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Merkator

Closing Plenary PUBLIC CONSOLIDATED SLIDES

111th OGC Technical Committee

Leuven, Belgium

Scott Simmons

27 June 2019

Agenda



- Thanks to Sponsors and Hosts
- OGC: Interoperability – Collaboration – Innovation: Nadine
- Quorum confirmation
- TC Member presentations
 - CityGML Hackathon recap: Carsten Rönsdorf
 - Archiving Geospatial data: Gregor Zafsrnik
 - LADM Update: Chris Body
 - Weather on the Web: Chris Little
 - OGC API – Catalogue SWG: Peter Vretanos
 - DGGS new tasks: Matt Purss
- TC Motions
 - MetOcean WCS profiles: Pete Trevelyan
 - GroundwaterML: Boyan Brodaric
 - WCS/CIS Corrigenda: Scott Simmons
 - OGC API – Features: Clemens Portele
 - GeoTIFF: Emmanuel Devys
- Upcoming TC Meetings
- TC Chair announcements and motions
 - PC Directive for assignment of SWG-DWG relationships
- Working Group reports with motions: Z to 3
- “Important Things” discussion

Thanks to our sponsors





Sponsors



Open Geospatial Consortium (OGC)

Interoperability – Collaboration - Innovation

Nadine Alameh, CEO



- Hydrology
- Meteorology
- Oceanography
- Aviation
- Energy and Utilities
- Emergency & Disaster
- Defense & Intelligence
- Earth Systems Science
- Security
- Data Quality
- Big Data



Communities-
Tech & Domain



Partnerships &
Alliances



Process for Standards
& Innovation

- 3D Information Mgt
- Mass Market
- Public Safety & Law Enforcement
- Geosemantics
- Health
- Agriculture
- Urban Planning
- Land Administration
- Mobile Location Services
- Point Cloud

Global forum for collaboration of developers and users of spatial data



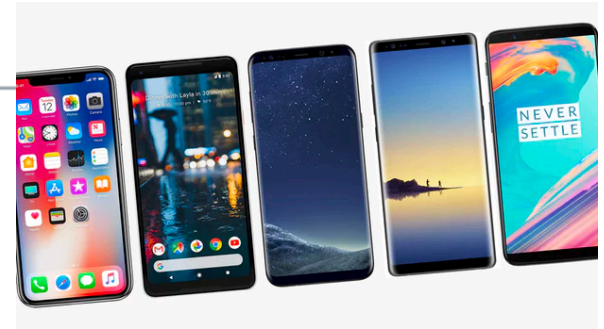
To advance development and adoption of international location standards



Our kids! The next generation

OGC[®]

amazon
Prime



Google

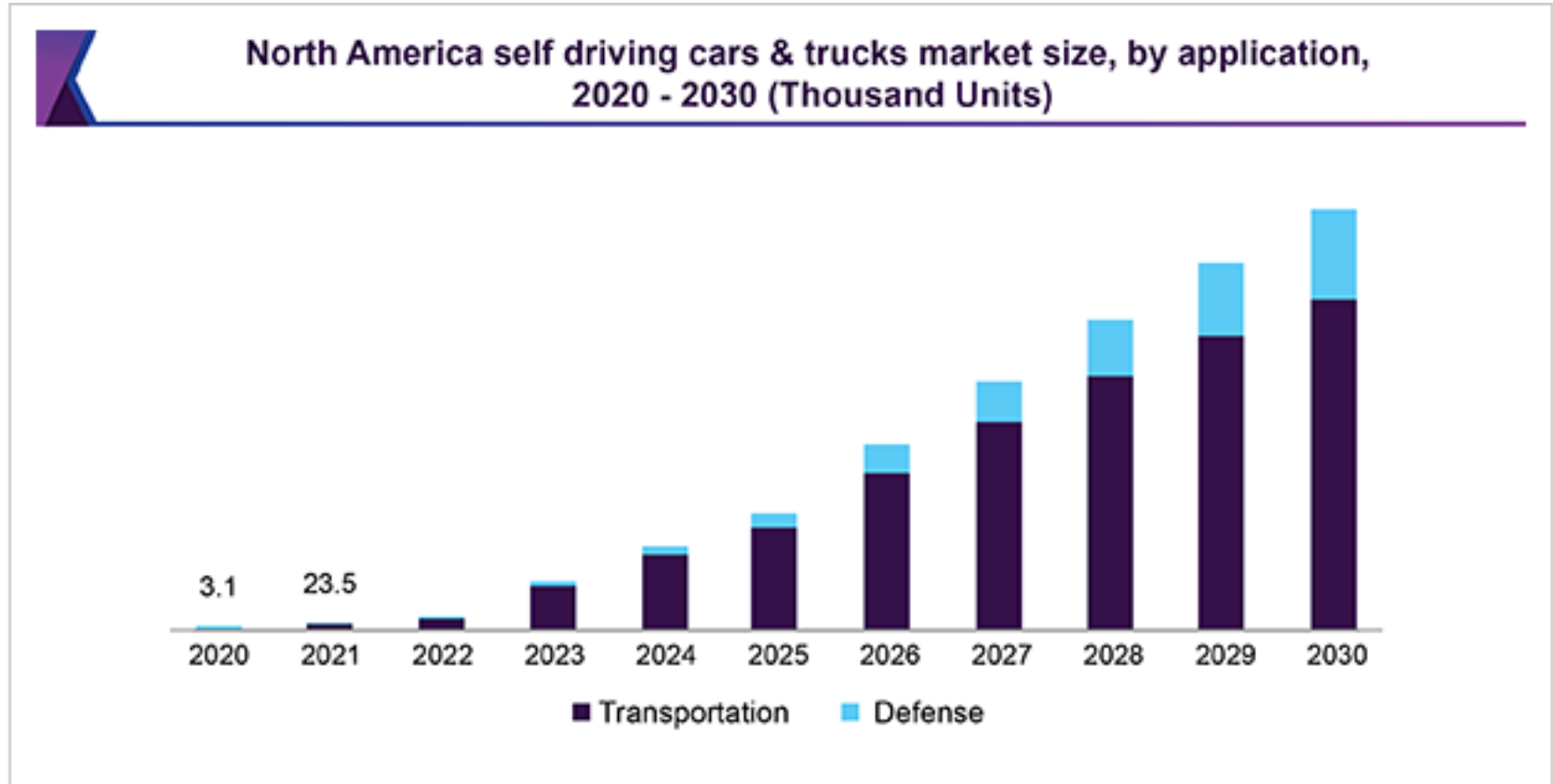


NETFLIX

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OGC®

We live in EXCITING times!



We live in EXCITING times!



<http://www.networkworld.com/article/3147892/internet/one-autonomous-car-will-use-4000-gb-of-dataday.html>



We live in EXCITING times!

- According to Airbus,
 - The commercial UAS market in the US could triple by 2023
 - In 2035, at ANY given hour, over the skies of Paris, there will be **196** commercial aircraft vs. **2500** urban mobility vehicles vs. **16667** cargo delivery drones vs. **58** inspection drones vs. **44** hobby drones
- By 2030 (RTCA, June 2019)
 - 750 million passenger trips in 30 metro areas



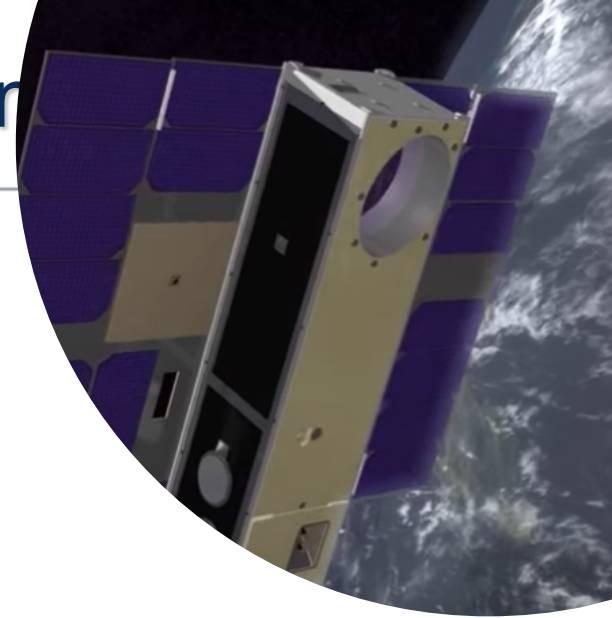


We live in **EXCITING** times!

- **90** sec in airspace
- Boosters back in **9** min
- **1300** miles of airspace closed for over **3** hours
- **1400** flights affected, doing an additional **7000** miles



We live in EXCITING times

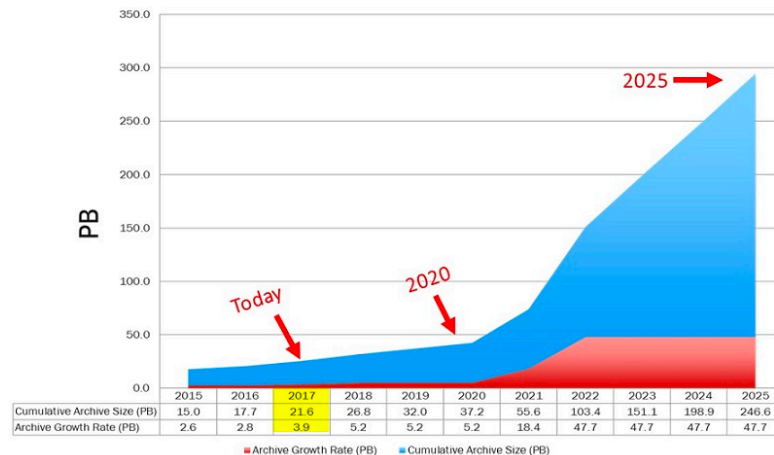


- How do you handle going from **75** satellites (that cost **~\$1.2 B** to get to orbit and take **YEARS** to build) to **~6000** cubesats (costing **~\$10 M** to get to orbit within **MONTHS**) – all by 2025 (NASA ESTO office)



We live in EXCITING times!

- NASA's ESOSDIS Archive going from 22 PB in 2017 to 250 in 2025 (earthdata.nas

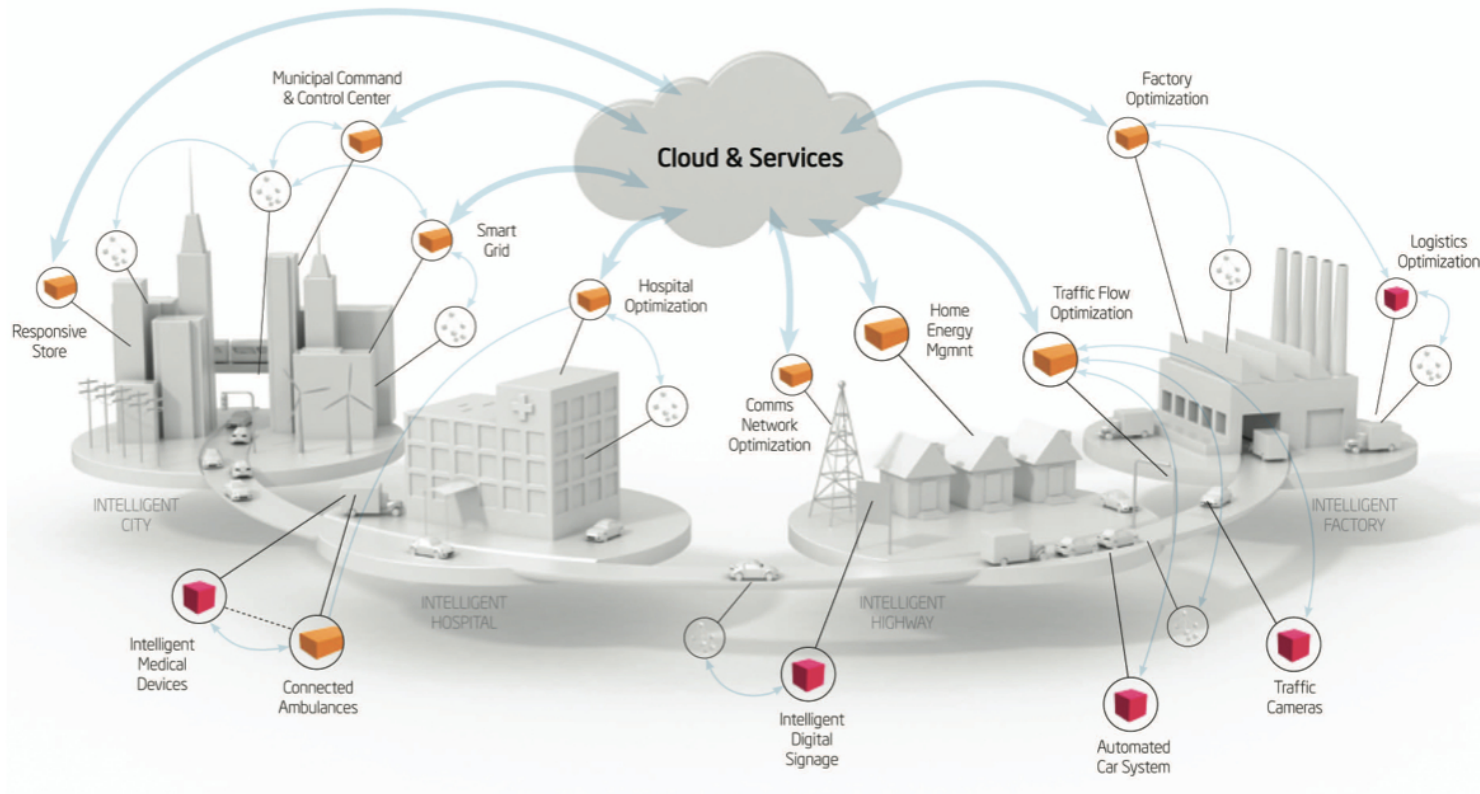


- The European Space Agency's Copernicus Missions archive is an ~8 PB archive and growing
- DigitalGlobe currently archives 70 PB of satellite imagery

We live in EXCITING times!



