript Object Notation (JSON)
  - Dynamic Object Systems – just about any OOPL
  - Yet Another Markup Language (YAML)

# Standards



- ISO 25964-1:2011 Information and documentation -- Thesauri and interoperability with other vocabularies –  
Part 1: Thesauri for information retrieval (reconfirmed 2017)
- [NSG Reference Documents](#)
  - Style Guide for Vocabularies in the National System for Geospatial Intelligence v1.0 – 2018-05-16
  - National System for Geospatial Intelligence (NSG) Core Vocabulary (NCV) Standard (Edition 2.0 2018-05-23)
- NSG Codelists Vocabulary
  - NSG Quality Measures Vocabulary
  - NSG Belief Systems Vocabulary
  - NSG Linguistic Entities Vocabulary
  - NSG Physical Quantities Vocabulary
  - NSG Spatiotemporal Reference Systems Vocabulary
  - DoD Installation Geospatial Vocabulary
  - NSG Enterprise Thesaurus (NET)

# Request for an Electronic vote

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- The Simple Features SWG recommends (by email vote) that the OGC Technical Committee approve an electronic vote to approve release of 17-087r13 "Features and Geometries - Part 1 - Feature Models" as an OGC Abstract Specification Topic.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent



# Next Parts

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- Metrics for geometry  
(beginning differential geometry and geodesy)
- Simple geometries  
(line, geodesic, rhumb, polygons, solids)
- and onwards – each geometry type from  
ISO 19107:2019 Spatial schema  
broken in sections of about 40-50 pages.



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# **QoSE DWG Report**

109th OGC Technical Committee

Charlotte, NC USA

Ilkka Rinne, Tom Kralidis

13 December 2018

# The most important thing for this WG is...

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TB14 QoSE thread provided implementation evidence of

- the Quality of Experience assessment criteria & method,
- the Quality of Service extended capabilities declarations with GeoServer,
- QoS performance testing of WMS instances with Jmeter, and
- Visualizing all of these service aspects on a web dashboard.

**We are on the right track**

# Agenda

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- Guy Schumann - Remote Sensing Solutions: Briefing of the T14 QoSE ER
- Continuation for the QoE guidance work
- Addressing QoS / QoE issues in OGC Standards
- Outreach for OGC member organisations: flyer etc.
- Discussion: Possible common topics with the OGC Data Quality DWG

# Activity Summary



- Discussion topics

- TB14 QoSE ER finalized, well done!
- WG is planning to start drafting a Best Practice document on the guidance for assessing the Quality of Experience of the OGC Web Services
- Need to coordinate with other relevant WGs on W\*S QoS declarations.

- Upcoming deliverables

- Motion to approve the release of the TB14 WMS QoSE ER

- Coordination (ongoing and planned)

- Data Quality DWG (identify common issues)
- OWS Common SWG (addressing QoS declarations in W\*S services)

- Future meetings

- 8<sup>th</sup> Jan 2019
- Feb/Mar '19 Singapore?
- June'19 Leuven, Belgium

# Key activities

---



- WG is about to start working on a draft of an OGC Best Practice for assessing the Quality of Experience of running OGC Web Service instances, and guidance for improving their user experience. This work is based on the OGC 17-049 "Ensuring Quality of User Experience with OGC Web Mapping Services - Discussion Paper", and the Testbed 14 QoSE thread results.
- WG will continue working on the QoS metric definitions and QoS declarations leveraging Capabilities extension mechanism targeting also other service types besides WMS (WMTS, WFS2, CSW,...), as suggested in the TB14 Engineering Report. WG Will approach OWS Common SWG to verify the feasibility of the approach.

# Template for Document Approval Motion

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- The QoSE DWG recommends that the OGC Technical Committee approve release of 18-028r2 “OGC Testbed-14 WMS QoSE Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent.
  - 18-028r2 reports the results of the OGC Testbed 14 activities considering application and development of the Quality of Experience assessment criteria defined in the OGC Discussion Paper 17-049, implementation experience of the expected QoS metrics as extended WMS capabilities, and testing & reporting WMS performance with Jmeter.



Meeting Sponsor

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# OGC e-Learning

109th OGC Technical Committee  
Charlotte, NC USA  
13 December 2018



# Introduction

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- OGC is launching an e-Learning program
- Enrolment starts Monday 17<sup>th</sup> December 2018
- Aim: To establish a program that allows individuals to confidently verify their competency in geospatial standards.
- Motivation: None of the existing certifications programs offer dedicated streams on OGC standards or geospatial interoperability.
- OGC e-Learning courses can be found at <http://www.opengeospatial.org/learning>

# OGC Web Map Service (WMS) Course

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- This course offers training on the OGC WMS standard.
- At completion of the course, students will be able to:
  - Describe how web clients and servers interact
  - Explain what a URL is
  - Explain what services, protocols and interfaces are
  - Explain what WMS is
  - Describe what can be done with WMS
  - Understand the main operations of WMS
  - Understand how to issue a GetMap request
  - Demonstrate how to configure an example WMS server

# WMS Course Structure



- There are two main sections in the course
  - Web Map Service (WMS) Learning section which provides learning material
  - The proctored examination
    - Multiple choice
    - Hands-on practical
- Delivery
  - Completely online
  - Monitored by a remote proctor
- Certificate issued after assessment



# Registration

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- The course fee is \$99 USD
- Within the first 12 months of the release of each new examination,
  - each OGC Strategic Member will receive 10 free examination vouchers,
  - each OGC Principal Member will receive 4 free examination vouchers.
- Contact OGC staff ([certification@opengeospatial.org](mailto:certification@opengeospatial.org)) to find out more!



# Upcoming TC Meetings

# Technical / Planning Committee Meetings



Date	Location	Host/Sponsor
10-14 December 2018	Charlotte, NC USA	EPRI
25 Feb - 1 March 2019	Singapore	NUS/SLA/MPA
24-28 June 2019	Leuven, Belgium	KU Leuven
9-13 September 2019	Banff, Canada	University of Calgary
Nov/Dec 2019	Toulouse, France	Airbus
March 2020	Asia	
June 2020	Montreal, Canada	CAE

**Who wants to host or sponsor? We are particularly looking for sponsorship assistance (\$,€,£...) for upcoming meetings.**

# OGC Technical Committee Meeting February 2019

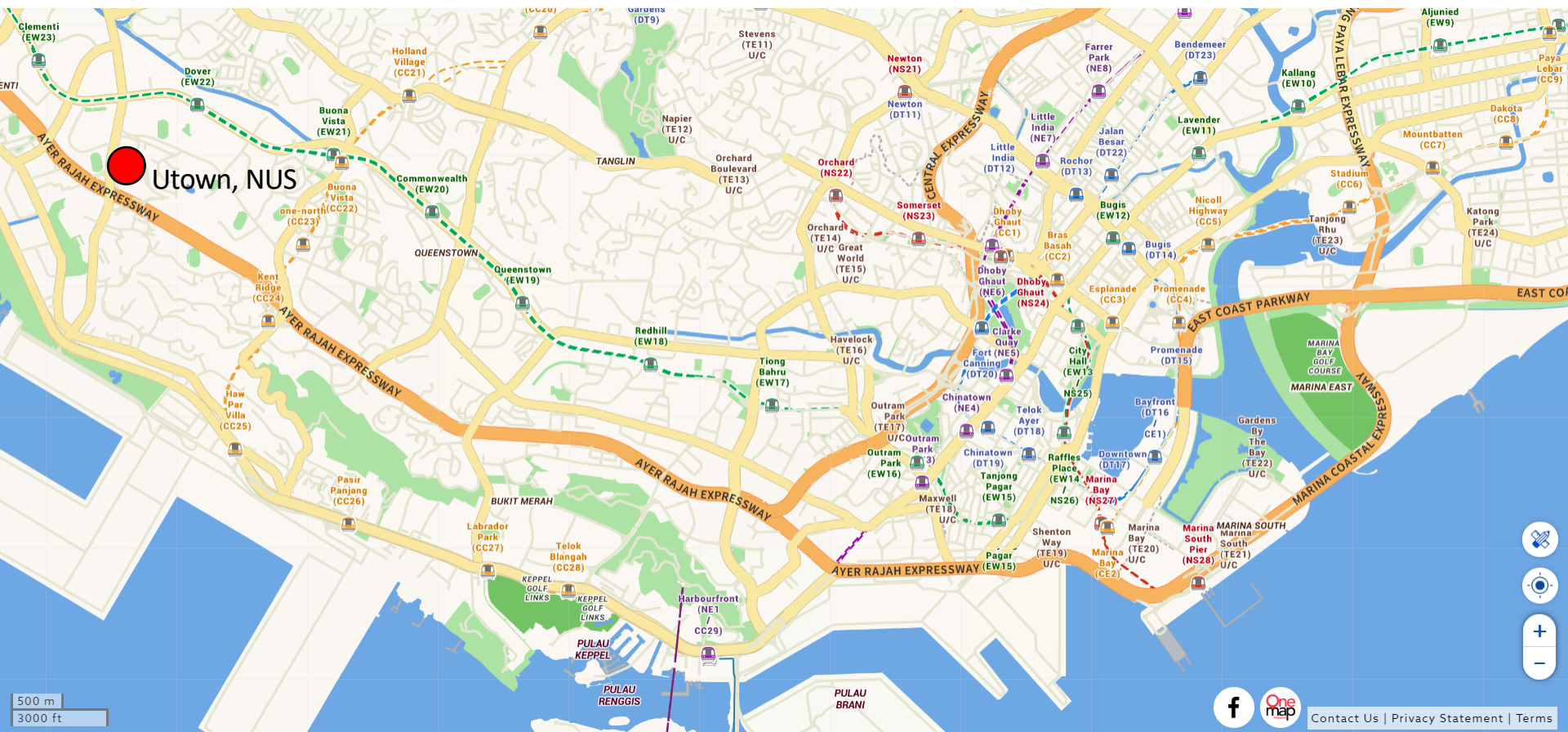
24 September 2018 (updated)  
Patrick Janssen



# OGC TC Meeting

- 25<sup>th</sup> to 28<sup>th</sup> February 2019
  - Monday to Thursday
  - Main OGC TC Meeting
  - 200 pax
- Proposed venue: NUS UTown
- 1<sup>st</sup> March 2019
  - Friday
  - Possibility of an Industry Day
  - 80 pax
- Proposed venue: SLA GeoWorks