50 billion Internet-connected things by 2020



We live in SCARY times!



WWF GLOBAL OUR AMBITION OUR WORK GET INVOLVED LATEST KNOWLEDGE HUB



GIFTS

DONATE

ARCTIC WILDLIFE ▾ HOW WE WORK ▾ PLACES ▾ NEWSROOM ▾

The Arctic is warming at a rate of almost twice the global average.

Without urgent action to cut greenhouse gas emissions, the world will continue to feel the effects of a warming Arctic: rising sea levels, changes in climate and precipitation patterns, increasing severe weather events, and loss of fish stocks, birds and marine mammals.

Why it matters



© wwf / Sindre Kinnerød

Summer sea ice is disappearing

Sea ice is critical to Arctic marine life - and



© Marie-Chantal Marchand / WWF-Canada

Shrinking sea ice is a big problem for Arctic wildlife



© WWF / Henry Harrison

Ice melt is a feedback loop

Shiny ice and snow reflect a high

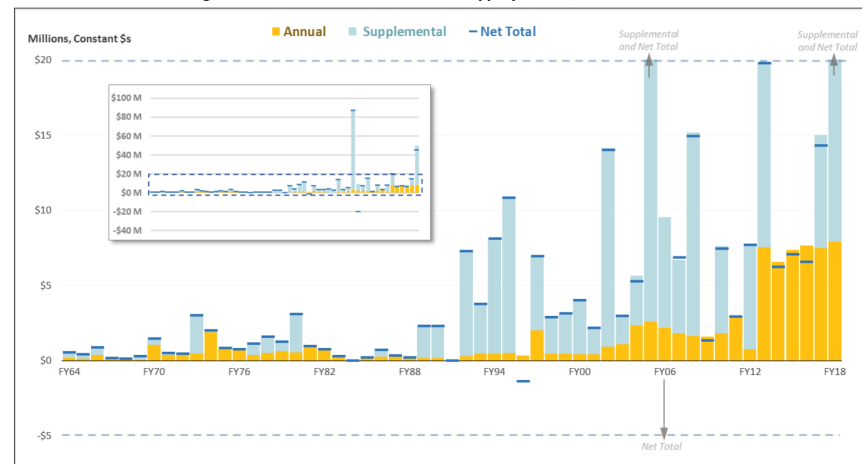
We live in SCARY times!



Since 1980, more than **241** billion-dollar disasters have cost the U.S. \$1.6 trillion and almost **half** of those losses came during the **four** most expensive years: 2017, 2005, 2012 and 2018. (Adjusted to the 2019 Consumer Price Index)

<https://www.bloomberg.com/news/articles/2019-06-11/u-s-hurricane-season-is-unnecessarily-dangerous>

Figure 2. FY2018 Dollar Disaster Relief Appropriations, FY1964-FY2018



The last twenty years have seen a dramatic rise of **151%** in direct economic losses from climate-related disasters, according to a new report released by the UN Office for Disaster Risk Reduction® (UNISDR).

We live in SCARY times!

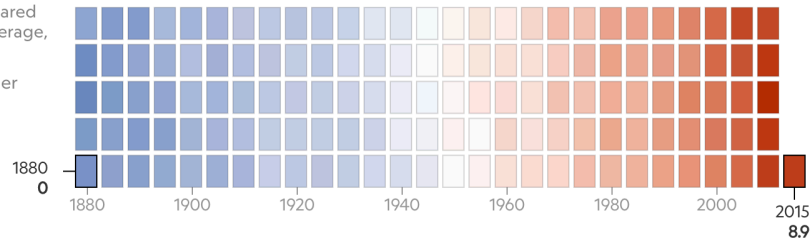


- Sea levels are rising
 - with estimates of the cost of sea level rise at **14 Trillion USD** a year by 2100 (<https://phys.org/news/2018-07-sea-world-trillion-year.html>)

Sea levels are rising.

Sea level change compared with a 20th-century average, inches

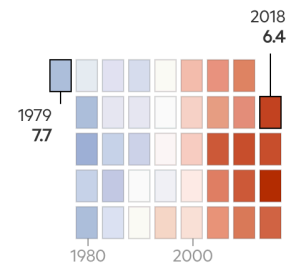
Lower Higher



The extent of our arctic sea ice is shrinking.

Arctic sea-ice extent compared with a 1979-2008 average, millions of square miles

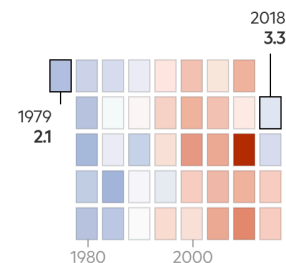
Larger extent Smaller extent



The Greenland ice sheet is melting.

Percent of ice sheet surface area that is melting compared with a 1979-2008 average

Less melt More melt



OGC – Location matters



- Using location, OGC connects people, communities, technology & decision making for the greater good
 - By focusing on making location data more accessible and interoperable
 - By evolving a collaborative and agile process combining standards development with innovation experimentation



People &
Communities



Technology &
Decision
making



Standards &
Innovation

Plan



1. Internal operational improvements to scale the organization
2. OGC APIs – energy, evolution, experimentation
3. Revamped member care and satisfaction process
4. Focus on value and impacts in our messaging
5. Promote promote promote – marketing beyond our geo bubble



TC Member Presentations



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CityGML SWG – CityGML 3 Hackathon

111th OGC Technical Committee

Leuven, Belgium

Carsten Rönsdorf

26 June 2019

CityGML Hackathon



11-12 June at Geovation in London

I am interested in
simple buildings

OGC®
Making location count.

I am interested in
BIM

OGC®
Making location count.

I am interested in
interior of buildings

OGC®
Making location count.

I am interested in
something

OGC®
Making location count.

I am interested in
buildings

OGC®
Making location count.

I am interested in
city furniture

I am interested in
sensor integration

OGC®
Making location count.

I am lost!

OGC[®]
Making location count.



Manchester Trial data

Oxford Road Corridor – Manchester's Smart City District



Data Catalogue



AutoSave Off CityGML Hackathon Data Catalogue - Read-Only - Excel Carsten Roensdorf CR

File Home Insert Draw Page Layout Formulas Data Review View Help Search Share Comments

Clipboard Font Alignment Number Styles Cells Editing Ideas

E19 16100 2018

	A	B	C	D	E	F	G	H	I	J
1	Manchester Triangulum									
2	Dataset	Content Description	Format	Data Location	Capture Date	Coverage	Capture Sensor/Software	Sensor Source		
3	Vector points	Streetside Assets	SHP	Hackathon storage drive	2017	Manchester CityVerve area	K-Mobile/Stereo Capture/MM	Aerial/Terrestrial		
4	Vector Lines	Road Markings	SHP	Hackathon storage drive	2017	Manchester CityVerve area	K-Mobile/Stereo Capture/MM	Aerial/Terrestrial		
5	Vector Polygons	Buildings and Streetside Assets	SHP	Hackathon storage drive	2017	Manchester CityVerve area	K-Mobile/Stereo Capture/MM	Aerial/Terrestrial		
6	UAV Imagery	Aerial Ortho	TIFF	Hackathon storage drive	2017	Whitworth Hall & Oxford Road	UAV	Aerial		
7	UAV Point Cloud	Aerial Point Cloud	LAS	Hackathon storage drive	2017	Whitworth Hall & Oxford Road	UAV	Aerial LiDAR		
8	UAV Mesh	Aerial RGB Mesh	MTL/OBJ	Hackathon storage drive	2017	Whitworth Hall & Oxford Road	UAV	?		
9	UAV DEM	Digital Elevation Model	Geotiff	Hackathon storage drive	2017	Whitworth Hall & Oxford Road	UAV	Pix4D?		
10	Aerial Imagery 5cm	Aerial all	TIFF	Hackathon storage drive	2018	Manchester CityVerve area	Eagle	Aerial		
11	Aerial Imagery 12cm	Aerial all	TIFF	Hackathon storage drive	2016	Manchester CityVerve area	XP	Aerial		
12	Aerial Point Cloud 12cm	Aerial All	LAS	Hackathon storage drive	2016	Manchester CityVerve area	Context Capture/Skyline	Aerial		
13	City GML models	Buildings and Footprints	City GML v2.0	Hackathon storage drive	2018	Manchester CityVerve area	VCS	Aerial		
14	Static Scanning	Terrestrial LiDAR & Imagery	LAS/JPG	Hackathon storage drive	2017	Peter's Square	SX10	Terrestrial		
15	Aerial RGB colourised Mesh	Aerial Mesh	OBJ	Hackathon storage drive	2016	Manchester CityVerve area	Context Capture/Skyline	Aerial		
16	DSM	Digital Surface Model	Geotiff	Hackathon storage drive	2016	Manchester CityVerve area	XP	Aerial		
17	DTM	Digital Terrain Model	Geotiff	Hackathon storage drive	2016	Manchester CityVerve area	XP	Aerial		
18	UAV Mesh	OBJ mesh of Oxford Road Area	OBJ	Hackathon storage drive	2017	Whitworth Hall & Oxford Road	UAV	Aerial		
19	City Mapper	Aerial Oblique Imagery	TIFF	Hackathon storage drive	2018	Manchester	Oblique Aerial	Aerial		
20	Mobile Mapping Point Clouds	Terrestrial LiDAR point clouds	LAS	Hackathon storage drive	2017	Manchester CityVerve area	Topcon MM System	Terrestrial LiDAR		
21	Mobile Mapping All Outputs	Point Clouds, Metadata, Panoramic Imagery	Many	Hackathon storage drive		Manchester CityVerve area	Topcon MM System	LadyBug, Terrestrial LiDAR, Total Station		
22	BIM model for OS HQ	BIM model	OBJ	Hackathon storage drive	2015	OS HQ				
23	Mesh model for Piccadilly Station	Aerial Mesh	OBJ	Hackathon storage drive	2016	Piccadilly Station				
24	OS MasterMap Highways Road Links	Vector data	SHP	Hackathon storage drive	2019	Manchester CityVerve area				
25	OS MasterMap Water Network Water Links	Vector data	SHP	Hackathon storage drive	2019	Manchester CityVerve area				
26	OS MasterMap Access Points (of functional sites)	Vector data	SHP	Hackathon storage drive	2019	Manchester CityVerve area				
27	OS MasterMap Address	Vector data	SHP	Hackathon storage drive	2019	Manchester CityVerve area				
28	OS MasterMap Functional Sites	Vector data	SHP	Hackathon storage drive	2019	Manchester CityVerve area				
29	OS MasterMap Greenspaces	Vector data	SHP	Hackathon storage drive	2019	Manchester CityVerve area				
30	OS Points of Interest	Vector data	SHP	Hackathon storage drive	2019	Manchester CityVerve area				