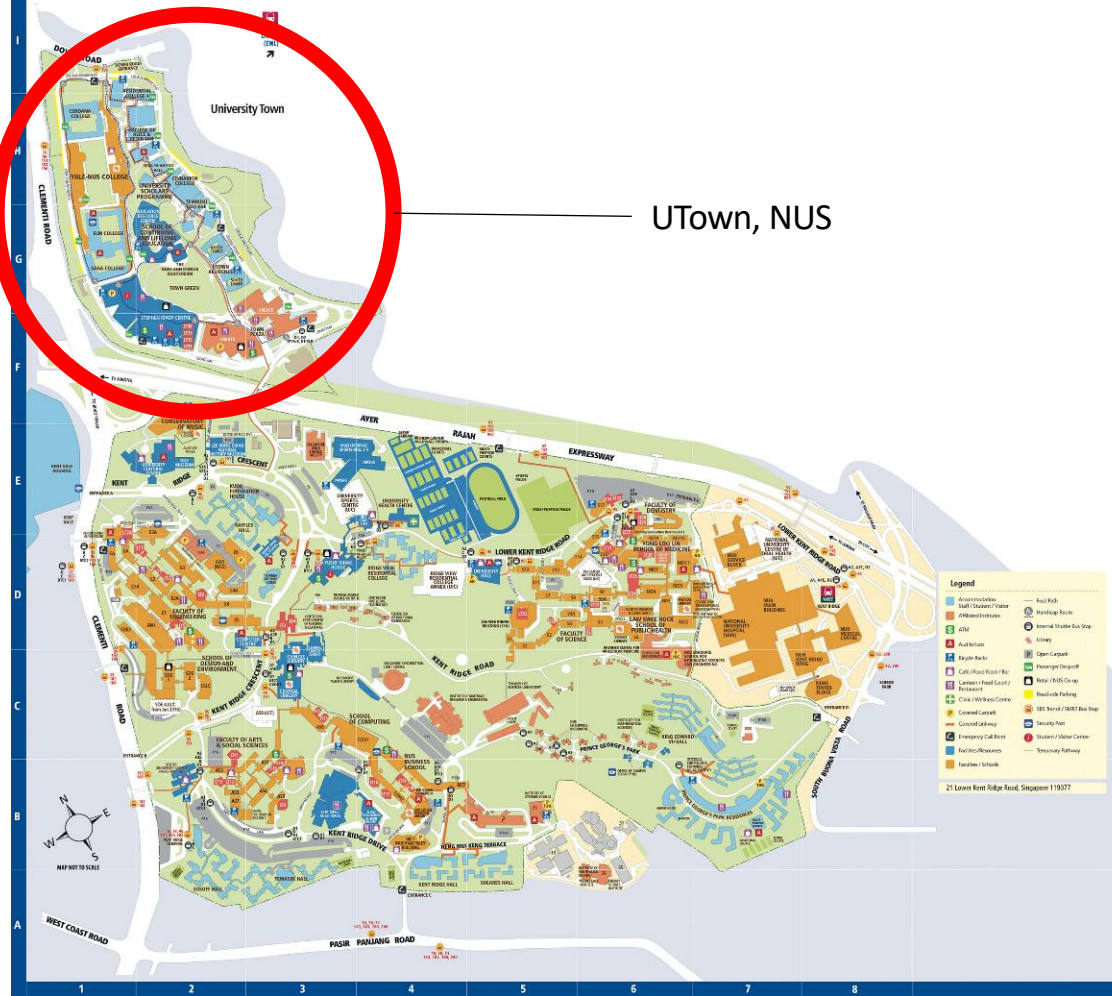


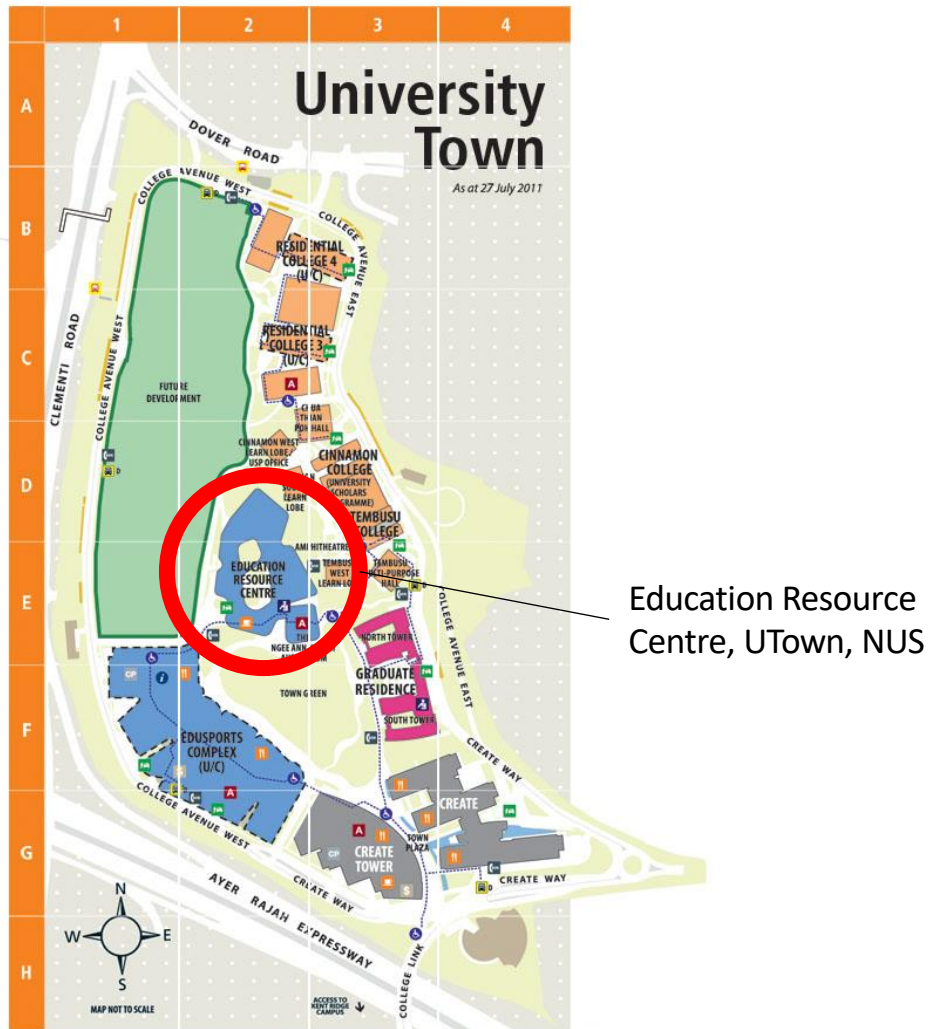


**Kent Ridge  
Campus**

University Town

UTown, NUS

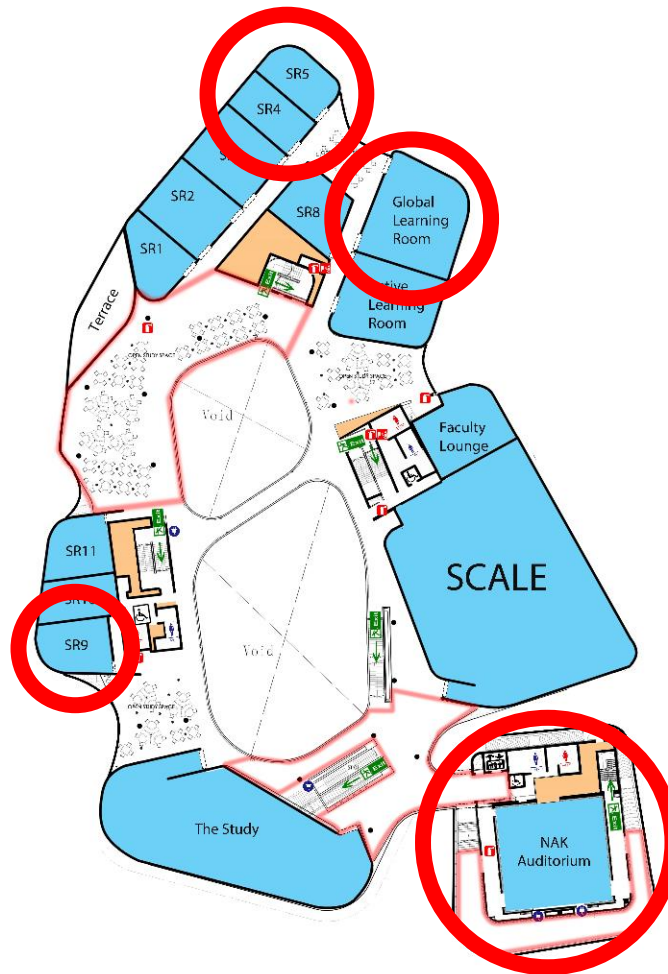




LEGEND			
	ATM		Auditorium
	SBS Transit / SMRT Bus Stop		Handicap Route
	Internal Shuttle Bus Stop		Security Post
	Emergency Call Point		Graduate Residence
	Passenger Drop-off		Residential Colleges
	Dining Hall / Food Kiosk		Facilities / Resources
	Café		Affiliated Institutes
	One Stop Service Centre		Road-side Parking
			Underground Carpark







Education Resource Center  
2nd Storey Plan



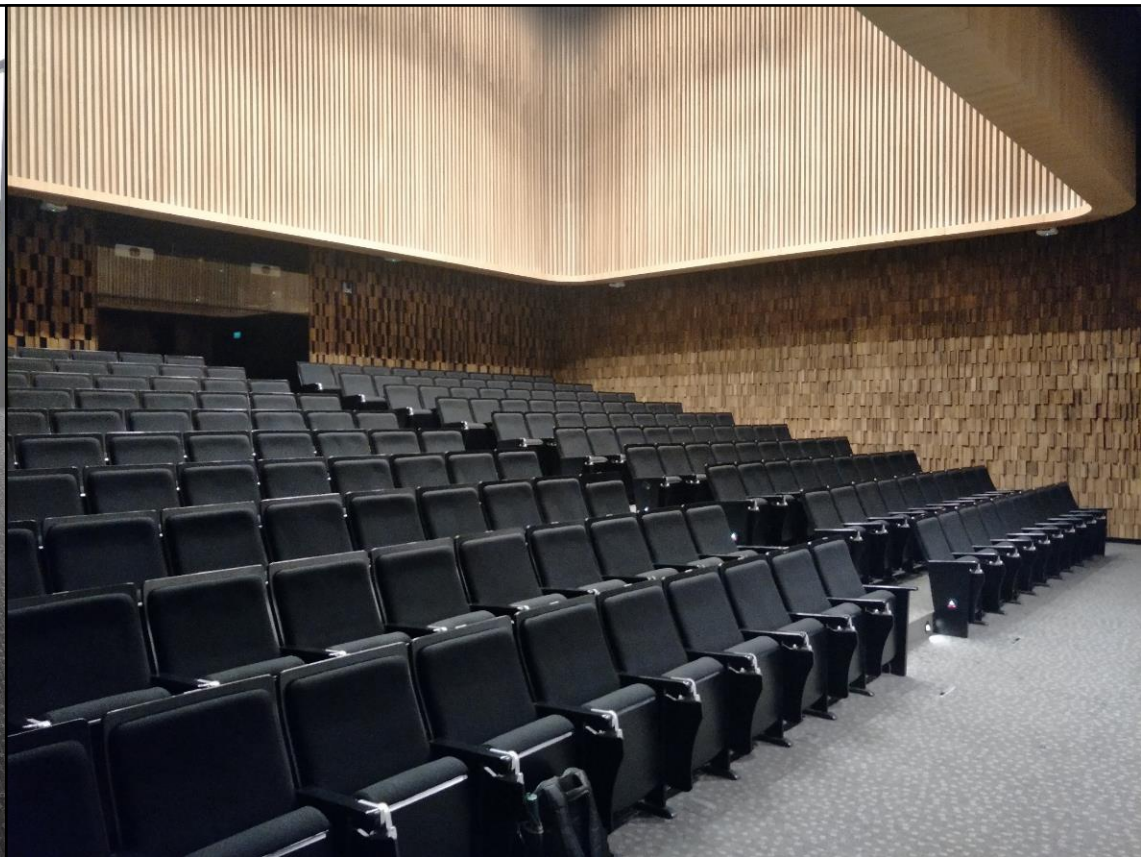
	Bookable Area
	Fire Exit
	AED
	Fire Extinguisher
	Fire Hose reel
	Power Socket
	Pillar
	Washroom
	Handicap Washroom
	Lift
	Facility / Office / Retail/Dining
	Non-Accessible Area
	Door
	Timber Flooring
	Tree
	Water Feature

# Lunch

- Starbucks directly downstairs
- 2 food courts  
(seating capacity 1100 people)
- 8 cafes/restaurants



# NAK Auditorium





# Global Learning room

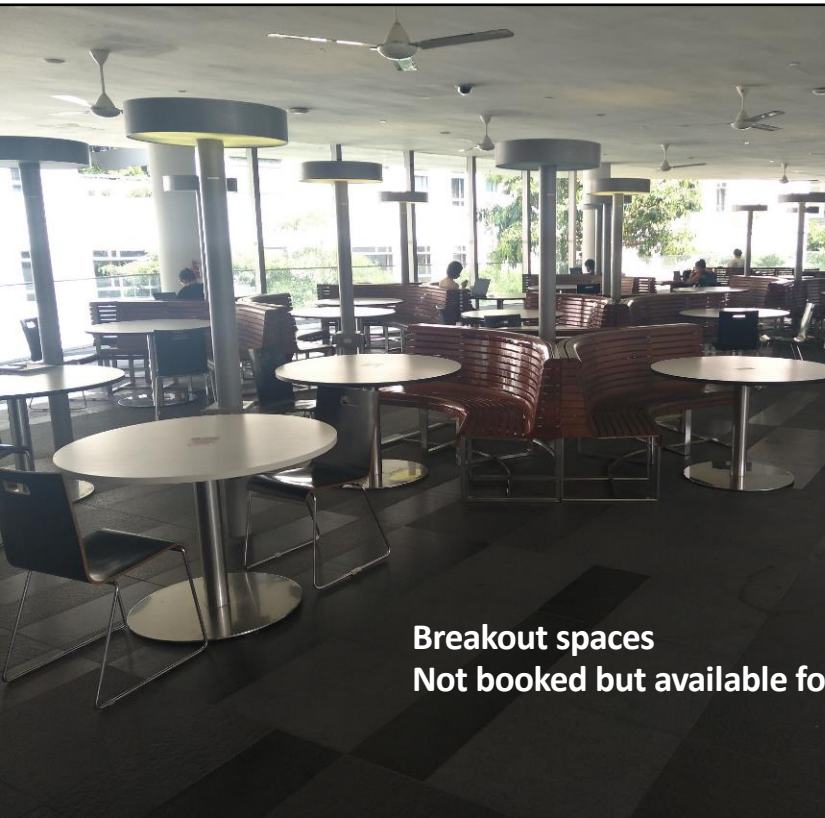


# Global Learning room





# Breakout Spaces



Breakout spaces  
Not booked but available for use



The End



# **TC Chair Announcements and Motions**

# TC representatives to the PC



- It's time to refresh our group of TC representatives to the PC
- 7 total positions, up to 2 can attend a PC meeting (typically as people are available)
- The 5 current reps are:
  - David Graham
  - Dimitri Sarafinof
  - Iain Burnell
  - Linda van den Brink
  - Stefan Strobel
- 2-year term
- Current reps can run again, election via electronic vote

# TC rep to the PC duties

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- Accept documented issues from TC members and bring these forward at PC meetings
- Provide a report to the TC of the activities that take place at PC meetings no later than two weeks following a PC meeting
- Be involved in discussions related to the ongoing work and issues in the TC
- Vote

# OAB call for candidates

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- The call closed this week
- For those of you who contacted me with interest, please send me a bio/resume/CV and have 3 other members email or talk to me to endorse your candidacy
- Election will start in January via electronic vote

# SDI Cookbook

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- The Global Spatial Data Infrastructure Association (GSDI) has disbanded
- OGC is maintaining GSDI assets and data
- The SDI Cookbook is published in 6 languages and is valuable to the geospatial community
- OGC staff propose advancing the SDI Cookbook as a Community Practice (English version as normative)
- <http://gsdiassociation.org/index.php/publications/sdi-cookbooks.html>



# Geotechnical Data Standardization Workshop

Maison de la Géologie, Paris  
January 22 – 24, 2019

hosted by



Géosciences pour une Terre durable

brgm



# Workshop details

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## **January 22nd and 23rd, 2019: Plenary discussions**

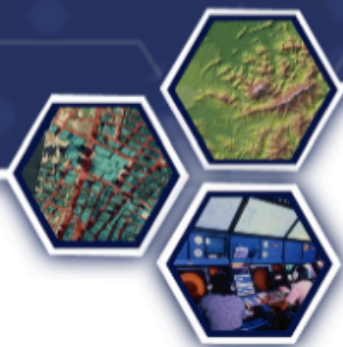
Engaging the geotechnical engineering community, the workshop will share knowledge and experience on geotechnical data standardization with the aim to design of an overview map of on-going activities to achieve better collaboration in the adoption of these new digitization technologies.

Needs and proposition of solutions will be discussed on two connected topics:

1. Interface between civil engineering and geotechnical engineering teams;
2. From Smart building and infrastructures to Smart Cities.

## **January 24th, 2019: Small committee to reach a MoU**

To build up on previous discussions, a smaller group will seek to reach a Memorandum of Understanding (MoU) between OGC and bSI, engaging people and actions to follow the roadmap defined by the geotechnical community.



Meeting Sponsor

**EPRI**

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# **OGC session at the 11th International Symposium on Digital Earth (ISDE) Florence Italy, 24 - 27 Sep 2019**

109th OGC Technical Committee

Charlotte, NC USA

Bart De Lathouwer

12 December 2018

# International Symposium on Digital Earth

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- The Symposium will address a new era of Digital Earth, reflected in the Symposium topic: "**DIGITAL EARTH IN A TRANSFORMED SOCIETY**".
- The Symposium is organized by the Chinese Academy of Science (**CAS-RADI**), the European Commission DG Joint Research Centre (**EC-JRC**) and the National Research Council of Italy (**CNR**).
- Florence (Italy), September 24-27, 2019

# International Symposium on Digital Earth

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- OGC session:  
**the role of Geospatial Information standards  
in a transformed Society.**

Send in your abstracts here:

**<https://www.digitalearth2019.eu/call-for-abstracts/>**

Deadline for Abstract Submission: January 31<sup>st</sup>, 2019



Meeting Sponsor

**EPRI**

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# Testbed 15 - announcement

109th OGC Technical Committee

Charlotte, NC USA

Luis Bermudez

13 December 2018

# Testbed 15 – revision schedule



**Release CFP January 7 2019**

**CFP Responses Feb 11**

**Evaluation and selection Feb 11-15**

**TEM 1 Feb 15**

**TEM 2 March 4**

**Contracts negotiation March 1 - 31**

**Kickoff Workshop April 2 - 4**

**Initiative Execution April 2 - Nov 30**

**Testbed-wide Interim meeting - June**

**Demonstration Events Dec 2019 - Mar 2020**

**35 days  
after CFP**





# **WG Reports not to be briefed**

# Not being briefed today

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- 3DIM DWG
- 3D Portrayal SWG
- Aviation DWG
- Blockchain and Distributed Ledger
- CDB SWG
- Citizen Science DWG
- CityGML SWG
- Coverages DWG
- CRS DWG/SWG
- Data Quality DWG
- DGGs DWG
- DGGs SWG
- DocTeam
- EDM DWG
- Energy Summit
- EO Exploitation DWG
- GeoTIFF SWG
- GMLJP2 SWG
- HY\_Features SWG
- IDBE/LandInfra/Smart Cities
- IndoorGML SWG
- ISG DWG
- LandInfra SWG
- Marine DWG
- Metadata and Catalog DWG
- Moving Features SWG
- Non-Authoritative Data ad hoc
- OGC Naming Authority
- OGC Web Services Security SWG
- Perspective Imagery DWG
- PipelineML SWG
- Point Cloud DWG
- SensorThings SWG
- SWE DWG
- TimeseriesML SWG
- UxS DWG





Z – 3

# **WG Reports with TC Motions**



Meeting Sponsor

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# **WPS/Workflow Closing Plenary Report**

109th OGC Technical Committee

Charlotte, NC USA

Benjamin Pross, Stan Tillman

13 December 2018

# The most important thing for this WG is...

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WPS 2.0 REST/JSON Binding

# Agenda

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- Testbed-14 ERs:
  - OGC Testbed-14: BPMN Workflow Engineering Report, Sam Meek
  - OGC Testbed-14: Application Package Engineering Report, Paulo Sacramento
  - OGC Testbed-14: ADES & EMS Results and Best Practices Engineering Report, Paulo Sacramento
  - OGC Testbed-14: WPS-T Engineering Report, Benjamin Pross
- WPS REST/JSON Binding
- AOB

# Motion



- The Workflow DWG recommends that the OGC Technical Committee approve release of [OGC 18-085] “OGC Testbed-14: BPMN Workflow Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- This Engineering Report (ER) presents the results of the D146 Business Process Modeling Notation (BPMN) Engine work item and provides a study covering technologies including Docker, Kubernetes and Cloud Foundry for Developer Operations (DevOps) processes and deployment orchestration.

# Motion



- The Workflow DWG recommends that the OGC Technical Committee approve release of [OGC 18-049r1] “OGC Testbed-14: Application Package Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
  - This Engineering Report (ER) describes the work performed by the Participants in the Exploitation Platforms Earth Observation Clouds (EOC) Thread of OGC Testbed-14 in regards to the Application Package (AP).

# Motion



- The Workflow DWG recommends that the OGC Technical Committee approve release of [OGC 18-050r1] “OGC Testbed-14: ADES & EMS Results and Best Practices Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- This Engineering Report (ER) describes best practices and results gathered through the work performed in the Exploitation Platforms Earth Observation Clouds (EOC) Thread of OGC Testbed-14 concerning the Application Deployment and Execution Service (ADES) and the Execution Management Service (EMS). Both the ADES and EMS were identified by the European Space Agency (ESA), beforehand, as essential elements of a Thematic Exploitation Platform (TEP).

# Motion



- The Workflow DWG recommends that the OGC Technical Committee approve release of [OGC 18-036] “OGC Testbed-14: WPS-T Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- This Engineering Report describes a transactional extension for WPS 2.0 including KVP and XML bindings and recommendations for a process deployment profile for BPMN.





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# WMS SWG

109th OGC Technical Committee

Charlotte, NC USA

Joan Masó

13 December 2018

# The most important thing for this WG is...

---



Tile Matrix Set standard candidate conceptual introduction has been rewritten to be sure that it includes the vector tiles concept. New would like to request the vector tile experts to review this part.

# Agenda

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- Reviewed Tile Matrix Set Document with responses to the CRs.
  - Joan Masó, UAB-CREAF
- OGC 18-083 OGC Vector Tiles Pilot: WMTS Vector Tiles Extension Engineering Report.
  - Peter Vretanos, CubeWerx Inc.
- Extending WFS 3.0 to include WMS and WMTS
  - Peter Vretanos, CubeWerx Inc.
- Proposal for a WMS-WMTS OpenAPI.
  - Joan Masó, UAB-CREAF

# Motion to make 08-083 a public ER



- The WMS SWG recommends that the OGC Technical Committee approve release of OGC 18-083 *WMTS Vector Tiles Extension Engineering Report* as an OGC Public Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- Abstract: Vector Tiles is a technology that optimizes delivering vector data over the web to create maps. The approach provides a pre-defined shape (i.e. tile) to package vector data. Vector tiles enable faster map loads (due to reduced size) and offer flexible styling on the client side with modern, easy-to-use tools. This Engineering Report (ER) describes the work done by participants during the Vector Tiles Pilot to add Mapbox and GeoJSON vector tile support to Web Map Tile Servers.



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# **WFS/FES SWG Closing Plenary Report**

109th OGC Technical Committee  
Charlotte, NC USA  
Clemens Portele  
13 December 2018

# The most important thing for this WG is...

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Consolidate the feedback from the implementations of WFS 3.0 (including various extensions) and of additional resource types. Draft a release candidate for WFS 3.0 Part 1 Core by July 2019.

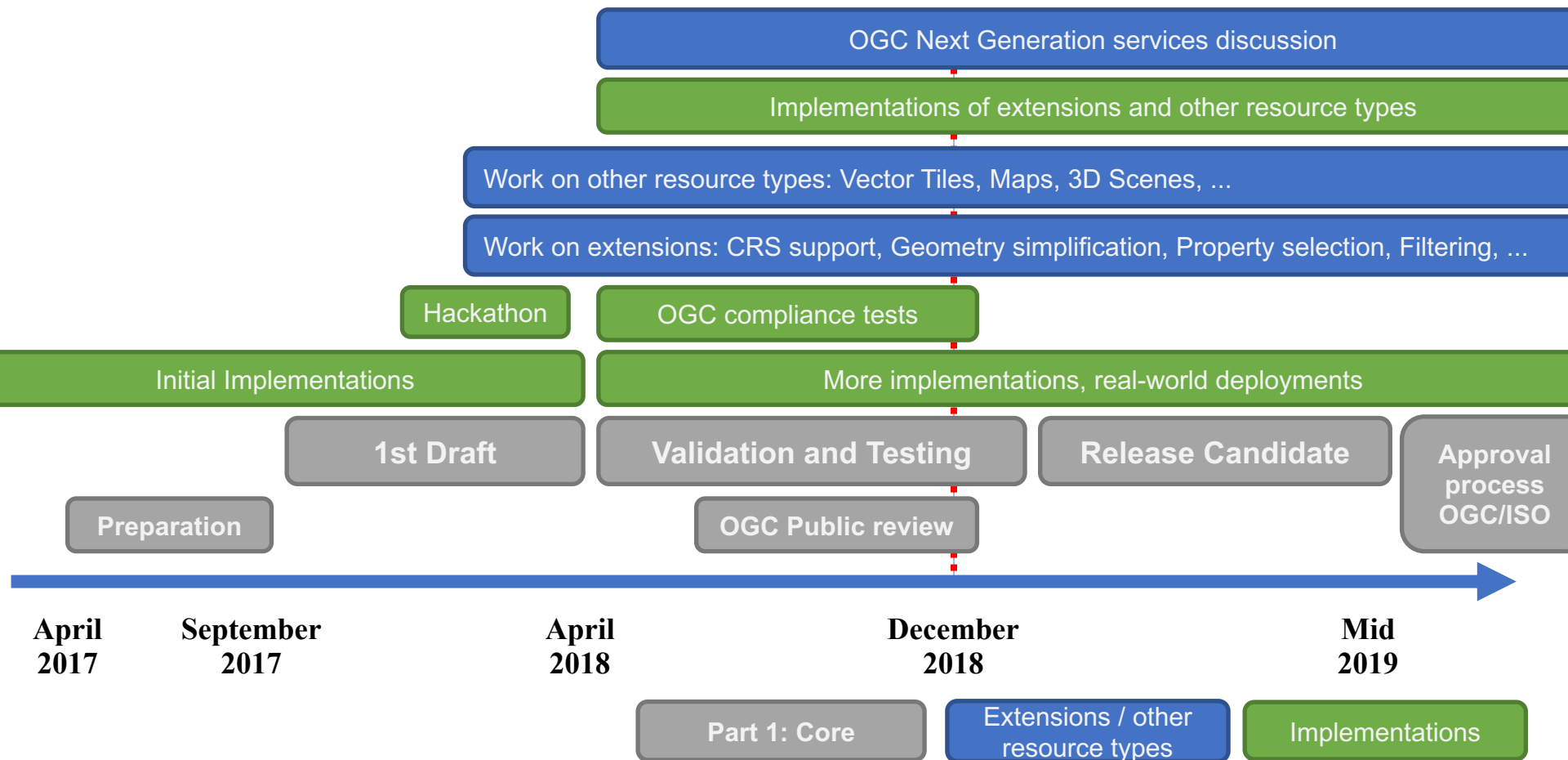
# Agenda

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- OGC Testbed-14: Next Generation Web APIs - WFS 3.0 Engineering Report, Jeff Harrison, Panagiotis (Peter) A. Vretanos
- OGC Testbed-14: Next Generation APIs - Complex Feature Handling Engineering Report, Clemens Portele
- OGC Vector Tiles Pilot: WFS 3.0 Vector Tiles Extension Engineering Report, Panagiotis (Peter) A. Vretanos
- Discussion of open issues for WFS 3.0 Part 1: Core / Issue resolution planning, all
- Status of WFS 3.0 Part 1: Core in ISO (ISO 19168-1), Clemens Portele, Panagiotis (Peter) A. Vretanos

# WFS 3.0 Core – Status and Timeline





# Key activity – Resolve open issues for Core



GitHub interface for the repository **openeospatial / WFS\_FES**.

Navigation bar: Search or jump to... Pull requests Issues Marketplace Explore

Repository stats: Unwatch 49, Unstar 67, Fork 16

Tab selection: Code Issues 74 Pull requests 5 Projects 0 Wiki Insights

Filters: is:issue is:open label:"Document: Part 1 - Core" Labels Milestones New issue

Clear current search query, filters, and sorts

<input type="checkbox"/>	36 Open 23 Closed	Author	Labels	Projects	Milestones	Assignee	Sort
<input type="checkbox"/>	<b>Wrong edge order in BBOX description</b> <span>Document: Part 1 - Core</span> <span>bug</span> #176 opened on 16 Oct by cportele <span>Part 1, Second ...</span>						
<input type="checkbox"/>	<b>Change collection name to collection id</b> <span>Document: Part 1 - Core</span> #171 opened on 6 Oct by m-mohr <span>Part 1, Second ...</span>					10	
<input type="checkbox"/>	<b>ATS Cleanup</b> <span>Document: Abstract Test Suite</span> <span>Document: Part 1 - Core</span> #169 opened on 25 Sep by cmheazel						
<input type="checkbox"/>	<b>extents not easily extensible as the connections to the reference systems are not clear</b> <span>Document: Part 1 - Core</span> #168 opened on 21 Sep by m-mohr <span>Part 1, Second ...</span>					22	
<input type="checkbox"/>	<b>Paging testability and reaching last page</b> <span>Document: Abstract Test Suite</span> <span>Document: Part 1 - Core</span> #166 opened on 17 Sep by aaim					1	
<input type="checkbox"/>	<b>Protect clients against large datasets/high limit values</b> <span>Document: Abstract Test Suite</span> <span>Document: Part 1 - Core</span> #165 opened on 17 Sep by aaim <span>Part 1, Second ...</span>					1	
<input type="checkbox"/>	<b>items vs. a type name - From presentations at TC</b> <span>Document: Part 1 - Core</span> #164 opened on 14 Sep by ogc-leedahl <span>Part 1, Second ...</span>					3	

# Document Approval Motion

---



- The WFS/FES SWG recommends that the OGC Technical Committee approve release of 18-045 “OGC Testbed-14: Next Generation Web APIs - WFS 3.0 Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- Summary: This ER describes implementations and experiments to test the next generation of spatial data Web APIs based on the architecture of the emerging WFS 3.0 standard. It includes work on a wide range of API extensions to simplify and secure access to geospatial features.

# Document Approval Motion

---



- The WFS/FES SWG recommends that the OGC Technical Committee approve release of 18-021 “OGC Testbed-14: Next Generation APIs - Complex Feature Handling Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- Summary: This Engineering Report proposes how to build on the WFS 3.0 architecture for spatial data Web APIs in order to support complex data structures, linked data, rich queries, 3D data and portrayal.