CityGML v3.0 data CityGML v2.0 OSdata Manchester-I

90%

Data Catalogue



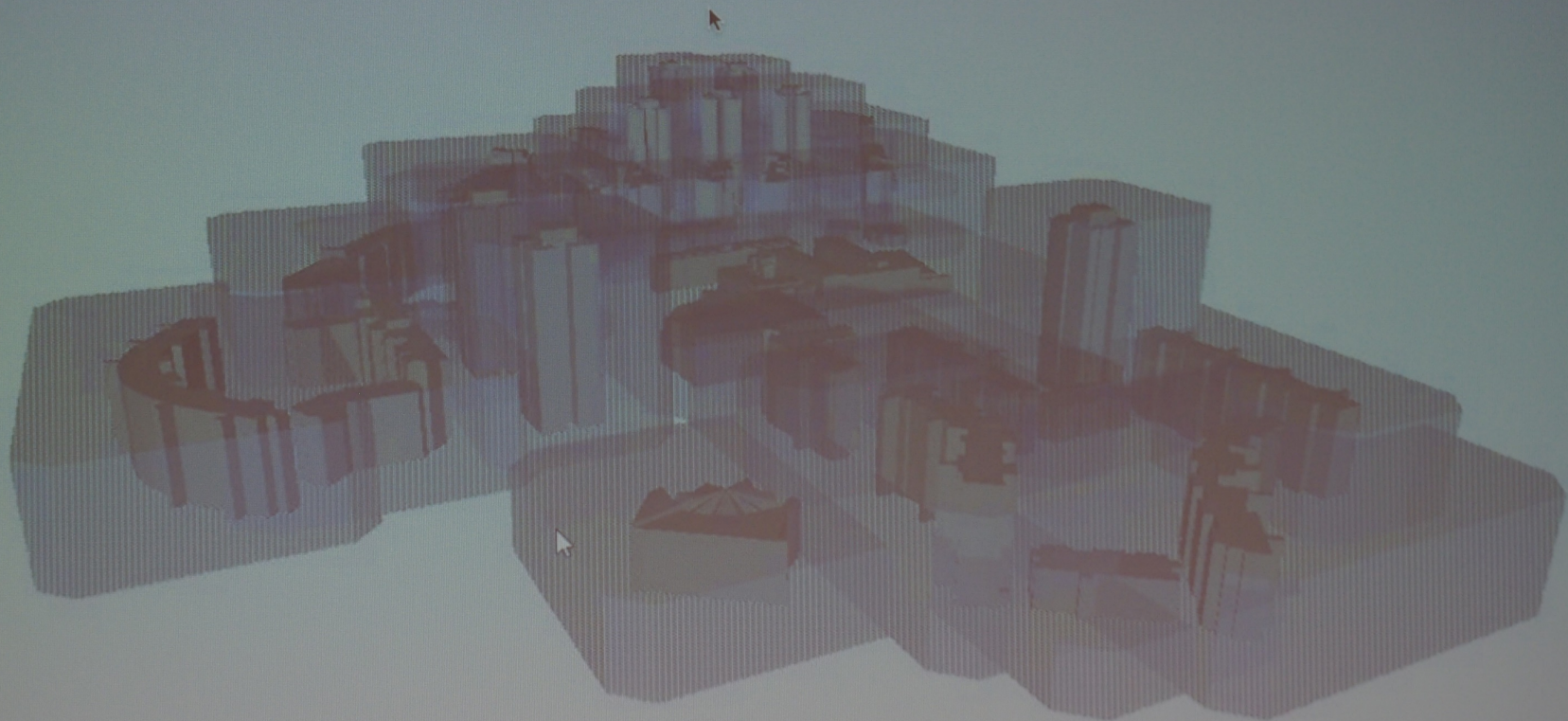
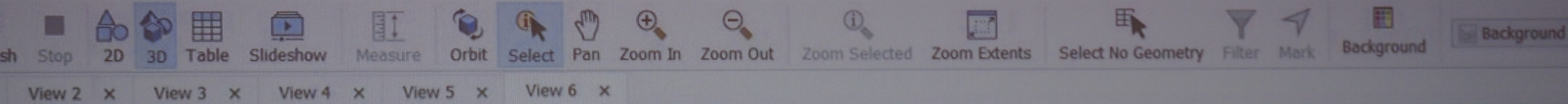
AutoSave Off CityGML Hackathon Data Catalogue - Read-Only - Excel Carsten Roensdorf CR

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B13 Utilities - UoM - Zochonis

	A	B	C	D	E
1	theme	data name	description	content	data location
2	Energy	Utilities - UoM - A.V. Hill	energy consumption for University of Manchester estates	Half-hourly electricity consumption (kWh), CO2 emissions d	MCR-I website for APIs and Hackathon Storage c
3	Energy	Utilities - UoM - Alan Gilbert	energy consumption for University of Manchester estates	Half-hourly electricity consumption (kWh), CO2 emissions d	MCR-I website for APIs and Hackathon Storage c
4	Energy	Utilities - UoM - Alan Turning	energy consumption for University of Manchester estates	Half-hourly electricity consumption (kWh), CO2 emissions d	MCR-I website for APIs and Hackathon Storage c
5	Energy	Utilities - UoM - Barnes Wallis	energy consumption for University of Manchester estates	Half-hourly electricity consumption (kWh), CO2 emissions d	MCR-I website for APIs and Hackathon Storage c
6	Energy	Utilities - UoM - Chemistry	energy consumption for University of Manchester estates	Half-hourly electricity consumption (kWh), CO2 emissions d	MCR-I website for APIs and Hackathon Storage c
7	Energy	Utilities - UoM - Christie	energy consumption for University of Manchester estates	Half-hourly electricity consumption (kWh), CO2 emissions d	MCR-I website for APIs and Hackathon Storage c
8	Energy	Utilities - UoM - Ellen Wilkinson	energy consumption for University of Manchester estates	Half-hourly electricity consumption (kWh), CO2 emissions d	MCR-I website for APIs and Hackathon Storage c
9	Energy	Utilities - UoM - George Begg	energy consumption for University of Manchester estates	Half-hourly electricity consumption (kWh), CO2 emissions d	MCR-I website for APIs and Hackathon Storage c
10	Energy	Utilities - UoM - Humanities Bridgeford	energy consumption for University of Manchester estates	Half-hourly electricity consumption (kWh), CO2 emissions d	MCR-I website for APIs and Hackathon Storage c
11	Energy	Utilities - UoM - Manchester University Library	energy consumption for University of Manchester estates	Half-hourly electricity consumption (kWh), CO2 emissions d	MCR-I website for APIs and Hackathon Storage c
12	Energy	Utilities - UoM - Stopford	energy consumption for University of Manchester estates	Half-hourly electricity consumption (kWh), CO2 emissions d	MCR-I website for APIs and Hackathon Storage c
13	Energy	Utilities - UoM - Zochonis	energy consumption for University of Manchester estates	Half-hourly electricity consumption (kWh), CO2 emissions d	MCR-I website for APIs and Hackathon Storage c
14	Transport and Mobility	Transport and Mobility - Car parks	information about car parks in Manchester	capacity, free spaces, occupancy and state information in	MCR-I website for APIs and Hackathon Storage c
15	Transport and Mobility	Transport and Mobility - EVs - charging sessions	information about EV charging session and journey	distance, CO2, CO, NOx, PM not emitted for all; start, end	MCR-I website for APIs and Hackathon Storage c
16	Transport and Mobility	Transport and Mobility - Cargo bikes	data about the usage of cargo bikes in Manchester - journeys data for	distance, CO2, CO, NOx, PM not emitted for all; start, end	MCR-I website for APIs and Hackathon Storage c
17	Transport and Mobility	Transport and Mobility - Charging stations	information about charging events	charge, cost, start time - time stamp for the session's end	MCR-I website for APIs and Hackathon Storage c
18	Air quality	Air quality - Piccadilly Gardens	air quality measures, DEFRA monitoring station in Picadilly Gardens	levels of NO, NO2, NOx, O3, SO2, PM 2,5 in 1 hour interval	MCR-I website for APIs and Hackathon Storage c
19	Air quality	Air quality - Oxford Road	air quality measures, DEFRA monitoring station in Oxford Road (All Sa	levels of NO, NO2, NOx, PM 10 in 1 hour intervals	MCR-I website for APIs and Hackathon Storage c
20	Air quality	Air quality - Whitworth Meteorological Observa	air quality measures from Whitworth Meteorological Observatory	levels of No, NO2, NOx, CO, O3, SO2 in 1 minute intervals	MCR-I website for APIs and Hackathon Storage c
21	Air quality	Air quality - Bury Preswich	air quality measures, DEFRA monitoring station in Bury prestwich	levels of NO, NO2, NOx, PM 10 in 1 hour intervals	MCR-I website for APIs and Hackathon Storage c
22	Air quality	Air quality - Bury Whitefield Roadside	air quality measures, DEFRA monitoring station in Bury Whitefield Rog	levels of NO, NO2, NOx, PM 10 in 1 hour intervals	MCR-I website for APIs and Hackathon Storage c
23	Air quality	Air quality - Salford Eccles	air quality measures, DEFRA monitoring station in Salford Eccles	levels of NO, NO2, NOx, PM 10 in 1 hour intervals	MCR-I website for APIs and Hackathon Storage c
24	Air quality	Air quality - Salford M60	air quality measures, DEFRA monitoring station in Salford M60	levels of NO, NO2, NOx, PM 10 in 1 hour intervals	MCR-I website for APIs and Hackathon Storage c
25	Air quality	Air quality - Stockport Cheadle	air quality measures, DEFRA monitoring station in Stockport Cheadle	levels of NO, NO2, NOx, PM 10 in 1 hour intervals	MCR-I website for APIs and Hackathon Storage c
26	Air quality	Air quality - Stockport Hazel Grove	air quality measures, DEFRA monitoring station in Stockport Hazel Gro	levels of NO, NO2, NOx, PM 10 in 1 hour intervals	MCR-I website for APIs and Hackathon Storage c
27	Air quality	Air quality - Trafford	air quality measures, DEFRA monitoring station in Trafford	levels of NO, NO2, NOx, PM 10 in 1 hour intervals	MCR-I website for APIs and Hackathon Storage c
28	Air quality	Air quality - Trafford A56	air quality measures, DEFRA monitoring station in Trafford A56	levels of NO, NO2, NOx, PM 10 in 1 hour intervals	MCR-I website for APIs and Hackathon Storage c