# Document Approval Motion

---



- The WFS/FES SWG recommends that the OGC Technical Committee approve release of 18-078 “OGC Vector Tiles Pilot: WFS 3.0 Vector Tiles Extension Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- Summary: This ER presents a specification for publishing vector features as tiles through two APIs that extend the architecture of the emerging WFS 3.0 standard. In the first API, vector features are organized into a fixed hierarchy of tiles. In the second API, vector tile output is treated as just another output format in a manner similar to GeoJSON or GML.



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# **WCS.SWG**

109th OGC Technical Committee

Charlotte, NC USA

Peter Baumann

13 December 2018

# The most important thing for this WG is...

---



...to maintain & continuously enhance  
a flexible, easy-to-use but powerful service suite  
for multi-dimensional coverages,  
in particular: datacubes

# Agenda

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- status brief (P. Baumann)
- Vote on the MetOcean profile to go for public comment (P. Trevelyan)
- Testbed 14 Swath Coverage Engineering Report (E.G. Yu)

# WCS MetOcean Profile



- The three documents form part0, part1 and part 2 of the MetOcean profile.
  - May we have a vote please on passing them for public comment.
- MOTION: The WCS SWG recommends to the TC that the WCS MetOcean Profile be released for Public RFC
  - Discussion
    - Noting that OAB previously reviewed the document for Public RFC
    - Noting that WMO is more than “Community Metadata” as listed on page 3 of this presentation. Confirm that does not appear in the spec.
  - NOTUC



# Motion: T14 Swath Coverage ER



- The WCS SWG recommends that the OGC Technical Committee approve release of OGC 18-047r2 “Testbed 14 Swath Coverage Engineering Report” as an OGC Engineering Report
  - Pending any final edits and review by OGC staff
  - Motion passes
- The report describes the characteristics of swath coverage: definition, types, and requirements. CIS and CF was applied in modeling swath coverage. A set of REST API was developed. Typical swath data have been served with swath coverage services and clients. Extension proposal and recommendations are provided as the outcome of the experiments.



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# **Security DWG Report to the TC**

109th OGC Technical Committee  
Charlotte, NC USA

Andreas Matheus, Chuck Heazel

13 December 2018

# The most important thing for this WG is...

---



One thing that is most important for this WG. Examples....  
Something happening in the WG? Coordination occurring or  
needed with another WG? Work with a broader implication  
for the OGC? Major accomplishment?

# Agenda



- Testbed-14 Security Engineering Report (Héctor Rodríguez Campo, Deimos) - PDF:  
[https://portal.opengeospatial.org/files/?artifact\\_id=81774&version=1](https://portal.opengeospatial.org/files/?artifact_id=81774&version=1)
- Testbed-14 Federated Clouds Engineering Report (Craig Lee, Aero) - PDF:  
[https://portal.opengeospatial.org/files/?artifact\\_id=81863&version=1](https://portal.opengeospatial.org/files/?artifact_id=81863&version=1)
- Testbed-14 Authorisation Authentication and Billing Engineering Report (Jerome Jerome Gasperi – Geomatys) - PDF:  
[https://portal.opengeospatial.org/files/?artifact\\_id=81795&version=1](https://portal.opengeospatial.org/files/?artifact_id=81795&version=1)
- Testbed-14 Secure Client Test Engineering Report (Sara Saeedi - University of Calgary) - PDF:  
[https://portal.opengeospatial.org/files/?artifact\\_id=81797&version=1](https://portal.opengeospatial.org/files/?artifact_id=81797&version=1)
- Towards Data-Centric Security (Andreas Matheus – Secure Dimensions)

# Activity Summary



- Discussion topics

- Upcoming deliverables
  - Testbed 14 Security ER
  - Testbed 14 Authorisation Authentication and Billing ER

- Coordination (ongoing and planned)

- Future meetings
  - next TC Meeting

# Document Approval Motion

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- The Security DWG recommends that the OGC Technical Committee approve release of **OGC #18-026r1 “Testbed-14 Security Engineering Report”** as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - NOTUC
- This ER describes work on several Testbed 14 topics including
  - Best practices for the integration of OAuth2.0/OpenID Connect
  - Mediation services for different security environments

# Document Approval Motion

---



- The Security DWG recommends that the OGC Technical Committee approve release of **OGC #18-057 “Testbed-14 Authorisation Authentication and Billing Engineering Report”** as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - NOTUC
- This ER describes the work performed in the EOC Thread of Testbed-14 concerning the interfaces proposed for the Authentication, Authorization, Billing and Quoting topics associated to the EMS and the ADES components.

# Request of an electronic vote

---



- The Security DWG recommends that the OGC Technical Committee approve an electronic vote to approve release of **OGC #18-090r1 “Testbed-14 Federated Clouds Engineering Report”** as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - NOTUC
- This Federated Cloud ER will dovetail with the Security ER and coordinates across all federation-related tasks in Testbed-14, including the Earth Observation Cloud and Workflow tasks; Identify and prioritize possible incremental development tasks for subsequent testbeds; and Liaison with groups external to OGC.





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# Land Administration DWG

109th OGC Technical Committee

Charlotte, NC USA

Chrit Lemmen, Scott Simmons

13 December 2018

# The most important thing for this WG is...

---



Piloting interoperability based on LADM and OGC encodings  
- Landinfra, CityGML, etc.

# Agenda

---



- Results white paper (voting)
- Summary ISO LADM Meeting Wuhan
- Collaboration ISO TC211 LADM v2
- Implementation/pilot activity

# Activity Summary



- Discussion topics

- Assessing feasibility to hold a land registry workshop in Europe in 2019, primarily aimed at Africa nations

- Upcoming deliverables

- White Paper on Land Administration

- Coordination (ongoing and planned)

- Deep coordination with ISO / TC 211, FIG, IHO, UNGGIM

- Future meetings

- next TC Meeting

# OGC White Paper on Land Administration



- The Land Administration DWG recommends that the OGC Technical Committee approve release of [OGC 18-008r1] “White Paper on Land Administration” as an OGC White Paper.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- This White Paper creates overview and proposes actions needed for design and develop implementation standards in the land administration domain. A close cooperation between OGC and ISO is expected to accelerate those developments.



Meeting Sponsor

**EPRI**

ELECTRIC POWER  
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# Hydrology DWG

109th OGC Technical Committee

Charlotte, NC USA

David Blodgett

11 December 2018

# Agenda

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- ELFIE ER Presentation
  - [https://opengeospatial.github.io/ELFIE/presentations/ELFIE\\_outcomes](https://opengeospatial.github.io/ELFIE/presentations/ELFIE_outcomes)
- Review priority actions from annual meeting
- Next annual meeting topic ideas and location

# Priority actions

---



- 1. Update the WMO-OGC MoU**
- 2. Complete adoption process at WMO for WaterML2: Part 3 & 4**
- 3. Fix informative content in WaterML2: Part2**
- 4. Make relevant feedback from WMO a standing item on HDWG agendas at OGC TC meetings**
5. Publicise a list of tools, APIs, implementations that support hydrological standards
6. Explore opportunities to collaborate on vocabularies and ontologies
7. Setup an OGC Hydrology DWG github
8. Define Hydrology DWG webinar series for 2019
  - Identify potential topics via email request to the list



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7. Setup an OGC Hydrology DWG github
8. Define Hydrology DWG webinar series for 2019
  - Identify potential topics via email request to the list

# Next Annual Meeting

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- **Option 1: Around the time of <https://www.digitalearth2019.eu/> in Florence Italy.**
  - Organize a special session on water.
  - Good opportunity to attract more participation and do outreach.

# Document Approval Motion

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- The Hydrology DWG recommends that the OGC Technical Committee approve release of [OGC 18-097] “OGC Environmental Linked Features Interoperability Experiment Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- The Environmental Linked Feature Interoperability Experiment (ELFIE) has explored existing OGC and W3C standards with the goal of establishing a best practice for exposing cross-domain links between environmental domain and sampling features.



Meeting Sponsor

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# Geosemantics DWG

109th OGC Technical Committee

Charlotte, NC USA

Josh Lieberman (for the Co-chairs)

13 December 2018

# The most important thing for this WG is...



Geosemantics DWG Challenge:

Consistent OGC approach to cross-community information sharing, domain model representation, and (smart) geosemantic technology building blocks

# Agenda



- Johannes Echterhoff / Clemens Portele\*
  - OGC Testbed-14: Application Schema-based Ontology Development Engineering Report (OGC 18-032) -  
[https://portal.opengeospatial.org/files/?artifact\\_id=81579&version=1](https://portal.opengeospatial.org/files/?artifact_id=81579&version=1)
  - OGC Testbed-14: Application Schemas and JSON Technologies Engineering Report (OGC 18-091) -  
[https://portal.opengeospatial.org/files/?artifact\\_id=81578&version=1](https://portal.opengeospatial.org/files/?artifact_id=81578&version=1)
- Yann Le Franc\*
  - SWIM Information Registry Engineering Report  
[https://portal.opengeospatial.org/wiki/pub/Testbed14/ConvertDocsT14Output/T14/D001-SWIM\\_Information\\_Registry\\_Engineering\\_Report.html](https://portal.opengeospatial.org/wiki/pub/Testbed14/ConvertDocsT14Output/T14/D001-SWIM_Information_Registry_Engineering_Report.html)  
[https://portal.opengeospatial.org/files/?artifact\\_id=81786&version=1](https://portal.opengeospatial.org/files/?artifact_id=81786&version=1)

# Agenda, cont'd



- Stephane Fellah
  - Semantically Enabled Aviation Data Models Engineering Report (OGC 18-035)  
[https://portal.opengeospatial.org/files/?artifact\\_id=81815&version=1](https://portal.opengeospatial.org/files/?artifact_id=81815&version=1)
  - Characterization of RDF Application Profiles for Simple Linked Data Application and Complex Analytical Applications Engineering Report  
[https://portal.opengeospatial.org/files/?artifact\\_id=81923&version=1](https://portal.opengeospatial.org/files/?artifact_id=81923&version=1)
- Sara Saeedi (presented to Portrayal Ad Hoc, motion to recommend release)
  - Symbology Engineering Report (OGC 18-029)  
[https://portal.opengeospatial.org/files/?artifact\\_id=81833&version=1](https://portal.opengeospatial.org/files/?artifact_id=81833&version=1)
- Rob Atkinson W3C Profiles Ontology FPWD and invite feedback (5 minutes)
- Overview of ELFIE (5 minutes)
  - [https://portal.opengeospatial.org/files/?artifact\\_id=81777&version=1](https://portal.opengeospatial.org/files/?artifact_id=81777&version=1)



# Activity Summary



- Discussion topics
  - Protocol(s) for authoritative conceptual model representation

- Upcoming deliverables
  - ALFIE? Any Linked Features IE

- Coordination (ongoing and planned)
  - OGC Knowledge Management
  - W3C SDWIG

- Future meetings
  - Singapore TC

# Key activities

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- Transition to new co-chairs
- Coordination with OGC Knowledge Management and Naming Authority
- Coordination with W3C Spatial Data Interest Group
- Advancing the OGC approach to domain model development and definition
- Advancing the OGC approach to Linked Geodata

# 18-032 Approval Motion

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- The Geosemantics DWG recommends that the OGC Technical Committee approve release of OGC Document 18-032 “OGC Testbed-14: Application Schema-based Ontology Development Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- Summary: this report enhances the understanding of the relationships between UML-based application schemas and OWL-based ontologies. The work documented in this report provides and improves tools and principled techniques for the development of RDF-based schemas from ISO 19109-conformant application schemas.

# 18-091 Approval Motion




- The Geosemantics DWG recommends that the OGC Technical Committee approve release of OGC Document 18-091 “OGC Testbed-14: Application Schemas and JSON Technologies Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- Summary: This Engineering Report (ER) enhances the understanding of the relationships between data exchange based on Geography Markup Language (GML), JavaScript Object Notation (JSON), and Resource Description Framework (RDF) for future web services, e.g. Web Feature Service (WFS) 3.0. The work documented in this report:
  - is contributing to the ability to bridge between technology-dependent alternate representations of “features” (real-world objects), and to consistently employ alternate encoding technologies (Extensible Markup Language (XML), JSON, RDF) to exchange information about “features”; and
  - determines principled techniques for the development of JSON-based schemas from ISO 19109-conformant application schemas.

# 18-022r1 Approval Motion



- The Geosemantics DWG recommends that the OGC Technical Committee approve release of OGC Document 18-022r1 “OGC Testbed-14: SWIM Information Registry Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- *“provide recommendations for development of an “information registry”, that is, a searchable catalog of information collectively provided by services in the context of a specific service inventory, such as FAA’s SWIM.”*

# 18-035 Approval Motion

- 
- The Geosemantics DWG recommends that the OGC Technical Committee approve release of OGC Document 18-035 “OGC Testbed-14: Semantically Enabled Aviation Data Models Engineering Report” as an OGC Engineering Report.
    - Pending any final edits and review by OGC staff
    - There was no objection to unanimous consent
  - OGC Testbed-14 findings and recommendations to “semantically enable” existing data and metadata models used in aviation industry. Examples of such data and metadata models include Aeronautical Information Exchange Model (AIXM) [1], Weather Information Exchange Model (WXXM) [2], Flight Information Exchange Model (FIXM) [3], Web Service Description Document (WSDD), Service Description Conceptual Model (SDCM) [4].

# 18-094r1 Approval Motion



- 
- The Geosemantics DWG recommends that the OGC Technical Committee approve release of OGC Document 18-094r1 “OGC Testbed-14: Characterization of RDF Application Profiles for Simple Linked Data Application and Complex Analytical Applications Engineering Report ” as an OGC Engineering Report.
    - Pending any final edits and review by OGC staff
    - There was no objection to unanimous consent
  - This Engineering Report (ER) enhances the understanding of the concept of application profiles (AP) for ontologies based on the Web Ontology Language (OWL) and used by Linked Data (LD) applications.

# 18-029 Approval Motion



- The Geosemantics DWG recommends that the OGC Technical Committee approve release of OGC Document 18-029 “OGC Testbed-14: Symbology Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
  - This ER captures the requirements, solutions, models and implementations of the Testbed 14 Portrayal thread. The objective is to extend the portrayal ontology to accommodate more complex symbols (e.g. composite symbols) and to provide clear recommendations on how to best proceed with portrayal information encodings.



# Actions



- Proposed that Joseph Abhayaratna become Geosemantics DWG co-chair for the Asia-Pacific region.
  - Moved: Clemons
  - Second: Byron
  - Outcome: NOTUC
- Proposed that <> become Geosemantics DWG co-chair for the North American region.
  - Moved:
  - Second:
  - Outcome:



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# **Defense & Intelligence Domain Working Group**

109th OGC Technical Committee

Charlotte, NC USA

Roy Rathbun

Lucio Colaiacono

12 December 2018

# Agenda

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- **Update on Disasters Pilot – T. Idol**
- **Marine SDI CDS RFI Release – T. Idol**
- **Mixed Reality to the Edge – T. Idol**
- **Vector Tiles Pilot Summary – S. Meek**
- **Vector Tiles Conceptual Model - ?**

# Agenda, con't

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- **OGC Sensor Model Registry – G. Hobona**
- **Lessons and issues from applying OGC Executable Test Suites at CWIX 2018 – P. Rowe (Remote)**
- **PED CDS RFI – T. Idol & C. Reed**
- **TB14 Machine Learning ER – T. Landry**

# Release of OGC 18-076 “OGC Vector Tiles Pilot: Conceptual Model Engineering Report”



The D&I DWG recommends that the OGC Technical Committee approve release of OGC 18-076 “Tiled Vector Data Conceptual Model Engineering Report” as an OGC Public Engineering Report.

- Pending any final edits and review by OGC staff
  - Result: There was no objection to unanimous consent
- 
- The ER addresses deliverable D007 of the OGC Vector Tiles Pilot. The Vector Tiles Pilot Call for Participation (CFP) outlines the deliverable as follows. "D007: Conceptual Model – A Conceptual abstract model for Vector Tiles, written as a draft standard that can provide the framework to serve Vector Tiles in different OGC Standards (e.g. WFS, WMTS and GeoPackage). It should be general enough to fulfill all the requirements and should be compatible with Mapbox Vector Tile Specification. It should be compatible with a GeoJSON encoding. Applicable concepts from other OGC specifications, such as the OGC Tile Matrix Set Standard Candidate (17- 0803), should also be taken into account."

# Release of OGC 18-086r1 “OGC Vector Tiles Pilot: Summary Engineering Report”



The D&I DWG recommends that the OGC Technical Committee approve release of OGC 18-086r1 “OGC Vector Tiles Pilot: Summary Engineering Report” as an OGC Public Engineering Report.

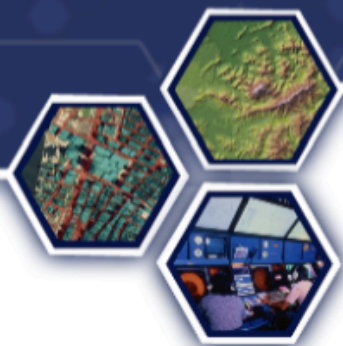
- Pending any final edits and review by OGC staff
  - Result: There was no objection to unanimous consent
- 
- This OGC Engineering Report (ER) provides the summary findings resulting from completion of the OGC Vector Tiles Pilot (VTP or Pilot). The ER provides an overview of each of the components, their implementation decisions and the challenges faced.

# Release of OGC 18-038r2 “OGC Testbed-14: Machine Learning Engineering Report”



The Defense and Intelligence DWG recommends that the OGC Technical Committee approve release of OGC 18-038r2 “OGC Testbed-14: Machine Learning Engineering Report” as an OGC Public Engineering Report.

- Pending any final edits and review by OGC staff
- Result: There was no objection to unanimous consent
- This OGC Engineering Report (ER) describes the application and use of OGC Web Service (OWS) for integrating Machine Learning (ML), Deep Learning (DL) and Artificial Intelligence (AI) in the OGC Testbed 14 Modeling, Portrayal, and Quality of Service (MoPoQ) Thread. This report is intended to present a holistic approach on how to support and integrate emerging AI and ML tools using OWS, as well as publishing their input and outputs. This approach should seek efficiency and effectiveness of knowledge sharing.



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# **Compliance Interoperability & Testing Evaluation (CITE) Sub-Committee (SC)**

109th OGC Technical Committee

Charlotte, NC USA

Chuck Heazel

13 December 2018



# The most important thing for this WG is...

---



We have successfully addressed two compliance test challenges:

1. Secured services
2. Testing APIs

# Agenda

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- OGC Validation Tools – Status Report (lat/lon)
- Secure Client Test ER - Sarah Saeedi
- Compliance Engineering Report - Andrea Aime
- Testing DGIWG Catalog 2.0 - Dirk Stenger
- Testing WFS 3.0 - Dirk Stenger
- Compliance testing experience at CWIX – Paul Rowe

# Activity Summary



- Discussion topics
  - Testbed 14 Engineering Reports
  - Testbed 14 Compliance Tests
  - Compliance Testing in the Coalition Warrior interoperability Demonstration (CWID)
- Upcoming deliverables
  - NSTR
- Coordination (ongoing and planned)
  - CWID rep. on their use of CITE tools
- Future meetings
  - February 2018 TC/PC

# Document Approval Motion

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- The CITE Subcommittee recommends that the OGC Technical Committee approve release of [OGC 18-030] “Secure Client Test Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- This ER describes the development of the compliance tests and their implementation in the OGC Test, Evaluation, And Measurement (TEAM) Engine to validate a client’s ability to make secure requests according to the OGC Web Service Security Candidate Standard.

# Document Approval Motion



- The CITE Subcommittee recommends that the OGC Technical Committee approve release of [OGC 18-034] “Compliance Engineering Report” as an OGC Engineering Report.
  - Pending any final edits and review by OGC staff
  - There was no objection to unanimous consent
- This document reviews the work that has been carried out as part of of Testbed 14 compliance activity: in particular:
  - A Web Feature Service (WFS) 3 core test suite, covering both the tests and the reference implementation servers
  - A Defence Geospatial Information Working Group CATalog (DGWIG CAT) 2.0 extension for the Catalog Services for the Web 2.0.2 (CSW) test suite and server reference implementation

# Test Suite Approval Motion

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The CITE SC requests that OGC Technical Committee approves release of GeoPackage 1.2 Executable Test Suite. There are 3 implementations passing all the conformance classes.

- There was no objection to unanimous consent



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# **Joint Architecture DWG and OWS Common SWG**

109th OGC Technical Committee

Charlotte, NC USA

Joan Maso, Gobe Hobona

13 December 2018

# The most important thing for this WG is...

---



The pattern that has been used with WFS 3.0, has been successfully used with WCS, WMTS, WPS. This proves that the pattern is repeatable and could form the basis for the next generation of OGC web services (i.e. the next version of OWS Common).



# Agenda – Session 1

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- Call for Contributors: JSON Best Practices : Joan Maso
- Testbed-14 Next Generation Services Engineering Report: Jeff Harrison/Peter Vretanos
- Testbed-14 Application Schemas and JSON Technologies Engineering Report: Johannes Echterhoff/Clemens Portele
- WFS 3.0 Vector Tiles Extension : Jeff Harrison/Peter Vretanos
- Testbed-14 MapML Engineering Report : Joan Maso

# Agenda - Session 2

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- Overview of recent OpenAPI Updates : Chuck Heazel
- MetOcean WCS REST Hackathon : Pete Trevelyan/Steve Olson
- Testbed-14 WCS REST API : Liping Di/Eugene Yu
- Testbed-14 Complex Feature Handling in Web APIs : Clemens Portele
- WMS-WMTS OpenAPI proposal : Joan Maso
- Web API - The new "OWS Common"? : Andreas Matheus

# Activity Summary



- Discussion topics

- Next generation OGC web services pattern
- MapML
- JSON and application schemas
- MetOcean WCS Hackathon
- Testbed-14 outcomes and recommendations on Web APIs
  - Key message: Do not go too far in specifying the API building blocks (e.g. CQL level is appropriate)
  - More support for media types to support Content Negotiation
  - Need to separate out CQL from the Catalogue standard

- Coordination (ongoing and planned)

- On-going tasking from OAB

- Upcoming deliverables

- JSON Best Practices
- OGC Web API Guidelines

- Future meetings

- Singapore TC Meeting 2019

# Key activities

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- Developing JSON Best Practices
  - <https://github.com/opengeospatial/architecture-dwg/tree/master/json-best-practice>
- Developing OGC Web API Guidelines
  - <https://github.com/opengeospatial/OGC-Web-API-Guidelines>
- OGC API Common Specification (New!)
  - [https://github.com/opengeospatial/oapi\\_common](https://github.com/opengeospatial/oapi_common)

# Release of OGC 18-023r1 “OGC Testbed-14: MapML Engineering Report”



- The Architecture DWG recommends that the OGC Technical Committee approve release of OGC 18-023r1 “OGC Testbed-14: MapML Engineering Report” as an OGC Public Engineering Report.
  - Pending any final edits and review by OGC staff
  - Result: There was no objection to unanimous consent
- This is the second Engineering Report (ER), about the Map Markup Language (MapML) resulting from Testbed initiatives. To find an introduction of MapML and how it works, please, refer to the previous ER (OGC 17-019). MapML is a new media type included in an Hypertext Markup Language (HTML) page in a <map> section in a <layer> element. This Testbed-14 ER is mainly focused on the description of the MapML media type and its evolutions. In particular, it considers issues about the Coordinate Reference System (CRS) types in MapML, Feature and properties encoding, Cascading Style Sheets (CSS) symbolization, multidimensional data etc.



# **“Important Things” discussion**

# Questions about other WG reports?

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- none

# Topics

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- Align Web Service Security standard with the Spatial Data on the Web roadmap (no discussion)
- Consistent OGC approach to cross-community information sharing, domain model representation, and (smart) geosemantic technology building blocks
- Assess suitability of an XML-based document encoding for OGC documents that can be editing with our current means and publish to multiple templates





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# **Working Group Reports (no motions)**

109th OGC Technical Committee

Charlotte, NC USA

Scott Simmons

13 December 2018



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# 3DIM DWG

109th OGC Technical Committee

Charlotte, NC USA

J Stoter, D Graham, C Rönsdorf

13 December 2018

# The most important thing for this WG is...

---



There's still a lot of 3D activity in OGC.

# Agenda

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- Urban Development utilizing "i-City Restoration (Urban Structure Visualization)"; Kentaro Akahoshi, Reo Iijima; Urban Structure Visualization Promotion Organizatio
- CityGML in China, Trevor Taylor/Scott Simmons
- OGC Indoor Mapping and Navigation Pilot - Public Safety ADE, Mohsen Kalantari
- ER for the CityGML and AR, Jérôme Jacovella-St-Louis

# Activity Summary



- Discussion topics
  - Use of CityGML

- Upcoming deliverables
  - none

- Coordination (ongoing and planned)
  - TB14: ER review
  - Mixed reality on the Edge CDS

- Future meetings
  - Feb 2019 TC meeting



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# 3D Portrayal Service SWG

109th OGC Technical Committee

Charlotte, NC USA

V. Coors, G. Gesquière

13 December 2018

# The most important thing for this WG is...

---



Visualization of 3D data, but not only

Strong links with other kind of data (2D, ...), other standards (WFS3.0, ...), other initiatives (portrayal, tiling, ...)

# Agenda

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- TOP 1: 3D Portrayal Service and WFS 3.0 - Results of Testbed 14 (V. Coors)
- TOP 2: High-Quality Server-Side Rendering using the OGC's 3D Portrayal Service – Applications and Outlook (M. Christen)
- TOP 3: Future perspective of 3DPS SWG (V.Coors, G. Gesquiere)
- TOP 4: AOB





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# Aviation DWG

109th OGC Technical Committee  
Charlotte, NC USA

Hubert LEPORI, EUROCONTROL

13 December 2018

# Agenda

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- GML profile for Aviation, Eduard POROSNICU, EUROCONTROL
  - Objectives
  - Online resources
  - Planned schedule
- Straight lines, polygons and CRS definitions, Mark HEDLEY, UK MET OFFICE

# Activity Summary



- Discussion topics
  - straight lines, polygons and CRS definitions (see Aviation DWG mailing list for details)

- Upcoming deliverables
  - GML Profile for Aviation as best practice

- Coordination (ongoing and planned)
  - Met/Ocean and UxS DWGs

- Future meetings
  - next TC Meeting
  - Ad-hoc teleconferences as needed



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# **Blockchain and Distributed Ledger Technologies Ad-hoc**

109th OGC Technical Committee  
Charlotte, NC USA  
13 December 2018

# The most important thing for this WG is...

---



How Blockchain can be used for Proof of Location, including in determining land property rights; as well as how it compares to Global Navigation Satellite Systems (GNSS)

# Agenda

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- Charter status update – Gobe Hobona (OGC)
- The Proof-of-Origin Based Cryptographic Location Network – Alex DeConde (XYO)
- Blockchain & Proof of Location – Chris Mellon (New America)
- Alysida Enterprise Blockchain – James Gamble (Alysida)
- An introduction to the world's first fast, fair, and secure distributed public ledger – Donald Thibeau (Hashgraph/Swirls)
- Esri and Blockchain – Adel Bolbol Fernández PhD, Matthew Pennells (Esri)

# Activity Summary



- Discussion topics
  - Proof of Location (PoL)
  - Proof of origin
  - Comparison of PoL with GNSS
  - W3C Verifiable Claims Working Group
  - Enterprise blockchain
  - Distributed public ledgers
- Upcoming deliverables
  - Charter Public Comment/Review
- Coordination (ongoing and planned)
  - Architecture DWG
  - Land Admin (DWG)
  - Security DWG (planned)
- Future meetings
  - None planned

# Key activities

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- Charter to go out for public review in early 2019





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# **CDB SWG Closing Plenary Report**

109th OGC Technical Committee

Charlotte, NC USA

David Graham

13 December 2018

# The most important thing for this WG is...

---



Beginning the work to create a major revision: CDB 2.0

# Agenda

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- **Turn on GTM recording**; Patent Call; roll call; quorum;
- New SWG Voting Member: Lance Moss, Rockwell-Collins
- New SWG Observer: Sam Chambers, US DOD JS J7
- SWG Roadmap update; CDB Geopackage IE SITREP
  - Possible carryover from earlier IE ad-hoc meeting
- Outside events recap: I/ITSEC; ISG DWG
- CDB 1.0 CITE Test update / situation report: Dr. Sara Saeedi
- Major Discussion: beginning the CDB 2.0 work
- CRP's
- Other Business / New Business
- Short term meeting schedule



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# **Cit Sci DWG**

109th OGC Technical Committee

Charlotte, NC USA

Joan Masó

13 December 2018

# The most important thing for this WG is...

---



The CitSci Interoperability Experiment is ongoing. You can still join an active team that is discussing about vocabularies, data sharing, single-sign-on and data quality issues. The first edition of the activity will end on June 2019

More info:

[http://external.opengeospatial.org/twiki\\_public/CitSciE/WebHome](http://external.opengeospatial.org/twiki_public/CitSciE/WebHome)

# Agenda

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- Landsense engagement platform and the options to globally interoperate for a better collaboration in citizen science
  - Andreas Matheus, Secure Dimensions
- Data quality and provenance annotations
  - Lucy Bastin, JRC
- Report on the Citizen Science Interoperability Experiment
  - Joan Maso, UAB-CREAF
- Relation to NAD group. Small discussion
  - Anne Bowser?