CityGML v3.0 data CityGML v2.0 OSdata Manchester-I

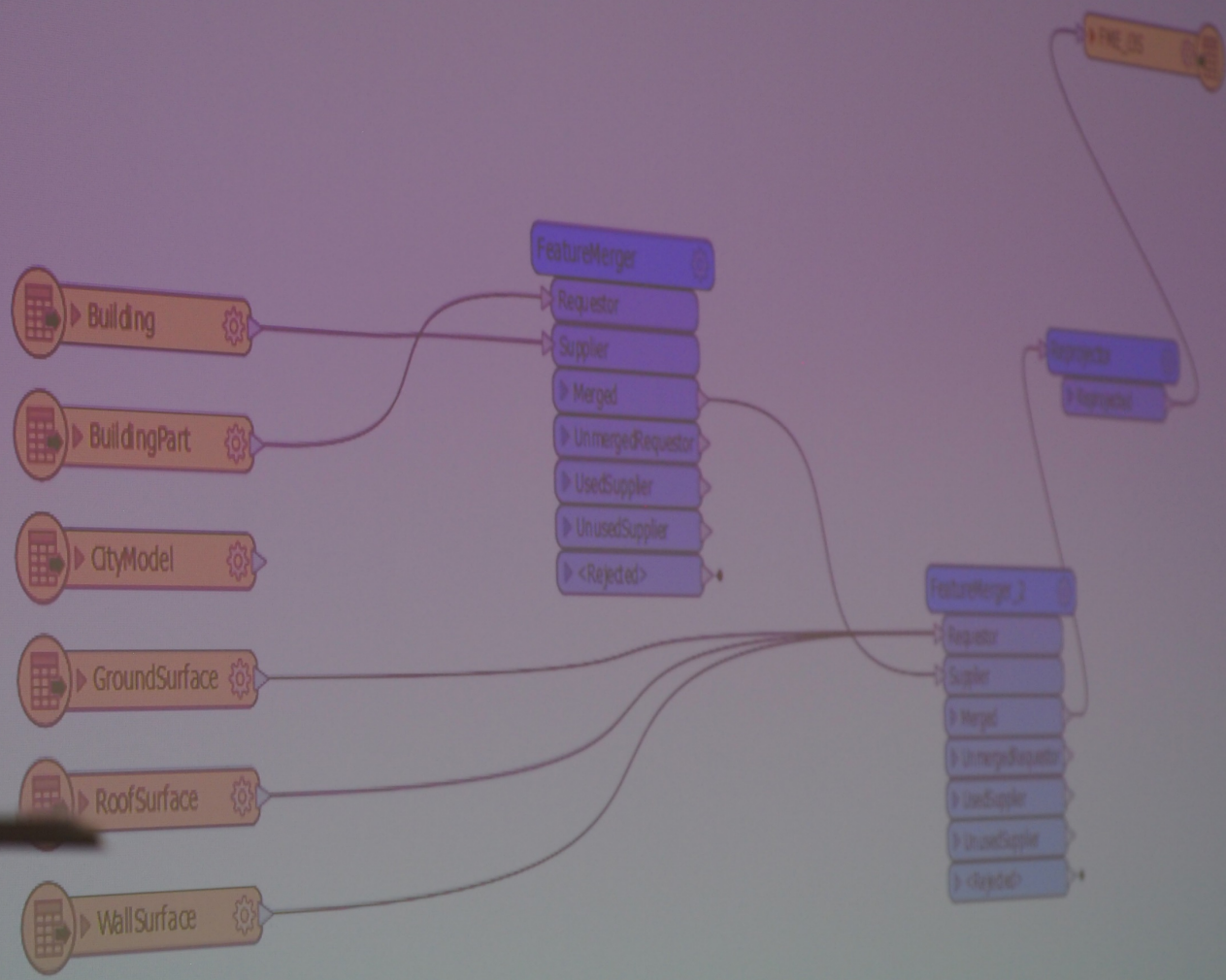


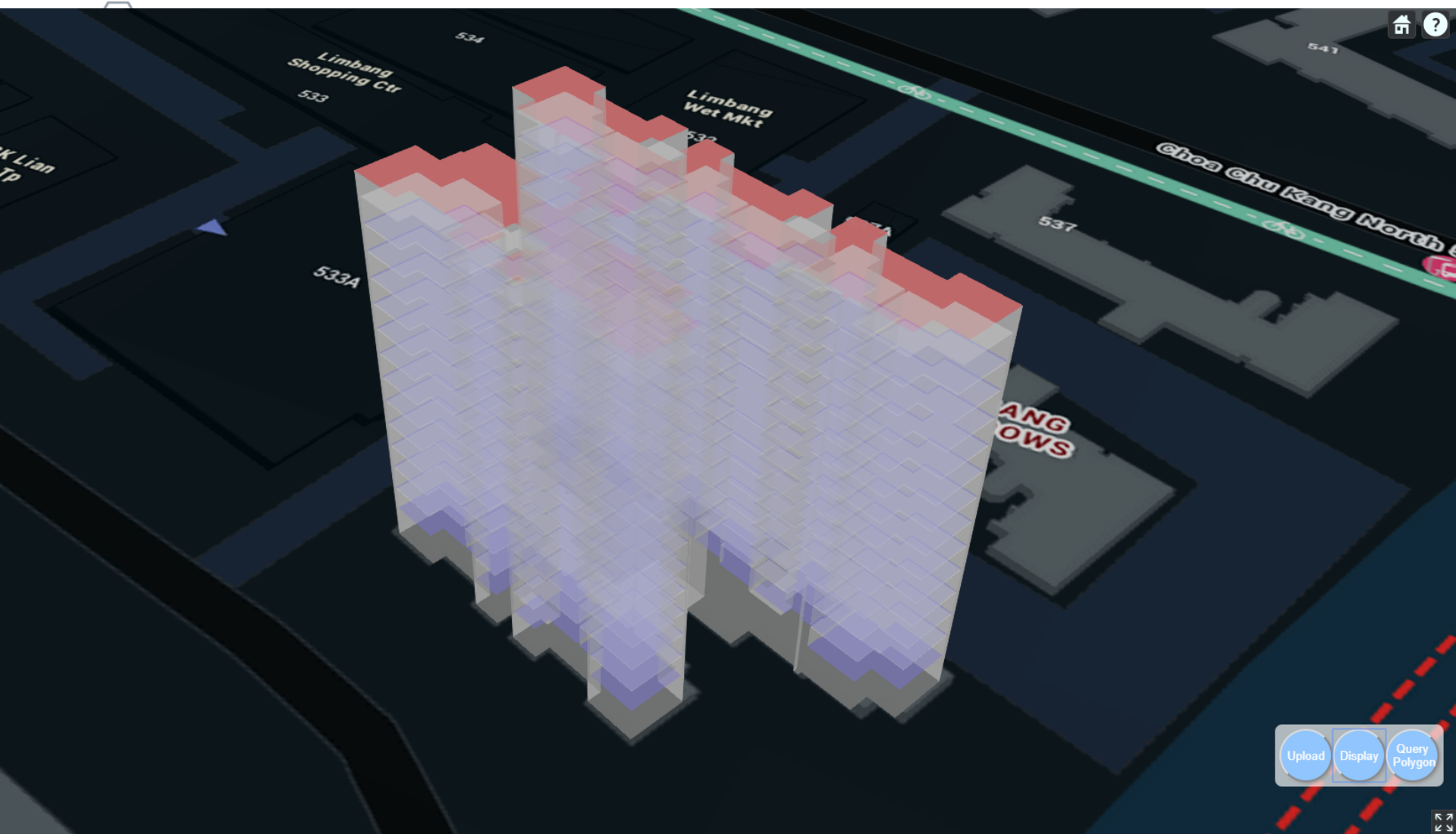
MultiSurface

CompositeSurf...

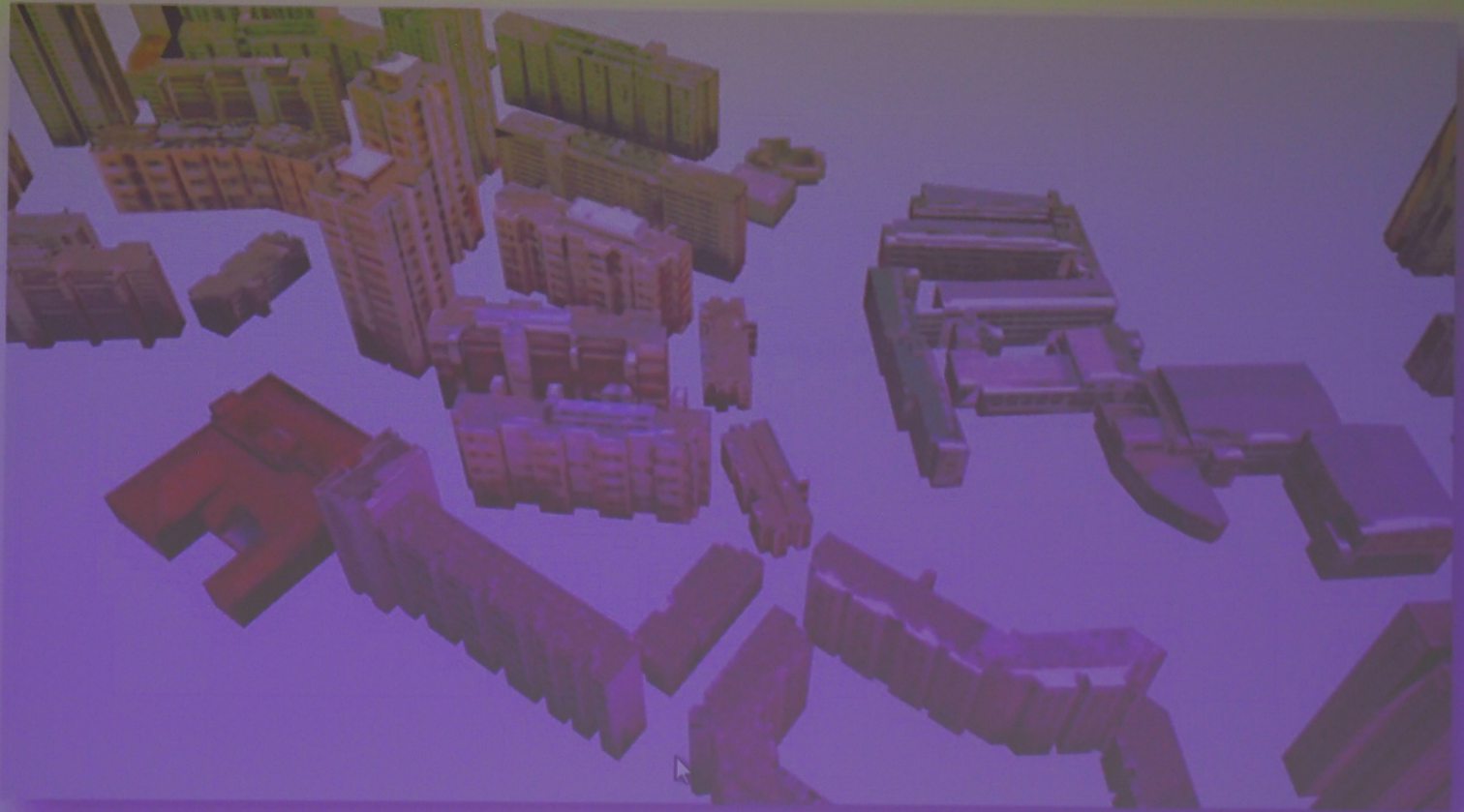
17)

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Hackathon Results




Singapore Buildings Area 1 in CityGML 3.0

June 12, 2019

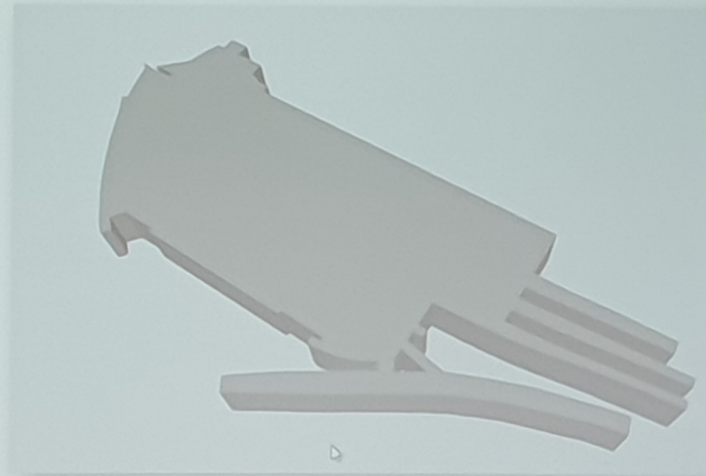
CityGML 3.0 Hackathon - Son H. Nguyen



Lehrstuhl für Geoinformatik

Technische Universität München 

Hackathon Results



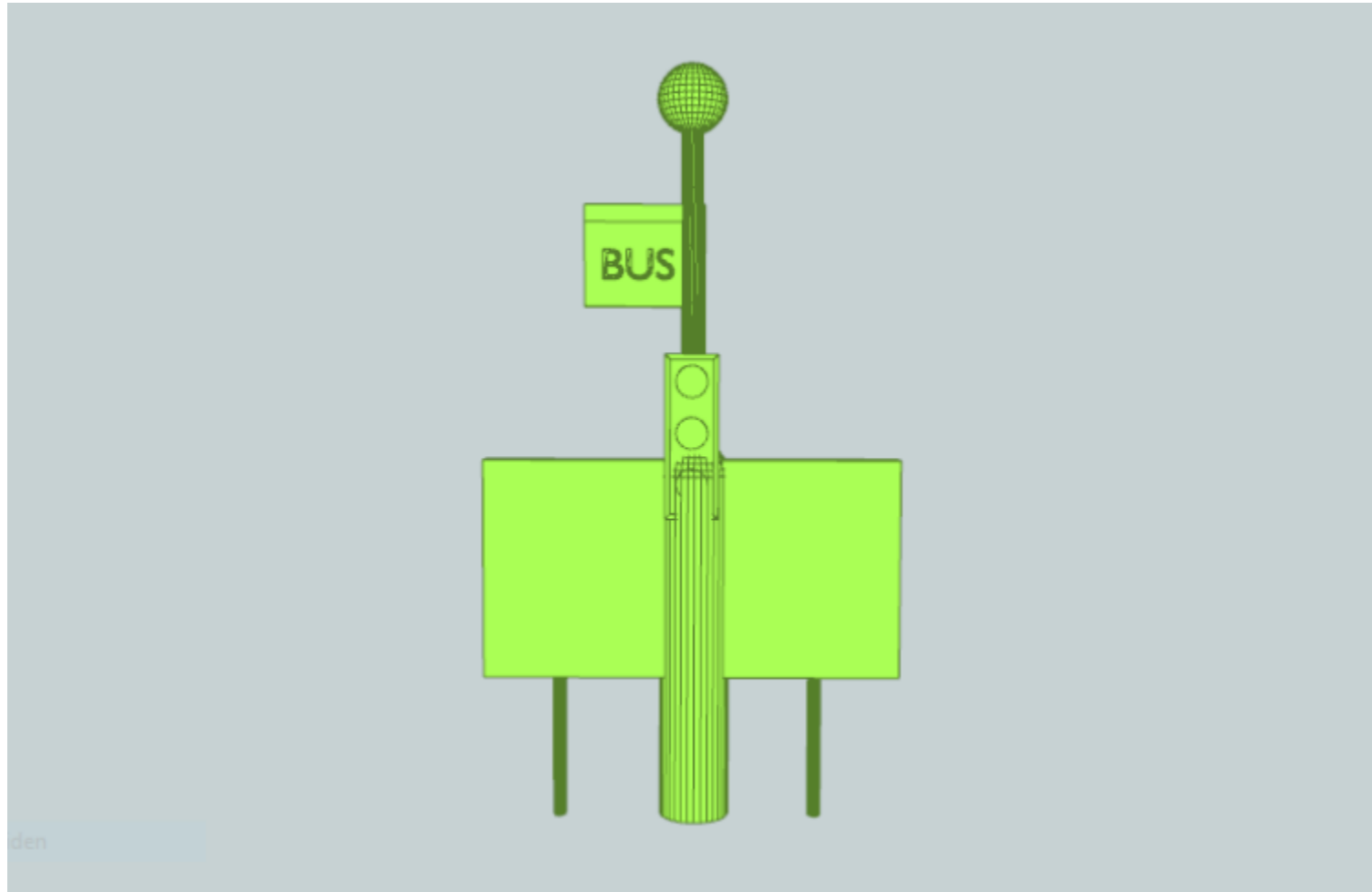
Piccadilly Station in CityGML 3.0

June 12, 2019

GML 3.0 Hackathon - Son H. Nguyen

3

City Furniture (Singapore)