# Activity Summary



- Discussion topics

- Annotations of documents extracting processes and sources related with citizen science
- Relation to Non Authoritative Data

- Upcoming deliverables

- CitSci IE ER

- Coordination (ongoing and planned)

- NAD

- Future meetings

- Next TC Meeting
- Regular telecons of the CitSciIE

# Key activities: CitSciE



FRIDAY SEPTEMBER 14TH

OGC CITIZEN SCIENCE IE KICK-OFF

9-15h Kick-off in  
Stuttgart



- **Vocabularies** for Citizen Science in particular **project metadata** standards implementation in **catalogues** of CitSci projects.
- The use of OGC standards or (e.g. Sensor Web Enablement (SWE)) to support **data sharing and integration** among CS projects, and with other sources, esp. authoritative data (e.g by following SWE4CS);
- The integration of CS projects/campaigns in **Single Sign-On** system (SSO) federation;
- How to **document** critical metadata, including **data quality** aspects, and generate a data quality label.



Initiators

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# CityGML SWG

109th OGC Technical Committee  
Charlotte, NC USA

CityGML Chairs – C Rönsdorf, C Nagel, C Smyth  
13 December 2018

# The most important thing for this WG is...

---



Gridlock – no consensus on future scope and shape of CityGML 3.0. However, agreed plan to proceed with CityGML 3.0 hackathon in 2019 as key future activity.

# Agenda

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- Welcome members/observers/OGC staff
- Patent call
- Sign-in/Roll Call – Do we have quorum?
- Status: where we are and the path forward (chairs)
- Discussion: possible CityGML DWG (chairs)
- CityGML 3.0 Hackathon (Carsten)
- Conceptual Model (Steve)
  - What do we standardise?
  - Opportunity: ADE + Profiling = AD Targeting

# Agenda

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- Ownership of CityGML.org (chairs)
- Development timeline (chairs)
- Motion to agree next steps (Carsten)
- Recent developments in conceptual model (Steve)
  - Working group – identify participants who want to work/edit
  - Update from SWG members about development work
  - GitHub [editor-model-updates](#) branch with new work
  - Discussion
- Discussion: resolving some GitHub issues (Steve)
- Other
- Next meeting
- Adjourn



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# **Coordinate Reference Systems SWG/DWG**

109th OGC Technical Committee

Charlotte, NC USA

Keith Ryden

13 December 2018

# The most important thing for this WG is...

---



How will the authors of OGC Standards that have chosen not to use CRS Well Known Text to communicate properties of Coordinate Reference Systems update their standards to support new/updated capabilities defined in OGC Topic 2 and ISO 19111?

What will authors tell implementations to do when coordinate axis properties are dynamic or not accessible strictly by ID through existing registries – information that is carried in the CRS WKT...

# Agenda

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- ISO 19111 / OGC Topic 2 revision status
- WKT
  - Revision status
  - Identifier
  - Axis order
  - Concatenated operation
  - Other comments
- OGC Topic2/ISO 19111 revision and GML



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# Coverages & Datacubes

109th OGC Technical Committee

Charlotte, NC USA

Peter Baumann

13 December 2018



# Agenda

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- status brief (P. Baumann)
- New Datacube Aspects: Federation, Security (P. Baumann)
- Data Cubes Community Practice - first draft (G. Percivall)
- A brief update on our work with OPENAPI and “Weather on the WEB” using WCS 2.1 (P. Trevelyan)

# Key activities

---



- Discussion topics
  - Datacube coverages: their data & service model
  - Datacube federation, security (with live demo)
  - Swath coverage data: T14 experiments with REST service interfaces
- Upcoming deliverables
  - 2<sup>nd</sup> RFC of WCS MetOcean Application Profile



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# Data Quality DWG

109th OGC Technical Committee

Charlotte, NC USA

Sam Meek

13 December 2018

# The most important thing for this WG is...

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This group is seeking to work with other groups inside and outside of the OGC as data quality permeates so much of what we do. We currently have a focus on qualification of non-authoritative data.

# Agenda

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- Four Years of Progress within NASA and ESIP on Earth Science Data and Information Quality
  - Presenters: Yaxing Wei, H. K. “Rama” Ramapriyan, David F. Moroni, and Ge Peng
- LandSense update including artificial intelligence
  - Presenter: Sam Meek
- NAD Ad-hoc update
  - Presenter: Sam Meek
- AOB/Discussion

# Activity Summary



- Discussion topics

- NASA's contributions to data quality through their ESIP working groups.
- Update on LandSense and use of AI in data quality.
- Continuing use of the ISO standards that are conceptually very good but tests are slightly outdated.

- Upcoming deliverables

- NASA/ESIP uncertainty paper sent to OGC for feedback and comment.

- Coordination (ongoing and planned)

- NAD Ad-hoc with CitiSci, QoS and Geospatial User Feedback.
- NASA/ESIP reached out for future work.
- Feedback from LandSense to ISO/TC211 on how to make the testing relevant to crowdsourced data as the concepts are sound.

- Future meetings

- Undecided, but potentially a meeting at the June TC

# Key activities

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- The main topics of discussion were:
  - Use of ISO standards in data quality and their applicability to crowd sourced data.
  - The work going on in the NAD ad-hoc including the production of the discussion paper and use cases on Github.
  - The use of AI in data quality procedures.
- The discussion paper should be complete by the June TC.
- There was also interest from the NASA ESIP group on future collaboration, this will be followed up upon release of their 6 position papers.



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# DGGS DWG

109th OGC Technical Committee

Charlotte, NC USA

Matthew Purss

13 December 2018



# The most important thing for this WG is...

---



Exploring the application, and impact, of higher dimensional  
DGGS implementations on the current OGC DGGS  
Standards baseline.

# Agenda

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## Surface DGGS Topics:

- **Presentation:** *Update on Digital Earth Canada DGGS activities* – Peter Rushforth (NRCan)

## 3D DGGS Topics:

- **Presentation:** *“From point clouds to voxels and where a DGGS could fit”* – Sisi Zlatanova (UNSW)
- **Presentation:** *“GEBCO’s Seabed2030 Initiative”* – Andy Hoggarth (Teledyne)/Thierry Schmitt (Shom)

## Standards Roadmap Discussion Topic:

- Could a 3D DGGS be implemented in conformance with Topic 21?
- If not, what are the gaps?

# Activity Summary



- Discussion topics

- Digital Earth Canada Update
- Use of Voxels in BIM (a step towards 3D DGGS)
- The value of 3D+ DGGS to GEBCO and Seabed 2030
- What are the gaps in the current DGGS standards baseline that higher dimensional DGGS present

- Upcoming deliverables

- No specific DWG deliverables forecast for the next quarter

- Coordination (ongoing and planned)

- GEBCO, EC, UN targeting broader applications of both surface and higher dimensional DGGS
- Continued outreach activities to promote DGGS and explore their application to spatial industries

- Future meetings

- Next telecon. 9 Jan 2019
- Next TC Meeting – Feb/Mar 2019 in Singapore
- Marine Summit during Feb/Mar 2019 TC in Singapore

# Key activities

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- Industry/Community engagement to further the awareness, adoption and implementation of DGGS technologies
- Elaboration of implications (and future work items for the DGGS SWG) of extending surface DGGS to higher dimensional constructs.
- Discussion and refinement of the DGGS Registry Governance Framework in close collaboration with OGC Staff.



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## **DGGS SWG**

109th OGC Technical Committee

Charlotte, NC USA

Matthew Purss

13 December 2018

# The most important thing for this WG is...




Publishing Topic 21 as a companion ISO Standard

# Agenda

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- ISO 19170 update
  - Review of Topic 21 document reformatted into the ISO/TC211 document template
  - Review of UML model for submission to ISO/TC211 Harmonized Model
- DGGS Registry update 
  - Collecting/validating requirements for v1.0 DGGS registry infrastructure
  - Governance Framework to certify candidate OGC DGGS specifications.

# Key activities

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- Publication of Topic 21 as ISO 19170
- Establishment of the OGC DGGS Registry
- Scoping relevant DGGS protocols and extensions to define and specify standardized DGGS API's and higher dimensional DGGS





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# DocTeam

109th OGC Technical Committee

Charlotte, NC USA

Scott Simmons

13 December 2018

# The most important thing for this WG is...

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Assess suitability of an XML-based document encoding for OGC documents that can be editing with our current means and publish to multiple templates.

# Agenda

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- Living documents
- Use of automated publishing
- Official position
- Templates and deviations (e.g., GeoPackage extensions)

# Activity Summary



- Discussion topics

- Living documents are acceptable if they are not normative
- Normative documents will not be automatically-generated (e.g., with GitHub pages)
- “Official Position” is now defined
- All extensions must use the OGC standard template

- Upcoming deliverables

- none

- Coordination (ongoing and planned)

- Ribose Inc. / CalConnect for publishing and document management toolchain

- Future meetings

- next TC Meeting



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# **EDM DWG Closing Plenary Report**

109th OGC Technical Committee

Charlotte, NC USA

Don Sullivan

13 December 2018

# The most important thing for this WG is...

---



Challenges supporting spatial data integration in the disaster  
and emergency management context

# Agenda

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- Terry Idol
  - An update on the Disasters CDS and request for sponsors for the pilot.
- David Graham
  - Report on a draft RFI for an OGC Concept Development Study, sponsored by SOFWERX [innovation workshop/organization that works for US SOCOM]; the CDS is tentatively called "Mixed Reality to the Mission Edge"
- Dean Hintz
  - A brief discussion on some of the challenges we have seen with supporting spatial data integration in the disaster and emergency management context. A couple of examples that come to mind are flood zone mapping and UAV storm damage assessments.
- Josh Lieberman/Lew Leinenweber
  - A talk about SCIRA, NGFR Handbook, and body-worn tech for first responders / public safety.
- <https://www.dhs.gov/science-and-technology/ngfr/handbook>
- Marcus Alzona
  - Results preview/news on a recent DHS S&T Next Gen First Responder (NGFR) operational exercise, which was leveraging SensorThings (and had multiple OGC members involved).

# Activity Summary



- Discussion topics
  - Challenges supporting spatial data integration

- Upcoming deliverables
  - N/A

- Coordination (ongoing and planned)
  - ESIP
  - DHS
  - FEMA/USAID

- Future meetings
  - Next TC Meeting>





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# OGC Energy Summit

109th OGC Technical Committee

Charlotte, NC USA

Eddie Oldfield, John Simmins

13 December 2018

# The most important thing for this WG is...

---



OGC E&U DWG can identify market requirements and enable coordination between relevant SWGs, for knowledge exchange and to facilitate development of interoperability pilots / projects, where new combination of standards are needed to solve pain-points in Energy & Utilities Domain.

Members contribute to efforts to Document Profiles of Implementation, identify Gaps / Future Research, and collaborate to Demonstrate interoperable solutions for key pain points (identified) in the energy and utility domain.

Build Trust and Demonstrate Value

# Agenda

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- Session One – Context Setting: Role of OGC standards, Summary of Summit #1, Energy Data Roadmap, and Digital Transformation of Utilities
- Session Two – Smart Energy Utilities
- Session Three – Smart Energy Communities
- Session Four – Smart Energy Networks

# Activity Summary



## • Discussion topics

- Distribution Model in GIS for network analysis, asset mgmt, outage restore, integration of DER; + data for training AI, neural network approaches
- Community Energy Planning
- Renewable Resource Assessment
- Energy and the Built Environment (e.g. CityGML, BIM, LandInfra). Above + Under Ground asset management

## • Upcoming deliverables

- Summit Report -> Wiki (January)
- Refine Requirements and Scenarios (identified in Summit #1 + #2)
- Identify Sponsors / Participants for Interoperability Pilots or Demonstration Project (June?)
- Discussion Papers (June)
- ...Profiles of Standards... (anytime)

## • Coordination

- Feed requirements to relevant SWGs; engage SWG members to develop interop pilots to solve energy and utility pain-points (or demonstrate)
- Interop between OGC standards (e.g. CityGML) with IEC CIM – for DERMS and Network Analysis (multi-utility); +BIM, Green Button, etc

## • Future meetings

- Bi-Monthly Web Meeting
- Next TC?
- QUEST Talks (Canada)
- Maybe consider 3<sup>rd</sup> co-chair, in order to help manage new activities / rotate between Regions.

– Use EPRI training data for Interops?



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# EO Exploitation Platforms DWG

109th OGC Technical Committee

Charlotte, NC USA

Nuno Catarino

13 December 2018

# Earth Observation Exploitation Platforms DWG



Distributed platforms in Earth Observation are an increasing trend worldwide, with many institutional as well as satellite-based commercial platforms.



The *EO Exploitation Platforms DWG* is a forum for addressing these emerging platforms, impacting several areas of current OGC activity (Metadata & Cataloguing, Security, Earth Sciences DWGs, and others).



Participation of both institutional and private sector in this DWG will address standardization and interoperability issues for multiple platforms.



# Agenda



- 10:15 - DWG Introduction and Next Steps Nuno Catarino (DEIMOS)
- 10:30 - Alexa, open NASA Earthdata - Joe Lee (HDF Group / NASA)
- 11:45 – OGC Session at the 11<sup>th</sup> SDE - (Bart de Lathouwer)
- 10:50 - Implementing Exploitation Platforms in ESA - Cristiano Lopes (ESA)
- 11:04 - Introduction to the Common Architecture - Richard Conway (Telespazio-VEGA UK)
- 11:18 - Automated 3D Mixed Reality at the Edge - Request for Information - Terry Idol, Carl Reed (OGC)
- 11:32 - Testbed-14 EO Clouds - Paulo Sacramento (Solenix)
- 11:46 - Testbed-14 Authorisation Authentication and Billing Engineering Report - Jérôme Gasperi (Geomatys)

# Activity Summary



- Discussion topics

- Setup of DWG, members and co-chairs
- Implementation of Exploitation Platforms
- Related testbed-14 activities

- Upcoming deliverables

- DWG Charter approved (Stuttgart TC)
- Federated Clouds Engineering Report
  - [Pending](#) review until 14 Dec
  - For voting 17 Dec – 4 Jan'19

- Coordination (ongoing and planned)

- Earth Systems Science, Metadata & Cataloguing and Security DWGs
- OpenSearch, WCS, WMS, WPS
- ESA, NASA, other institutions
- Private sector

- Future meetings

- Feb/Mar'19: TC meeting in Singapore
- Jun'19: TC meeting in Leuven
- Sep'19: TC Meeting in Alberta
- Date TBD: Web meetings



# Key activities

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- DWG setup and charter approved (Sep'18 TC in Stuttgart)
- Selection of co-chairs (Dec'18 TC in Charlotte)
- Main topics of this meeting:
  - Enabling OGC Web Services through CUMULUS
    - CUMULUS Workflow: Data Discovery, Transformation and Archiving
  - ESA's implementation of Exploitation Platforms and Common Architecture
  - Automated 3D Mixed Reality at the Edge
    - RFI to be released early Jan
  - Overview of Testbed-14 results:
    - EO Clouds (D008 and D009)
    - Authorization Authentication and Billing ER (D010)
  - OGC session at the 11th ISDE, Florence Italy, 24 - 27 Sep 2019:  
*The role of GEOSpatial information standards in a transformed society*

# Motion for DWG Chairs



- The DWG recommends that the OGC Technical Committee approve the following individuals as co-chairs of the EO Exploitation Platforms DWG
  - Nuno Catarino (DEIMOS)
  - Cristiano Lopes (ESA)
  - Chris Lynnes (ESA)
  - Don Sullivan (NASA)
  - *Someone from Australia still TBD*
- NOTUC



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# GeoTIFF.SWG

109th OGC Technical Committee  
Charlotte, NC USA  
Emmanuel Devys  
13 December 2018

# The most important thing for this WG is...



Updating the current GeoTIFF specification, aligning it with current practice, OGC standards rules, modernization of EPSG codes rules (in accordance with EPSG registry) and better handling vertical CRS for elevation data.

**Keep Backward compatibility in this minor revision**

# Agenda

---



- GeoTIFF.SWG logistics and resources
  - change of Chair
  - call to new members
- discussion of the current version of the revised GeoTIFF draft (opengeospatial/geotiff)
  - cf.  
<https://github.com/opengeospatial/geotiff/tree/master/GeoTIFF%20Standard/standard>
  - review of open issues
- POW till next TC



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# **GMLJP2 SWG**

109th OGC Technical Committee

Charlotte, NC USA

Lucio Colaiacono

13 December 2018

# The most important thing for this WG is...

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To present a discussion paper about a possible solution for annotations (symbology) to force discussion and finalization of the long lasting issue.

# Agenda

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- Annotation discussion





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# **HY\_Features SWG**

109th OGC Technical Committee

Charlotte, NC USA

David Blodgett

11 December 2018

# Agenda

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- CHyF Demo
  - <http://chyf.ca/chyf-beta/>
- HY\_Features Ontology / Appschema Publication Progress
- CHyLD Demo US/Canada HY\_Features-based linked data.
  - <https://cida-test.er.usgs.gov/chyld-pilot/app/index.html> and
  - <https://geoconnex.ca/gsip/app/index.html>
- Experience with HY\_Features in ELFIE



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# **Joint IDBE / LandInfra / SmartCities DWGs**

109th OGC Technical Committee

Charlotte, NC USA

DWG Chairs

13 December 2018

# The most important thing for Smart Cities DWG is...

---



Quote:

"If I have been able to see farther than others, it was because I stood on the shoulders of giants" – Isaac Newton

Purpose:

Create a curated package of knowledge (best practices and playbooks) to support Smart Cities initiatives to “build on the shoulders of giants”.

Reach out to Smart Cities to promote the package

# The most important thing for LandInfra DWG is...

---



- The most important thing for LandInfra DWG is to redefine the scope as it now is based on continuation of LandXML. Implementations need to be supported and work on sample datasets and version 2.0 started.

# Agenda

---



- Geotechnical workshop - Beaufils Mickael
- Status and activities of the SCIRA project - Josh Lieberman
- Update of the IDBE SC – Carsten Roensdorf
- Requirements for geospatial field application for different industries – HC Gruler
- Umbrella DWG – «Build Environment» DWG
  - IDBE DWG
  - SmartCities DWG
  - LandInfra DWG
  - PipelineML SWG

# Activity Summary



- Discussion topics

- Purpose of the group(s)
  - Create a package of knowledge which communicates the value of geospatial information and standards to Smart Cities
  - Outreach to cities
  - Provide support for LandInfra implementations

- Upcoming deliverables

- Coordination (ongoing and planned)

- 3D and the Built Environment cluster (3DIM, E&U, IDBE SC, Interoperable Simulation and Gaming, Land Admin, LandInfra, Point Cloud, PipelineML)
- SensorThings API SWG
- ISO/IEC JTC 1 WG 11

- Future meetings

- Future joint meeting at next TC

# Key activities

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- IDBE update
  - Coordinate projects between OGC and BSI
  - IDBE meeting in Singapore – next in Switzerland 1-2 April Heerbrugg
- Geotechnical workshop 22-24 January Paris
- SCIRA Update
- ISO/TC127
- Umbrella DWG
- SmartCities / IoT /... workshop in TC Banff ?





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# IndoorGML SWG Report to TC

109th OGC Technical Committee

Charlotte, NC USA

Ki-Joune Li

13 December 2018

# Agenda

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- Closed Session
  - SWG Report by Ki-Joune Li – 5 min.
  - IndoorGML 1.1 for including storey by Ki-Joune Li - 10 min.
  - Progress on IndoorGML 2.0 and Discussion by Sisi Zlatanova - 20 min.
  - Review on the ER from NIST-OGC Indoor Mapping and Navigation Pilot Project. - 5 min.
  - Presentation: IndoorGML - implementation progress and challenges from the Pilot by Dean Hintz - 7 min.

# Agenda

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- Open Session
  - Opening by George Percivall and Ki-Joune Li
  - Introduction to OGC IndoorGML by Ki-Joune Li
  - OpenStreetMap Indoor by Antoni Pérez-Navarro and Joaquín Torres Sospedra
  - NIST(PSCR)-OGC Indoor Pilot Project by Jeb Benson and George Percivall
  - Apple IMDF by Yuval Kossovsky
  - Indoor data: quality, modeling and integration challenges by Dean Hints
  - Discussion and closing



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# **Interoperable Simulation and Gaming Domain Working Group**

109th OGC Technical Committee

Charlotte, NC USA

David Graham

13 December 2018

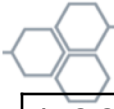
# The most important thing for this WG is...

---

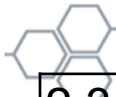


Finding experienced stakeholders from the ‘gaming’ (for training and rehearsal) community to help us make the ‘G’ in ISG better represented.

# Agenda: first session



1:00pm - 1:05pm	Introductions, Admin Setting the Stage	ISG DWG Chairs	Confirmed
1:05pm - 1:30pm	US DOD Geospatial Technical Capability Team and Emerging Capability Technology Demonstration	Sam Chambers, Joint Staff J7	Tentatively confirmed pending travel orders
<del>1:30pm - 1:45pm</del>	<del>Hosted Simulations of IRA Ambushes; CityGML Use Case</del>	<del>Steve Carl Smyth, OGC CityGML Co-Chair</del>	<del>Confirmed</del>
1:45pm - 2:05pm	Procedural Model Generation	Ron Moore, Leidos	Confirmed
2:05pm - 2:20pm	Building Game-based training databases	Ron Moore, Leidos	Confirmed



2:35pm - 2:45pm	SOFWERX 'Mixed Reality to the Mission Edge' Concept Development Study	Carl Reed	Confirmed
2:45pm - 3:05pm	Kronos GLTF Standard and ISG	Nacho Sanz-Pastor, Aechelon Technologies	Confirmed
3:05pm - 3:20pm	Lessons Learned and the Future for Enabling Realistic Mission Readiness	Mike Vaughn, VATC	Confirmed
3:20pm - 3:40pm			
3:40pm - 3:55pm	CDB SWG Activities / Update	David Graham	Confirmed

# Activity Summary



- Discussion topics

- Standards possibilities for Procedural Generation
- GLTF as a candidate encoding for 3D in OGC CDB
- Human 'geography' datasets in ISG standards
- Rules-of-Engagement for CDB 2.0

- Upcoming deliverables

- Beginning the journey to CDB 2.0

- Coordination (ongoing and planned)

- CDB / Geopackage IE
- SOFWERX sponsored CDS:
  - Mixed Reality at the Edge

- Future meetings

- Next TC meeting



# Next Quarter WG Communications Plan

---



- Communication from OGC Staff and the ISG DWG to the newly formed FG3D group led by NGA (Dr. Tom Creel)
- Consider arranging face-to-face meeting between Mark Reichardt and Jesse Citizen / Leigh Yu
- PR/CFP of the CDB/Geopackage IE
- RFI of the SOFWERX sponsored CDS



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# LandInfra SWG

109th OGC Technical Committee

Charlotte, NC USA

HC Gruler

13 December 2018

# The most important thing for this WG is...



Create sample datasets and get some feedback and push implementations for InfraGML 1.0 – Get aligned with other WG and define the scope and collect the requirements for the next version.

# Agenda

---



- Roadmap for 2019
  - Regular conference calls
  - Definition of work packages
  - Ambassador for new implementations
- Site
- LADM
- Utilities



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# Marine DWG Report

109th OGC Technical Committee

Charlotte, NC USA

Sebastian Carisio, Co-Chair

13 December 2018

# The most important thing for this WG is...

---



The Marine DWG is currently monitoring/involved with the following initiatives:

Marine SDI-Concept Development Study RFI

GEBCO Seabed 2030 engagement

Marine Summit at Singapore TC

S-121 Pilot

# Agenda

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- Update on MSDI Concept Development Study - workshop, RFI and future plans (Robert Thomas)
- Marine DWG attendance at GEBCO Seabed 2030 meeting readout and way forward (Andy Hoggarth, Teledyne CARIS)
- Marine GeoPackage proposal and development. (Jonathan Pritchard, IIC)
- S-121, OGC pilot project developments. (Jonathan Pritchard, IIC)
- IOGP Seabed Survey Data Model (SSDM) (Roger Lott, IOGP)
- Marine Summit, Singapore. Ideas for content and proposals.
- Co-Chair arrangements.

# Activity Summary



- Discussion topics

- GeoPackage for marine domain key features
- Marine Summit topics
- 3D DGGS for Depth and Elevation for Seabed 2030

- Upcoming deliverables

- Marine SDI-CDS responses to RFI
- Seabed Survey Data Model (SSDM) being prepared to be submitted to OGC as a community standard.

- Coordination (ongoing and planned)

- IHO MSDIWG
- GEBCO
- DGGS DWG
- UN-GGIM MGIWG

- Future meetings

- Singapore, TC & Summit (FEB 2019)
- Busan, MSDIWG & UN-GGIM MGIWG (MAR 2019)



# Key activities

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- Change in UKHO Co-Chair: Jonathan Lewis
- Co-Chair, Andy Hoggarth, presentation at GEBCO Symposium on Bathymetry (NOV 2018 Canberra, Australia)
- MSDI-CDS RFI released to community (NOV 2018). Responses due 17 JAN 2019.
- Coordinating participants, and logistics for Marine Summit (27 FEB 2019).
- No motions or votes recommended to the Technical Committee.



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# Metadata & Catalog DWG

109th OGC Technical Committee  
Charlotte, NC USA

Frédéric Houbie and Danny Vandembroucke  
13 December 2018

# The most important thing for this WG is...

---



Metadata & Catalogues  
(and therefore the DWG)  
are cool ...

Great developments ...  
... need good alignment

# Agenda

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- Catalogue Service 4.0 and Web APIs - (Peter Vretanos - Cubewerx) (5')
- SpatioTemporal Asset Catalog (STAC) - (Michael Smith - Harris) (15')
- Google Dataset Search Beta - (Ed Parsons - Google) (15')
- CAT 2.0 DGIWG profile test and reference implementation - (Dirk Stenger – Lat/Lon) (10')
  - Not enough time for the last presentation! But it is on the OGC Portal; please have a look at it

# Activity Summary



- Discussion topics

- New ways of handling metadata and searching for data
- Need for aligning all the efforts regarding metadata, catalogues (spread over different initiatives)
- Call for playing around with Google Dataset Search Beta

- Upcoming deliverables

- Draft charter MD&C DWG

- Coordination (ongoing and planned)

- OGC Testbeds (14, 15 ...)
- WFS3 SWG
- W3C DXWG
- Projects: POLIVISU, NEXTGEOSS, other projects

- Future meetings

- (Intermediate Telco)
- Singapore and Leuven meetings

# Key activities

---



- Draft charter Metadata & Catalogue DWG
- Extending GeoDCAT-AP discussion paper with implementation guidance and examples
- Follow-up of the W3C DXWG
- Follow up WFS3 work for future catalog API



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# Moving Features SWG Report

109th OGC Technical Committee  
Charlotte, NC USA

Nobuhiro Ishimaru, Kyoung-Sook Kim  
13 December 2018

# The most important thing for this WG is...

---



OGC 16-140r1 “OGC Moving Features Encoding Extension – JSON” Best Practice Paper should be recategorized as OGC Standard.