Next steps

OGC[®]
Making location count.

OGC CityGML
Challenge
2019

OGC[®]

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Gregor Zafrsnik

Archiving Geospatial data



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ISO LADM v2 and Land Administration DWG Update

111th OGC Technical Committee

Leuven, Belgium

Chris Body

26 June 2019

ISO LADM v2 Update



Land Administration Domain Model (LADM) is a knowledge domain specific standard capturing the semantics of the Land Administration domain.

LADM covers basic information related to components of land administration: including water and elements above and below the earth's surface, as well as people.

Organisations that have an interest in LADM v2



- UN – FAO
- UN – HABITAT
- Global Land Tool Network
- UN – Division for Ocean Affairs and the Law of the Sea
- UNGGIM – Expert Group Land Administration and Management
- World Bank
- ISO/TC 211 members
- Open Geospatial Consortium
- International Federation of Surveyors
- Valuation Community
- International Hydrographic Organisation
- Royal Institution of Chartered Surveyors
- *European Land Registry Association – ELRA*
- *CINDER Registrars*



Contributing to LADM v2



- Australia
- Austria
- Canada
- China
- Czech Republic
- Denmark
- France
- Finland
- Germany
- Japan
- Republic of Korea
- Netherlands
- New Zealand
- Norway
- Saudi Arabia
- South Africa
- Spain
- Sweden
- UK
- USA
- FIG
- Academia
- IHO
- OGC
- World Bank
- United Nations – FAO & HABITAT
- UNGGIM EG-LAM
- Valuation
- Industry

ISO LADM v2 Update



- Stage 0 Working Group and Document
- Input from Canada & Australia
- Agreed to multi-part
 - Part 1 - Land Administration Fundamentals
 - Part 2 - Land Tenure or Land Registration or Land Interests
 - Part 3 - Marine Space or Marine Geo-Regulation
 - Part 4 - Land Valuation
 - Part 5 - Spatial Planning
 - Part 6 - Implementation
- Advantages of a multi-part standard
 - Manageable
 - Coordination
 - Cost

ISO LADM v2 Update



Topics & Issues

- Spatial Units and Indoor in Part 1 or 2, Blockchain in Part 2. Country Profiles in Part 2, 3 & 4.
- Refine Survey Model in Part 1 and 2 (3 & 4) VGI in Part 1 or 2
- Correct errors in LADM v1
- Backward Compatible with LADM v1
- Management issues developing multi-part standard
- Sustainable Development Goals
- Links with the work of UNGGIM Expert Group – Land Administration & Management

ISO LADM v2 Update



- Future Schedule
 - Update Stage 0 document to reflect Maribor outcomes
 - Distribute Stage 0 to Working Group
 - Stage 0 to be issued for approval by ISO/TC 211
 - OGC TC Meeting, 24-27 Jun 19 – Leuven
 - UNGGIM Meeting, 5-9 Aug 19 – New York
 - 8th FIG Land Administration Domain Model, 1-3 Oct 19 – Kuala Lumpur
 - ISO/TC 211 Meeting, 9-13 Dec 19 - Omiya

OGC Land Administration DWG



- examination of **existing systems** of land administration
- preparation of **best practices** that enable nations to address their needs in **less time, cost, and effort** through standards-based implementations; and
- dialog on the **integration** of emerging information resources and/or technologies to assist nations in leapfrogging capability.

Additionally, the DWG will identify **proposals** for industry interoperability assessments, interoperability testbeds, pilots and experiments designed to bring together users and technology providers to test, demonstrate and validate best practices for use to guide the acquisition and implementation of sustainable, scalable and interoperable systems.

OGC Land Administration DWG



Outcome from Leuven Meeting

Cadasta, Esri, GEOFIT IGN FI, GLTN STDN, Meridia and Trimble confirmed their willingness to work on LADM proposals based pilots and testbeds under OGC umbrella. With ISO support.



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Met Ocean Domain Working Group Plenary Report

111th OGC Technical Committee

Leuven, Belgium

Chris Little, Steve Olson, Frédéric Guillaud

27 June 2019

The most important thing for this WG is...



Weather on the Web OpenAPIs

become domain-agnostic

Data Retrieval Pattern API

OGC standards

Data Retrieval Patterns



- Data at a 4D Point
- Time series at a 3D Point
- Data in a 2D Polygon at a Level and Time
- Data along a vertical profile at a 2D Point and Time
- Data along a 2D Trajectory, and 3D and 4D
- Data within a Corridor around a 4D Trajectory
- .
- .
- .

Met Ocean DWG Agenda



1. Welcome, Introduction, technology struggles
2. Experiences with a pilot WFS3 implementation at FMI, Roope Tervo
3. Extracting Time Series from NWP output in WFS3, Roope Tervo
 - Discussion
4. ~~Q/A & approval Vote for vertical Pressure Depth CRS, Kathi Schleidt~~
 - Did previously, started 'paperwork' offline. OGC-NA process missing
5. Weather-on-the-Web API (& cross-domain outreach: Aviation, ESS, EO, etc DWGs)
6. Hackathon(s) outcomes (& OWS Common & WCS/WMS API Building Blocks)
7. Search patterns rather than pure RESTful approach
8. Met Office WotW Proof of Concept & Demo, Mark Burgoyne

Activity Summary



- Discussion topics: WotW
 - to progress as rapidly as implementation experience allows
 - become a domain agnostic API Standard
 - Best Practice for Met Ocean Domain

- Upcoming deliverables
 - Draft Engineering report by Banff
 - Proposed SWG Charter by Banff
 - Draft Best Practice by Toulouse
 - Draft Standard by Hong Kong

- Coordination (ongoing and planned)
 - Hydrology DWG
 - OWS Common SWG
 - WFS3 SWG
 - Other service SWGs with APIs
 - WMO

- Future meetings
 - Banff, Toulouse, Hong Kong
 - EGOWS in Netherlands, Nov 2019

Key activities



- 2019-09 OGC TC 112 Banff
 - Draft WotW Engineering Report of experiences, implementations and Hackathons
 - Convene Data Retrieval API Ad Hoc and propose Charter
- 2019-12 OGC TC 113 Toulouse
 - Draft WotW OpenAPI Best Practices from Met Ocean DWG
 - Establish Data Retrieval API SWG
 - Support from: Met Ocean, Hydrology, ??
- 2020-03 OGC TC 114 Hong Kong
 - Data Retrieval API SWG liaises with OWS Common OpenAPI SWG
 - Draft Data Retrieval OpenAPI Standard

Next Quarter WG Communications Plan



- European Meteorological Operational Workstations Workshop (EGOWS) hackathon/plugfest
 - KNMI, de Bilt, Netherlands, Nov 2019
- Outreach to other domains for API work
- WMO 4-yearly Congress reported OGC standards development work for Met Ocean and Hydrology DWGs



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OGC API Catalogue/Metadata/Records

111th OGC Technical Committee

Leuven, Belgium

Panagiotis (Peter) A. Vretanos, CubeWerx Inc.

25 June 2019

Purpose & Motivation



- The purpose of this presentation is to request from the TC approval for the formation of a new SWG named the **OGC API – Catalogues SWG**
 - The anticipated name of the primary deliverable of the SWG shall be: **OGC API – Catalogues – Part 1: Core**
 - However, the names **Metadata** and **Records** have also been proposed
- Current version of the catalogue specification was developed in the early 2000s
 - Uses a remote-procedure-call-over-HTTP architectural style with XML payloads
 - This legacy is now badly outdated and we want to modernize it
- Purpose of the proposed SWG is to develop a new version of the catalogue services specification based on the new **OGC API** framework
 - Like WFS we will start with a minimal core (Part 1) and then develop other parts and resources, desire and motivation dictate
- We want to specify a modernized service that aligns with the current architecture of the web and the Spatial Data on the Web Best Practices

Charter Members



- Paul van Genuchten, Geocat
 - Chris Holmes, Planet Labs
 - Frederic Houbie, Hexagon
 - Tom Kralidis, Environment and Climate Change Canada, Met. Service of Canada
 - Clemens Portele, interactive instruments
 - Angelos Tzotsos, Open Source Geospatial Foundation
 - Panagiotis (Peter) A. Vretanos, CubeWerx Inc.
-
- So far, committed implementations from Kralidis, Portele and Vretanos

Timeline



- **NOW**

- Prepared a charter for the SWG
- Written a draft outline for the core and other parts (e.g. Tx)
 - This helped highlight a number of issues that we need to address
- Written draft OpenAPI document describing the core (and some of the other parts) that validate on SwaggerHub
- Have created a github repo where all this content lives
- The repo is private for now but we intend it to be public once the SWG is formed

- **NOV 2019**

- An initial draft suitable for implementation by end of Nov.

- **Dec 2019+**

- Testing via testbeds, hack-a-thons, etc.

- **Jul 2020+**

- Clean-up, resolve issues, etc. with goal of adoption vote in TC around the end of the year.

Collaboration



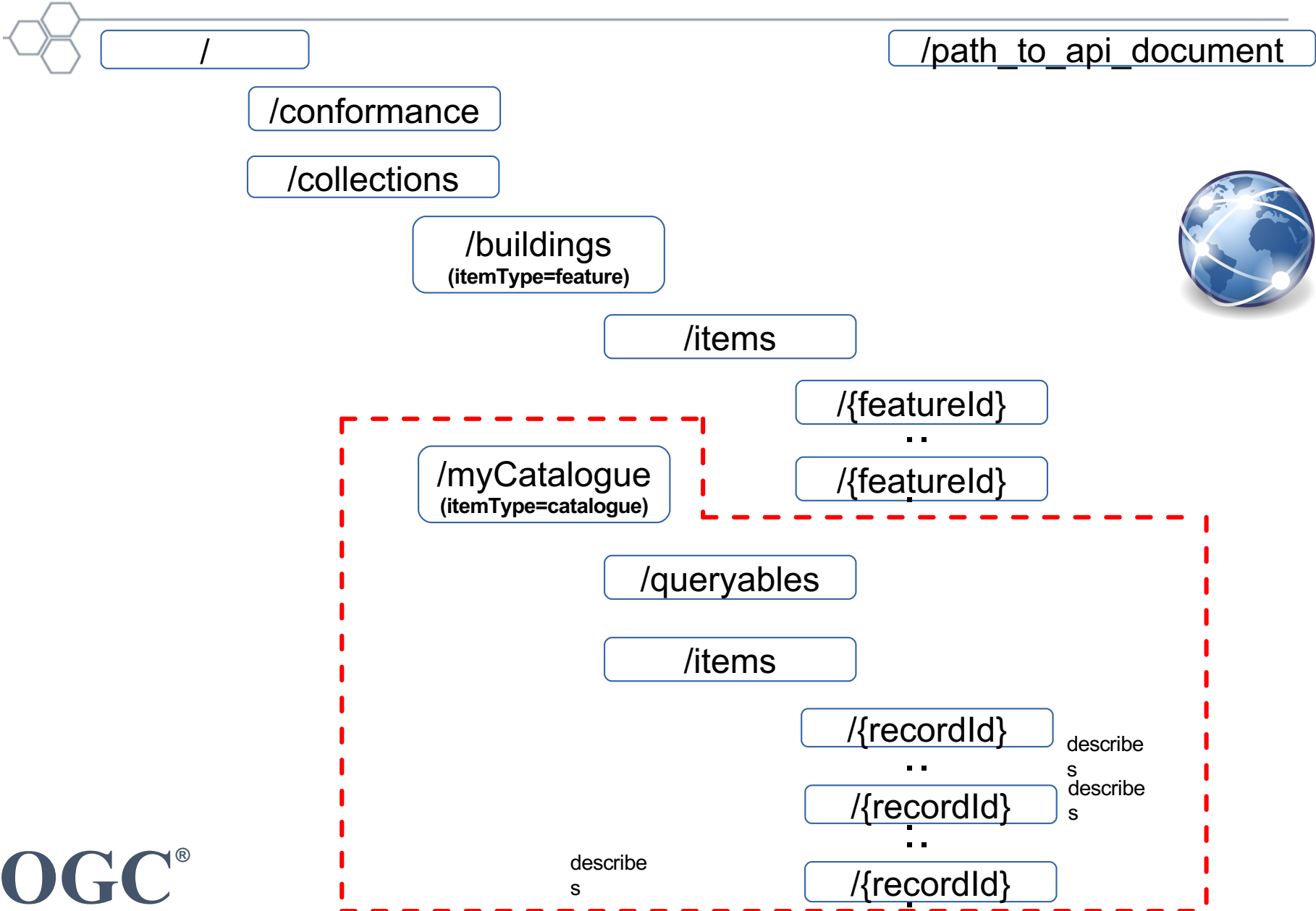
- Work shall be performed on the github repo here:
<https://github.com/opengeospatial/CAT4.0>
- The repo is currently private but once the SWG is formed it will be public
 - So, please approve this request to save OGC some money!
- Developers, including those that are not active in OGC or ISO will be encouraged to participate and hopefully implement that draft and provide feedback
- Periodic teleconferences
- Email, Gitter

Resource paths



ACCESS PATH	DESCRIPTION
/	GET: Landing page
... opaque ...	GET: Service or API description document (OpenAPI)
/conformance	GET: conformance statement
/collections	GET: list of catalogue identifiers with hypermedia controls to each catalogue
/collections/{catalogueId}	GET: Metadata about the specific catalogue including hypermedia controls to other resources <i>POST: create a new catalogue</i>
/collections/{catalogueId}/item	GET: query the catalogue (simple) <i>POST: create a new record</i>
/collections/{catalogueId}/item/{recordId}	GET: retrieve a specific record <i>PUT: modify an existing record</i> <i>PATCH: modify part of a record</i> <i>DELETE: remove a record</i>
/collections/{catalogueId}/queryables	GET: query the list of queryables for the catalogue

Where it fits into the OGC API Framework?



Next steps



- TC and Public review of charter
 - Edits to charter (if any)
- Two-week email vote to ask to start electronic vote
 - Electronic vote to start SWG
- The charter is available here:
https://portal.opengeospatial.org/files/?artifact_id=84661&version=1



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DGGS SWG

111th OGC Technical Committee
Leuven, Belgium
Matthew Purss
27 June 2019

Our first SWG task process!

Agenda



- ISO Activities
 - Response to ISO 19170 CD Ballot comments & outcomes from ISO/TC 211 Plenary
- ASCIIDocs
 - Progress update – porting Topic 21 content across from MSWord to ASCIIDocs format
 - What this means for the maintenance and further development of the DGGS Standards Suite
- DGGS Registry
 - What does the DGGS Registry mean for DGGS Implementation Standards?
 - How will the DGGS Registry support OGC Certification of DGGS Implementations?
 - Are we capturing all of the necessary information in the prototype?

Agenda



- DGGs Standards Roadmap
 - Multi-part standard suite under the Abstract Spec topic
 - Part 1 – Surface DGGs (current Topic 21)
 - Part 2 – 3D (volumetric) DGGs
 - Part 3? – 4D (3D + Temporal) DGGs
 - Part 4? – non-Equal-Area DGGs (if there is a community push to draft)
 - Implementation Standards
 - OGC API – DGGs
- Other Business

New DGGS SWG Task Proposals



• The DGGS SWG has voted to propose the following New SWG Tasks to the TC for public comment and approval:

– **Extension of Topic 21 to be a multipart suite of Abstract Specifications:**

- Part 1 – Core Operations and Equal Area Earth Reference System (current Topic 21)
 - Work currently underway as a joint OGC – ISO/TC 211 activity to publish Topic 21 as ISO 19170 once ISO ballot comments have been addressed
- Part 2 – 3D Equal Volume Earth Reference System
 - Work expected to begin in 2020 once Part 1 update is complete
- Part 3 – Spatio-temporal Earth Reference System
 - Work expected to follow Part 2 drafting effort – further technical discussion required to define scope.
- Part 4 – non-Equal Area Earth Reference System
 - Work anticipated to be lead by China (potentially as a joint OGC – ISO/TC211 activity)

– **Implementation Standards**

- OGC API – DGGS
 - Work anticipated to begin during the second half of 2019 or first half of 2020 in collaboration with the wider OGC API activities

– **OGC DGGS Best Practice Guide**

- Work to begin in late 2019/early 2020 in association with the work to establish the OGC DGGS Registry

- There was no objection to unanimous consent



TC Motions



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MetOcean WCS profiles and extensions

111th OGC Technical Committee

Leuven, Belgium

Peter Trevelyan

27 June 2019

Agenda



- Brief explanation of the MetOcean profile.
- Move to a motion to go for an electronic vote.

Key activities



- This work was initiated to create a specific MetOcean profile for WCS2.0. This was complimentary to the EO profile of WCS2.0
- The MetOcean profile part 0 outlines the MetOcean metadata that is returned in response to the service requests.
- An additional service request was added to reflect the nature of MetOcean coverages, to wit they may be grouped together for form a collection.
- With the advent of WCS2.1 the profile was changed to reflect the use of 4D coverages using CIS1.1. This radically reduced the size of the GetCapabilities responsefile.

Key activities



- The MetOcean WCS2.1 profile part 1 outlines the MetOcean extension that extends the request pattern to accept the specification of a trajectory.
- . The MetOcean profile part 1 outlines the MetOcean extension that extends the request pattern to accept the specification of a multidimensional polygon.
- The standard has been completed and there is full implementation done by IBL soft on behalf of the UK MetOffice.
- A request for comment has been sent and all comments have been processed

Request an electronic vote



- The WCS SWG recommends that the OGC Technical Committee approve an electronic vote to approve release of 15-045r7 “A MetOcean Application profile for WCS2.1 Part 0 MetOcean Metadata” as an OGC Adopted Standard.
 - Pending any final edits and review by OGC staff
 - There was no objection to unanimous consent

Request an electronic vote



- The WCS SWG recommends that the OGC Technical Committee approve an electronic vote to approve release of 15-108r3 “A MetOcean Application profile for WCS2.1 Part 1 MetOcean GetCorridor Extension” as an OGC Adopted Standard.
 - Pending any final edits and review by OGC staff
 - There was no objection to unanimous consent

Request an electronic vote



- The WCS SWG recommends that the OGC Technical Committee approve an electronic vote to approve release of 17-086r3 “A MetOcean Application profile for WCS2.1 Part 2 MetOcean GetPolygon Extension” as an OGC Adopted Standard.
 - Pending any final edits and review by OGC staff
 - There was no objection to unanimous consent



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GroundWater SWG

Closing Plenary Report

111th OGC Technical Committee

Leuven, Belgium

Boyan Brodaric

27 June 2019

Request an electronic vote



- The GroundWater SWG recommends the OGC Technical Committee approve an electronic vote to approve release of **19-013 “OGC WaterML 2: Part 4 – GroundWaterML 2 (GWML2) v2.3”** as an OGC Implementation Standard.
 - Pending any final edits and review by OGC staff
 - This revision (v2.3) addresses three change requests received subsequent to approval of the GWML2 standard in 2016-09-06.
 - There was no objection to unanimous consent.



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Coverages&Datacubes Session / WCS.SWG

111th OGC Technical Committee

Leuven, Belgium

Peter Baumann, Stephan Meissl

27 June 2019

Agenda



Coverages & Datacubes:

- Coverages Update (P. Baumann)
- OpenAPI for Coverages (P. Baumann, S. Meissl)
- Datacube establishment & application in Taiwan (振宇 How)
- INSPIRE WCS (P. Baumann)

WCS.SWG:

- Coverages Update (P. Baumann)
- WCS 2.0 to 2.1: WCS Extension upgrade & corrigenda (P. Baumann)

Corrigenda Due: CIS



- CIS 1.0

- CIS axisLabels attribute names vs EPSG axis labels
 - OGC-NA decision “v0 always points to latest version”
 - Need independence from axis labels in CRS
 - Captured in CIS 1.1, now need corrigendum to CIS 1.0

```
<generalGridCoverage ... gml:id="CIS_001">
  <domainSet>
    <generalGrid srsName="http://www.opengis.net/def/crs-compound?
      1=http://www.opengis.net/def/crs/EPSSG/0/4979
      &2=http://www.opengis.net/def/crs/OGC/0/AnsiDate"
      axisLabels="Lat Long h date">
      <regularAxis axisLabel="Lat" uomLabel="deg" lowerBound="40" upperBound="60" resolution="10"/>
      <regularAxis axisLabel="Long" uomLabel="deg" lowerBound="-10" upperBound="10" resolution="10"/>
      <irregularAxis axisLabel="h" uomLabel="m">
        <c> 0</c>
        <c>100</c>
      </irregularAxis>
      <irregularAxis axisLabel="date" uomLabel="d">
        <c>2015-12-01</c>
        <c>2015-12-02</c>
      </irregularAxis>
      <gridLimits srsName="http://www.opengis.net/def/crs/OGC/0/Index4D" axisLabels="i j k l">
        <indexAxis axisLabel="i" lowerBound="0" upperBound="2"/>
        <indexAxis axisLabel="j" lowerBound="0" upperBound="2"/>
        <indexAxis axisLabel="k" lowerBound="0" upperBound="1"/>
        <indexAxis axisLabel="l" lowerBound="0" upperBound="1"/>
      </gridLimits>
    </generalGrid>
  </domainSet>
```

Corrigenda Due: CIS



- CIS 1.0
 - CIS axisLabels attribute names vs EPSG axis labels
 - OGC-NA decision “v0 always points to latest version”
 - Need independence from axis labels in CRS
 - Captured in CIS 1.1, now need corrigendum to CIS 1.0
 - Example RectifiedGridCoverage-1: domainSet not fitting rangeSet (K. Schleidt)
- CIS 1.1
 - [Issue 550](#): reconsider calculation for #positions on RegularAxis (B. Tolley)
 - Example #45: distorted grid to be clarified
 - ReferenceableGridBySensorModel multiplicity in Table 6 (E. Hirschorn)

Corrigenda Due: WCS



- WCS 2.0.1
 - WSDL syntax; fix provided (G. Hobona)
- WCS 2.1
 - Coverageld element missing from WCS2.1 DescribeCoverage schema (P. Trevelyan)
- WCS 2.0.1 test suite
 - Issue [#23](#): CRS_Extension Req 13 mandates srsName, but not in schema (D. Stenger) -> remove corresponding test case
- WCPS 1.0
 - crsTransformExpr: editorial flaws in result bbox definition (K. Schleidt, D. Misev)
 - p44 crsTransform: missing (, URN instead of URL - legacy... (K. Schleidt)
 - Adjust to allow CIS 1.1 coverages (P. Baumann)

Overview of Corrigenda Due



- CIS 1.0 -> 1.0.1
- CIS 1.1 -> CIS 1.1.1
- WCS 2.0.1 -> WCS 2.0.2
- WCS 2.1 -> WCS 2.1.1
- WCPS 1.0 -> WCPS 1.1

- Motion Singapore TC:
provide docs for motion @ next TC (=now)

Motion: WCS Extension Upgrade & Corrigenda



- The WCS.SWG recommends that the OGC Technical Committee approve release of [OGC 19-033r1] “WCS 2.1.1 Extension upgrade & corrigenda.”
 - Pending any final edits and review by OGC staff
 - There was no objection to unanimous consent
- The specifications complete “upgrade” of WCS to CIS 1.1 by extending the WCS Extensions (WCS Core 2.1 adopted earlier). Further, some pending fixes have been incorporated. See overview document.