We should have an OAB discussion before finalizing the draft Standard document.



# Agenda

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17:05-18:00, Tuesday December 11 @ BLDG 3.902

- Roll call, General Introduction, Review the previous discussion at the TC in Stuttgart (Nobu, 10min)
- Discussion on Moving Features JSON for an OGC Standard (Kyoung-Sook, 45min)

8 members presented (including 1 online), Quorum has not been established.



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# **NAD adhoc**

109th OGC Technical Committee

Charlotte, NC USA

Joan Maso

13 December 2018

# The most important thing for this WG is...



Need use cases to start our activities

# Agenda

---



- **Crowdsourcing and Volunteered Geographic Information (VGI) document**
  - <https://github.com/opengeospatial/crowdsourcing-vgi/blob/master/ucr.md>
  - Joseph Abhayaratna
- **The future of this group as stable DWG group**
  - Joan Maso

# Discussion points

---



- Possible new use cases
  - Annotation of images to be used in machine learning (<https://www.zooniverse.org/>)
  - Artificial intelligence to assess the data quality.
  - Combining data from different scales in a single dataset.
  - Candidate geo-synchronization standard
    - [https://portal.opengeospatial.org/files/?artifact\\_id=76559&version=1](https://portal.opengeospatial.org/files/?artifact_id=76559&version=1)
    - Partially originated in Data synchronization and GeoPackage on Testbed 13
  - Crowdsourcing of more than one sources: License IPR + harvesting APIs interoperability.
- Blockchain and provenance and traceability (too much for that?)
- Need for APIs (or web services) for *pushing* data around
  - geo-synchronization (again)

# Activity Summary



- Discussion topics

- More use cases to consider in the Crowdsourcing and Volunteered Geographic Information (VGI) document
- Our relation to Candidate geo-synchronization standard
  - [https://portal.opengeospatial.org/files/?artifact\\_id=76559&version=1](https://portal.opengeospatial.org/files/?artifact_id=76559&version=1)

- Upcoming deliverables

- <document to review by WG, OAB, TC, etc.>
- <document to Pending>
- <vote in progress>

- Coordination (ongoing and planned)

- CitSci.DWG, DataQuality.DWG, SensorThings, Provenance.DWG, SmartCities.Geo-synchronization
- NGA and other (for the use cases) (Gobe)
- BlockChain could be (too much?)

- Future meetings

- Continue de Github document
- Next TC Meeting session
- For the moment, we will continue as an adhoc?



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# **OGC Naming Authority SC**

109th OGC Technical Committee  
Charlotte, NC USA  
13 December 2018

# The most important thing for this WG is...

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IOGP concerns about EPSG definitions published by the  
OGC



# Agenda

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- EPSG CRS registry concerns (Roger Lott)
- Update on nominations for new co-chairs (Gobe Hobona)
- OGC Definitions Server update (Rob Atkinson/Gobe Hobona) [Deferred]

# Activity Summary



## • Discussion topics

- EPSG concerns
  - EPSG Dataset releases have not been mirrored on OGC Definitions Server
  - OGC-NA slow to update EPSG content
  - Treatment of version 0
  - Validity of GML resolving
- No nominations for OGC-NA co-chairs received yet
  - Keep call for nominations open until roles are filled

## • Coordination (ongoing and planned)

- OWS Common Security
- D&I DWG, CRS DWG, PipelineML SWG

## • Upcoming deliverables

- OWS Common Security Codelist Registration
- Sensor Model and Parameter Registers

## • Future meetings

- Teleconference in January 2019 to complete the motion on EPSG CRS definitions
- Singapore TC Meeting 2019

# Key activities

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- Invitation for co-chair nominations is still open
- OGC Sensor Model Registry development
- DGGS registry
- OWS Common Security Codelist registration



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# **OWS Common – Security SWG Report to the TC**

109th OGC Technical Committee

Charlotte, NC USA

Andreas Matheus

13 December 2018

# The most important thing for this WG is...

---



The recently voted standard

**OGC #17-007**

is now ready for publication (including final edits)

Aligns with the Spatial Data on the Web roadmap  
as it enables

OGC Web Services to become Webbie\*

\*: as used in [<https://w3c.github.io/web-roadmaps/sdw/>]

# Agenda



- Final review of the final version of 17-007
  - OK
- Verify that links for Authentication Codelist and resolving of codes is working
  - URLs are not resolving as specified in the document (as of yesterday)
  - From the document:  
**[https://www.opengis.net/def/security/1.0/codelist/authentication/CLIENT\\_CERTIFICATE](https://www.opengis.net/def/security/1.0/codelist/authentication/CLIENT_CERTIFICATE)**
  - What works is this:  
**[https://www.opengis.net/def/security/1.0/codelist/authentication/AuthenticationCode/CLIENT\\_CERTIFICATE](https://www.opengis.net/def/security/1.0/codelist/authentication/AuthenticationCode/CLIENT_CERTIFICATE)**
  - Action Item to Gobe: Make sure that the URLs in the document work BEFORE publishing the document
- Verify that the required DTD / XSD is published
  - <http://schemas.opengis.net/wms/1.3.0/ExtendedSecurityCapabilities.xsd>
  - <http://schemas.opengis.net/wms/1.1.1/ExtendedSecurityCapabilities.dtd>
  - Action to Andreas: Upload DTD and XSD to the portal and inform WMS SWG that we propose to put the DTD and XSD into the WMS schema directories
  - Action to Gobe: Make sure the DTD and XSD get published



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# Perspective Imagery DWG

109th OGC Technical Committee

Charlotte, NC USA

Eric Hirschorn

13 December 2018

# The most important thing for this WG is...

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Discussions about the development of a standard involving search and retrieval from oblique imagery collections.



# Agenda

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- PI DWG Update, Eric Hirschorn, KeyW
  - Purpose and scope of the Perspective Imagery DWG
  - Open topics of discussion
  - OGC still imagery collections standard
    - One that already exists...
    - Revision by this working group for oblique imagery datasets
    - Proposals from Danish Agency for Data Supply and Efficiency
- Oblique Imagery Collection Systems Update
  - Andrew Flatman, Danish Agency for Data Supply and Efficiency (SDFE)

# Activity Summary



- Discussion topics

- Criteria for search for images in oblique datasets
- Survey and workshop for developers of oblique imagery collection systems
- What standards should be used as models for oblique imagery collections systems?
- Where to find good SensorML encodings for frame cameras?
  - See [gmljp2.aeroptic.com](http://gmljp2.aeroptic.com)

- Coordination (ongoing and planned)

- Discussion with experts on EO-WCS
- OGC D&I, SWE, and UxS (for sensor models)
- SDFE

- Upcoming deliverables

- Updates to the DP from SDFE on oblique imagery collections search and retrieval system
- DP describing activities of the DWG, with recommendations towards standards work.
- New charter for the DWG

- Future meetings

- Follow-up skype call with SDFE after Charlotte TC on survey and workshop
- Singapore TC in March 2019
- Leuven, Belgium TC in June 2019

# Key activities

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- SDFE investigating ideas and standards for oblique imagery collection systems involving search and retrieval functionality.
- The most important function of the associated web service is currently thought of as involving imagery search and retrieval. The search involves not just a georeferenced bounding area but also additional criteria such as a view origin and direction (similar to ideas from gazetteer).
- Decision to have a survey and workshop geared towards organizations that have developed such capabilities (similar to what was done for the Point Cloud DWG).
- Survey to be conducted soon after the Singapore TC in March 2019
- Workshop to be conducted at the Leuven, Belgium TC in June 2019



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# PipelineML SWG

109th OGC Technical Committee

Charlotte, NC USA

John Tisdale and Jan Stuckens

12 December 2018

# The most important thing for this WG is...

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Discussed what steps to take next in terms of getting candidate through the approval process and next steps in the event it is approved and published.

# Agenda

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- PipelineML status update
- PipelineML implementations
- Marketing and socialization
- Naming Authority code management
- Github repository
- LandInfra harmonization
- Potential 1.1 revisions
- Potential 2.0 direction



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# **Point Cloud DWG Report to TC**

109th OGC Technical Committee

Charlotte, NC USA

Stan Tillman, Hexagon

13 December 2018

# The most important thing for this WG is...

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Evaluating the content of the Point Cloud Handling ER to determine if/what should be addressed by a potential SWG to define an interoperable Point Cloud Service. So the debatable topic is do we need a single service? If so, what should be standardized?



# Agenda

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- Point Cloud Enrichment and Its Implications for Web Service Development
  - Anh Vu Vo, New York University
- Testbed 14 Point Cloud Engineering Report Status Update
  - Howard Butler, Hobu, Inc.

# Activity Summary



- Discussion topics

- Both presentations centered around the need to have a point cloud service for improved interoperability

- Upcoming deliverables

- The Point Cloud Handling ER will be put forward for a vote after a sufficient amount of time for review.

- Coordination (ongoing and planned)

- N/A for this meeting

- Future meetings

- Next meeting will be in Singapore



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# **SensorThings API Closing Plenary Report**

109th OGC Technical Committee

Charlotte, NC USA

Marcus Alzona

13 December 2018

# The most important thing for this WG is...

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Completing the minor revision of Part I  
Sensing, so that SensorThings API can  
become an INSPIRE downloading  
service.

# Agenda

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- Elect a new co-chair (5 minutes)
- News (5 minutes)
- Principles of Conduct (5 minutes)
- Roadmap, Work Packages (30 minutes)
  - SWG Objectives
  - Work Packages
- Process to propose new work packages (5 minutes)
- Process to handle comments (5 minutes)
- Change Requests (issues in GitHub) (60 minutes)
  - Sensing, Tasking, Rules
  - Conformance Test

# Activity Summary



- Discussion topics

- Elected Marcus Alzona as a co-chair
- Discussed SensorThings roadmap
- Reviewed change requests on GitHub

- Upcoming deliverables

- STA Part I v.1.1
- STA Part III - Rules Engine
- STA Extension – stateless interface for devices to connect to SensorThings
- STA Best Practice on Moving Sensors

- Coordination (ongoing and planned)

- ITU-T FG-DPM, to be held in January 2019 in Seoul, Korea

- Future meetings

- Telecons
- Singapore TC March 2019



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# **SWE DWG**

109th OGC Technical Committee

Charlotte, NC USA

Steve Liang

13 December 2018

# Agenda

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- SWE.DWG Support of SensorML for Remote Sensing Imagery



# Activity Summary



- Discussion topics
  - SWE.DWG Support of SensorML for Remote Sensing Imagery
- Upcoming deliverables
  - Two discussion papers
    1. Discussion paper on how to define SensorML 2.0 documents for remote sensing imagery
    2. SensorML 2.0 encodings of sensor models for imagery
- Coordination (ongoing and planned)
  - Agriculture, UXS, D&I, Marine, Smart Cities and all other SWG/DWG using remote sensors, we will send this document your way!
- Future meetings
  - Next TC in Singapore



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# **Timeseries SWG Closing Plenary Report**

109th OGC Technical Committee

Charlotte, NC USA

Paul Hershberg

11 December 2018

# The most important thing for this WG is...



**Moving forward, an important consideration is for the Timeseries SWG to consider Cross Compatibility & Communication of other ISO/OGC Standards with TSML, including:**

- 1) Discussing the repercussion of implementations as the following edits occur to the following abstract models ISO19123 and ISO19156.
- 2) Considering the Observational / Coverage relationship for any mis-alignment and redundancies
- 3) Communicating and Disseminating the more complex Timeseries Use Cases (NASA's), both outside and inside OGC, to gauge their need across other domains.

All three of the above points need to be taken into consideration as we move toward deciding on **contents for TimeseriesML Version 2.0**. Consensus is to use these above points to move toward:

- Development of a Timeseries Profile of CIS1.1 (update from GMLcov 1.0)
- Developing a JSON Encoding to go along with the XML Encoding (15-042r5)

# Agenda



- Status of TSML Ver 1.2/Ver 1.3
- Cross Compatibility and Communication of other OGC Standards and TSML--> ***Focus of TSML 2.0 ?***
  1. Observational - Coverage Alignment needed (Kathi Schleidt)
  2. Timeseries SWG to communicate with ISO edits
    - Side meetings
  3. NASA Complex Use Cases - Communication amongst OGC
    - Addition of 6<sup>th</sup> use case – moving platform
- Co-chair request



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# **UxS DWG Closing Plenary Report**

109th OGC Technical Committee

Charlotte, NC USA

Don Sullivan, Marcus Alzona

13 December 2018

# The most important thing for this WG is...

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Continued research into UxS data quality, and utilization of that data by Machine Learning applications.

# Agenda

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- Dexter Lewis
  - An overview of the UAS R&D that EPRI is doing for the Power Industry.
- Jane Wyngaard
  - ESIP DroneCluster Minimal Information Framework Update & Next Steps
  - Drone Thing API discussion
  - #Drones4Good at IDW

# Activity Summary



- Discussion topics

- Data quality
- Reuse
- Need more interoperable data sets

- Upcoming deliverables

- N/A

- Coordination (ongoing and planned)

- ESIP, RDA, FAA, EUROCONTROL
- Aviation DWG

- Future meetings

- Next TC Meeting>



# Key activities

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- If you've read this far, see part three of Dr. Wyngaard's presentation, which she did not have time to present, where she describes ongoing efforts by her, and her colleagues, to utilize UxS technologies to protect endangered Rhinos in Botswana.