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WFS/FES SWG

111th OGC Technical Committee
Leuven, Belgium

Clemens Portele, Panagiotis Vretanos
27 June 2019

Agenda



- Resolve [open issues for OGC API - Features - Part 1: Core](#)
- Finalizing Part 1 in OGC and ISO/TC 211
- Planning for other parts of OGC API Features (*skipped*)



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OGC API – Features – Part 1: Core

111th OGC Technical Committee
Leuven, Belgium
Clemens Portele
27 June 2019

OGC API – Features



- **OGC API standards** define modular API building blocks to spatially enable Web APIs in a consistent way
- **OGC API Features** specifies the fundamental API building blocks for interacting with features (create, modify and query features on the Web)
- Started as a revision of the OGC Web Feature Service standard that
 - proposes a modernized service architecture,
 - leverages the OpenAPI specification,
 - follows the current Web architecture and the (Spatial) Data on the Web Best Practices,
 - has a focus on the developer experience,
 - specifies modular building blocks for fine-grained access to spatial data that can be used in data APIs,
 - is developed in a open process doing all work in a public GitHub repository, early implementations, in-depth validation, slow release

OGC API – Features – Part 1: Core



Resources of the Web API

Table 1. Overview of resources, applicable HTTP methods and links to the document sections

Resource	Path	HTTP method	Document reference
Landing page	/	GET	7.2 API landing page
Conformance declaration	/conformance	GET	7.4 Declaration of conformance classes
Feature collections	/collections	GET	7.12 Feature collections
Feature collection	/collections/{collectionId}	GET	7.13 Feature collection
Features	/collections/{collectionId}/items	GET	7.14 Features
Feature	/collections/{collectionId}/items/{featureId}	GET	7.15 Feature

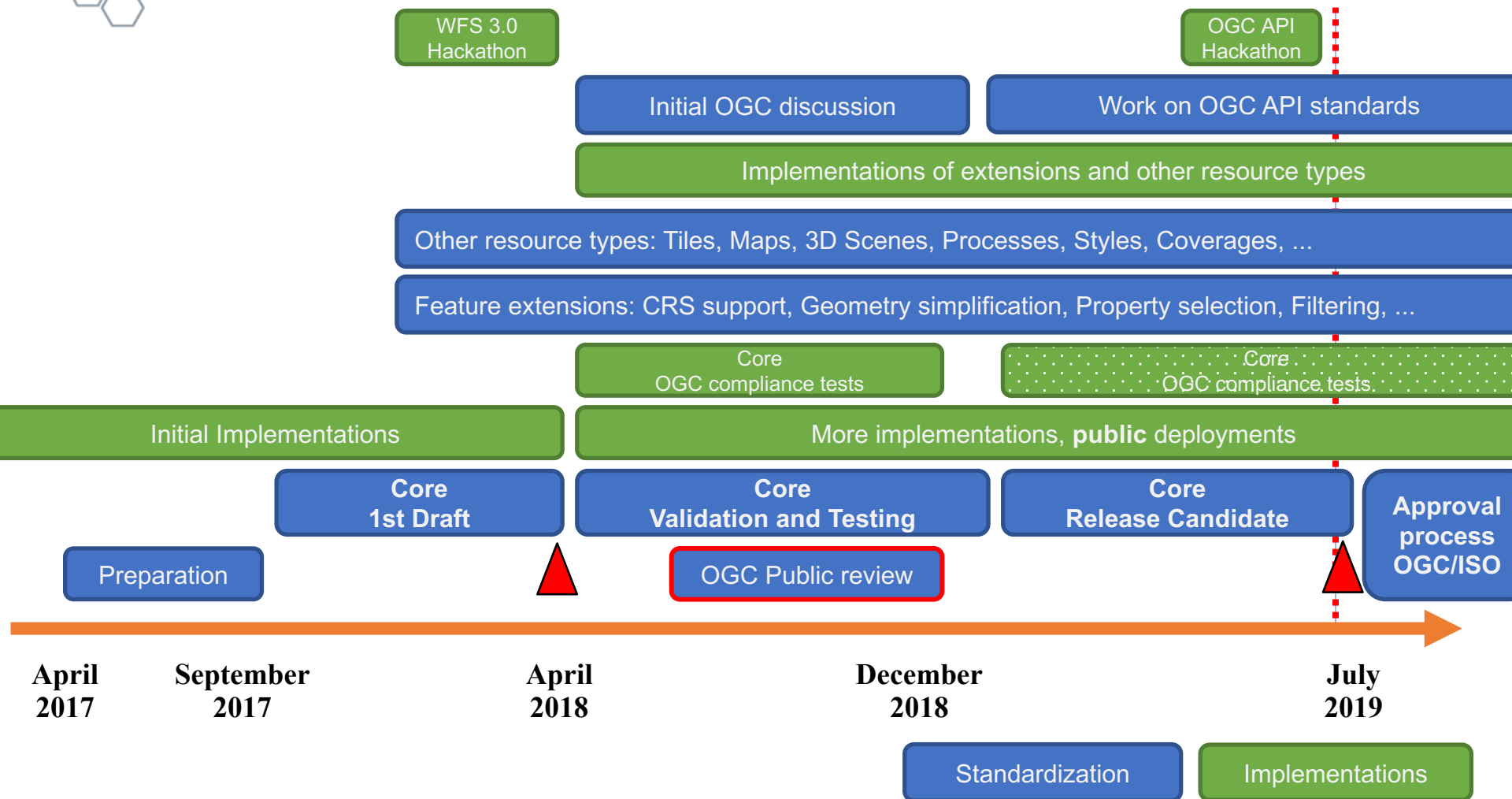
information
about the API

a dataset with a
sub-division
into named
collections of
features

the features

<http://docs.opengeospatial.org/DRAFTS/17-069r1.html#tldr>

OGC API – Features – Part 1: Core History and Status



OGC API Features in ISO



ISO/CD 19168-1 - Geographic

Organisation Internationale de Normalisation (ISO) [CH] | <https://www.iso.org/standard/32586.html>

ISO International Organization for Standardization
When the world agrees

Standards | All about ISO | Taking part | **Store**

Standards catalogue | Publications and products

Store > Standards catalogue > ICS > 35 > 35.240 > 35.240.70 > ISO/CD 19168-1

ISO/CD 19168-1

Geographic information -- Geospatial API for features -- Part 1: Core

General information ⓘ

Status : ⓘ Under development

Edition : 1

Technical Committee : [ISO/TC 211](#) Geographic information/Geomatics

ICS : [35.240.70](#) IT applications in science

Life cycle

ISO/CD 19168-1	Mr Clemens Portele Mr Peter Vretanos	Geographic information -- Geospatial API for Features -- Part 1: Core	30.99 2019-07	DIS text expected from project leaders. IS to publish before 2020-07.
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Relationship with OGC API Common



- Scope and content of OGC API Common is still being determined
- The OGC API Hackathon last week provided very useful input
- The building blocks that are not specific to features work for the other resource types, but OGC API Common still has to determine where to cut the line between Common and the resource types like Features, Coverages, etc.
- A future minor revision of Part 1, Core, could remove the building blocks eventually specified by Common and normatively reference the relevant OGC API Common conformance class(es) after adoption

Evidence of implementation



- Several server and client implementations
- Some are listed in the [implementations page on GitHub](https://github.com/opengeospatial/WFS_FES/blob/master/implementations.md), more exist
- Some published APIs in production, more in testing / experimental phase
- [CITE tests exist](#), too, and will need an update to align with the candidate standard

Implementations

Overview

This page points to servers implementing drafts of the OGC API Features series. For now this is limited to implementations of the current draft of Part 1. Core.

Implementations:

Servers:

- [interactive instruments](#)
- [CubeWerx Inc.](#)
- [GeoServer](#)
- [pygeoapi](#)
- [jivan](#)
- [sofp](#)
- [STAC](#)
- [nls-fi](#)

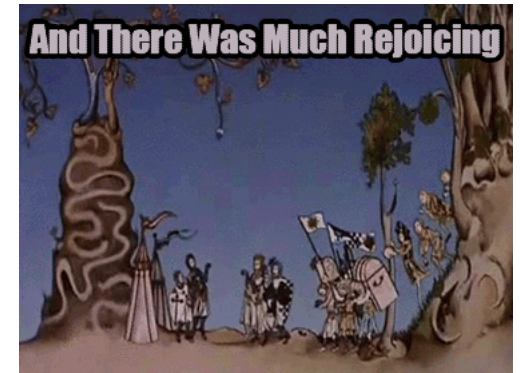
Clients:

- [go-wfs3-client](#)
- [ogr/gdal WFS 3.0 client driver](#)
- [OWSLib WFS 3.0 client](#)
- [STAC](#)

Motion



- The WFS/FES SWG recommends that the OGC Technical Committee approve an electronic vote to approve release of 17-069r2 “OGC API – Features – Part 1: Core” as an OGC Adopted Standard.
 - Pending edits of the remaining open issues in https://github.com/opengeospatial/WFS_FES/projects/1 according to the documented resolution in each issue.
 - 17-069r1 posted to pending is the current draft
 - 17-069r2 will contain the resolution of all remaining issues
 - Pending any final edits and review by OGC staff
 - There was no objection to unanimous consent
 - And there was much rejoicing





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GeoTIFF SWG

111th OGC Technical Committee

Leuven, Belgium

Emmanuel Devys

26 June 2019

GeoTIFF 1.1 content



1. Scope
 2. Conformance
 3. References
 4. Terms and Definitions
 5. Abbreviations
 6. Clauses not Containing Normative Material
 7. Requirements
 - 7.1. Underlying **TIFF Requirements**
 - 7.2. **GeoTIFF Configuration GeoKeys**
 - 7.3. **Raster to Model Coordinate Transformation** Requirements
 - 7.4. Requirements for **definition of Model CRS** (when Model CRS is from GeoTIFF CRS register)
 - 7.5. Requirements for **definition of user-defined Model CRS**
 8. Media Types for GeoTIFF data encoding
- Annex A: Abstract Test Suite (Normative)
 - Annex B: GeoTIFF File Structure and GeoTIFF CRS and models principles (Informative)
 - Annex C: GeoTIFF Map Projection Method codes (Normative)
 - Annex D: Recommendations for including height in model CRS definitions (Informative)
 - Annex E: Summary of GeoKey IDs and names
 - Annex F: Examples
 - Annex G: Deprecated and deleted EPSG codes
 - Annex H: Backward compatibility
 - Annex I: Revision History
 - Annex J: Bibliography

GeoTIFF 1.1 support (thanks to Even)



- Needed changes to support GeoTIFF 1.1 merged into libgeotiff (1.6.0dev) and GDAL (3.1.0dev) master versions
- libgeotiff, main changes:
 - at the library version level is the ability to specify the 3 version numbers, whereas previously 1:1:0 was hardcoded.
 - on the utility level, listgeo uses the new names of the geokeys for a GeoTIFF 1.1 file
 - geotifcp has also a new -v flag that can be used to just tweak the version numbers.
- GDAL
 - GTiff driver has now a GEOTIFF_VERSION=AUTO/1.0/1.1 creation option.
 - Full doc of the driver at <https://gdal.org/drivers/raster/gtiff.html>
- boring & small GeoTIFF 1.1 files at the beginning of <https://github.com/OSGeo/gdal/commit/509383e3139e7e47f561b673b92593660bdb0d52>

Agenda



- Comment Adjudication
- GeoTIFF Media (MIME) Type
- Motions for submission to TC
- Discussion on future action

Request for an electronic vote / motion



- The GeoTIFF SWG recommends that the OGC Technical Committee approve an electronic vote to approve release of OGC 19-008r3 “OGC GeoTIFF Standard” as an OGC Adopted Standard.
 - Pending application of the editorial changes identified in SWG review
 - Pending any final edits and review by OGC staff
 - There was no objection to unanimous consent

Note: need to register GeoTIFF MIME type to IANA (see next)



Upcoming TC Meetings



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Banff TC 2019

111th OGC Technical Committee

Leuven, Belgium

Steve Liang, CTO of SensorUp

25 June 2019

Banff Centre, Banff, Canada



Banff Centre

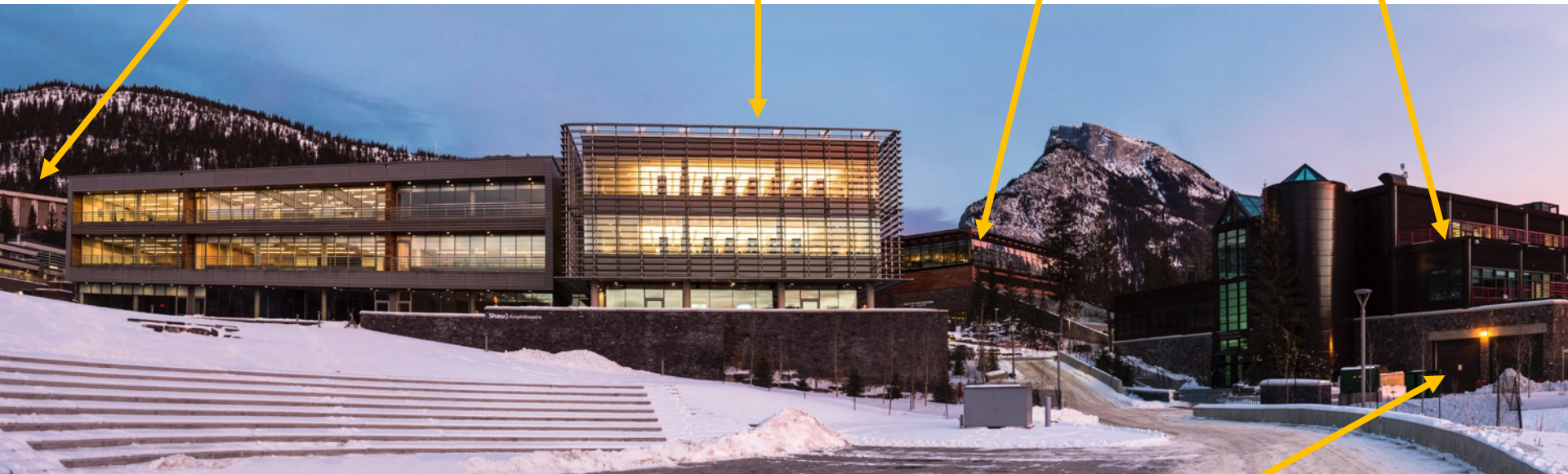


Hotel Rooms

Meeting Rooms

Hotel Rooms

Dining



Gym and Swimming Pool

Moraine Lake



Lake Louise



Sunday Morning Hike – Lake Agnes Tea House



September 8th

Sunday

9:30 am

One way 3.5 km.

400m elevation gain

**Meet In front of
Chateau Lake Louise Sign
Sara will be there.**

Pack your lunch.

Lake Agnes Tea House



Sunday Evening Informal Meet-up



Location TBD

**Most likely
Banff Central Park**

Sunday 6:00pm

How to get there

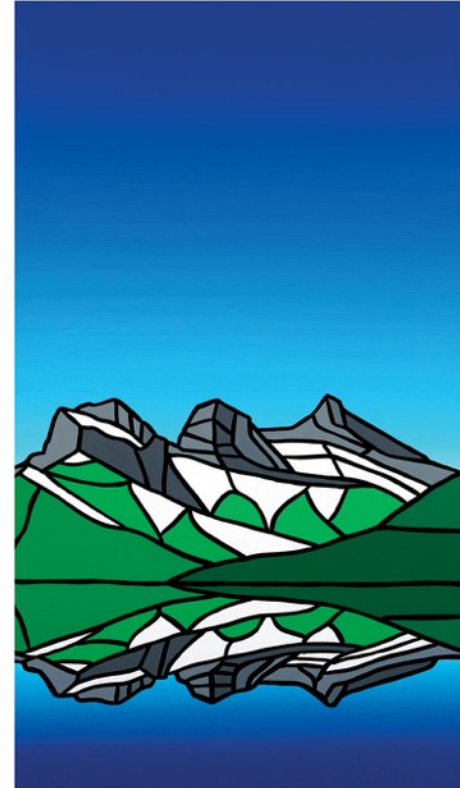


- Fly to Calgary airport (YYC)
 - Direct flights from LHR, LGW, CDG, FRA, AMS, NRT, PEK, and many US airports
- From YYC
 - Rent a car (90 minutes drive from airport)
 - Shuttle
 - Banff Airporter
 - Banff Airport Express
- Around town
 - Walk
 - Banff local transit – ROAM

Banff TC Photo Contest



- Submit a photo taken during TC before Wednesday end of day.
- A prestigious panel will be selected to evaluate the submissions.
- 1st prize will be a reprint of a local artist's art work.



What to do in Banff?



Banff Gondola



Emerald Lake



Johnson's Canyon



Peyto Lake



When you have time, check this video.



<https://www.youtube.com/watch?v=ThFCg0tBDck>

Technical / Planning Committee Meetings



Date	Location	Host/Sponsor
Now	Leuven, Belgium	KU Leuven
9-13 September 2019	Banff, Canada	University of Calgary, NRCan
18-22 Nov 2019	Toulouse, France	Airbus
March 2020	Hong Kong (TBC)	
June 2020	Montreal, Canada	CAE
14-18 Sept 2020	Munich, Germany	TUM
30 Nov – 4 Dec 2020	Palo Alto, CA USA	EPRI

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



TC Chair Announcements and Motions

Welcome new members!

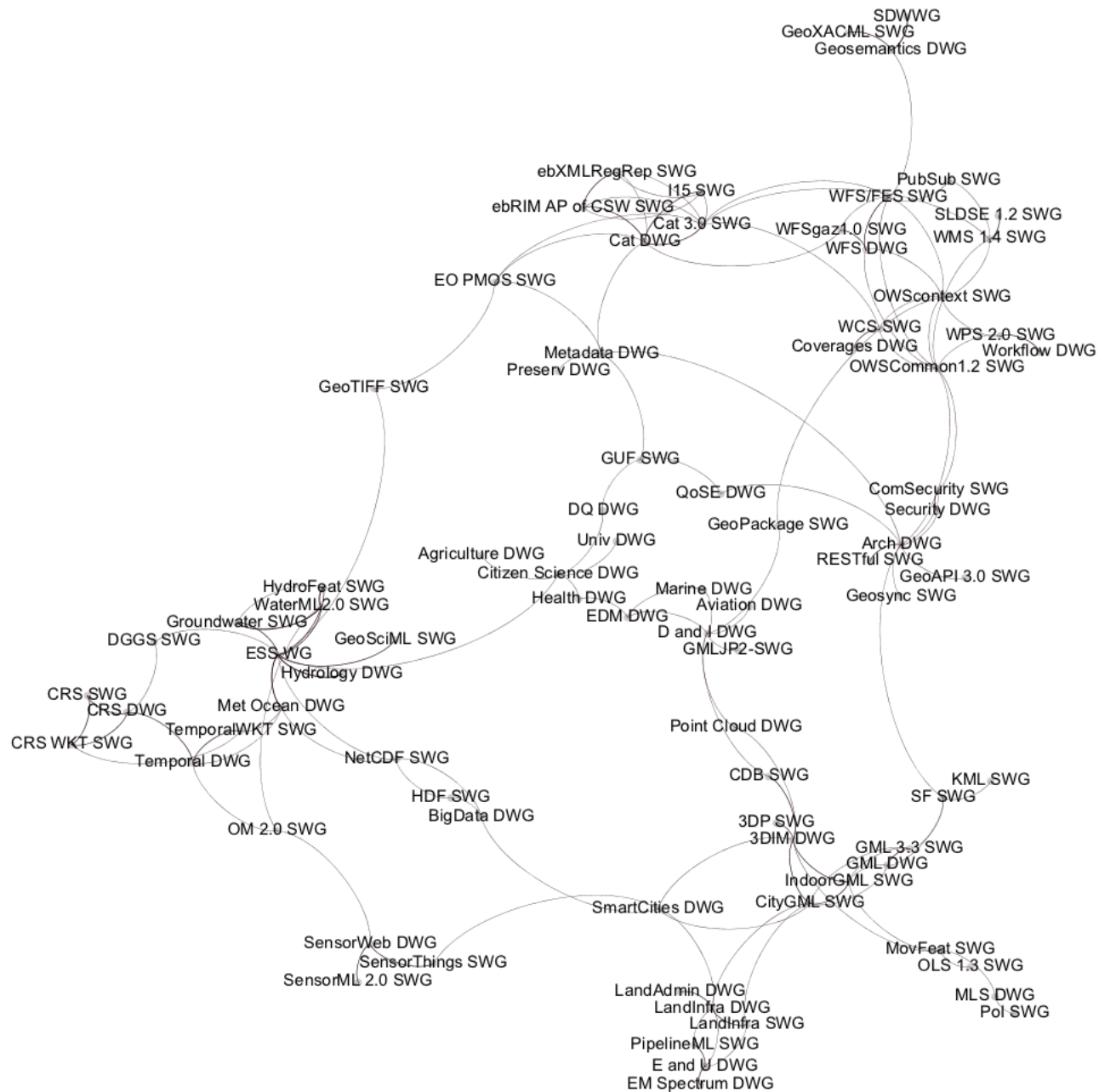


- Lands Department, Hong Kong SAR Government
- Adam Steer
- National Institute of Advanced Studies
- Punjab Remote Sensing Center (PRSC)
- Voyager Search
- Jeffrey Young
- Robert Christian Morrow
- Panasonic Corporation, Life Solutions Company
- Fisheries and Oceans Canada/Canadian Hydrographic Service
- OceanWise, Ltd
- Hunter College-City University of NY
- Zhengzhou Zhonghe Jingxuan Information Technology Co. Ltd
- Cyient, Ltd
- Plan4all
- Open AR Cloud

SWG-DWG relationships - background



- Action from 2015 Barcelona PC Meeting (!) to find a “home” DWG for every SWG
 - Be an open forum for discussion of use cases and requirements
 - Provide DWG guidance for collaboration between SWGs as needed
 - Be a home for Change Requests that are made on standards with inactive SWGs: make the decision whether to reactivate the SWG
- Action from 2017 Delft PC Meeting to develop a WG wiring diagram
 - See next slide
 - Used to guide clustering of DWGs
 - Based on common work/topical discussions, being expanded to include common attendance





WG Reports not to be briefed

Not being briefed today, saving you **210** slides



- 3DIM DWG
- 3D Portrayal SWG / SLD/SE SWG
- Agriculture DWG
- Architecture DWG
- Aviation DWG
- Blockchain and DLT DWG
- CDB SWG
- CITE SC
- Citizen Science DWG
- CityGML SWG
- CRS SWG/DWG
- Data Preservation DWG
- Data Quality DWG
- D&I DWG
- DGGs DWG
- EDM/LEAPS DWG
- EO Product Metadata and OpenSearch SWG
- GeoAI DWG
- GeoSciML SWG
- Geosemantics DWG
- Hydro DWG
- IndoorGML SWG
- LandInfra DWG
- LandInfra SWG
- MetCat DWG
- MLS DWG
- Moving Features SWG
- OGC Korea Forum
- O&M SWG
- OWS Common SWG
- Perspective Imagery DWG
- Point Cloud DWG
- Portrayal DWG
- QoSE DWG
- Security DWG
- SensorThings SWG
- SWE DWG
- Timeseries SWG
- UxS DWG
- WMS SWG
- WPS SWG / Workflow DWG



Z – 3

WG Reports with TC Motions



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Spatial data on the web interest group

111th OGC Technical Committee
Leuven, Belgium

Jeremy Tandy, Linda van den Brink

27 June 2019

The most important thing for this WG is...



Following W3C rules the interest group will expire by the end of 2019.

Do we want to continue and in that case, what job will the group have?

(consensus during the meeting was that yes, we do want to continue)

Agenda



- <https://www.w3.org/2017/sdwig/meetings/f2f-4.html>
- Detailed minutes are linked from the bottom of this page

Relevant activity



- We resolved to publish an erratum for the OWL Time standard
(the W3C way)

PROPOSAL: to publish an erratum for OWL Time relating to Pull Request 1116

< **ChrisL** > +1 for merging #1116

< **projector_** > +1

< **projector_** > jtandy +1

+1

RESOLUTION: to publish an erratum for OWL Time relating to Pull Request 1116

< **scribe** > **ACTION:** ChrisL to talk to the Francois/Ted to make the change

jtandy: please update issue 1131 on the IANA considerations

Correction to the above: the issue about time instants and intervals is <https://github.com/w3c/sdw/issues/1126>

ChrisL: Simon and I will produce the text of a new note and put it through the W3C process

... <https://github.com/w3c/sdw/issues/1055> there is a problem with comparing instants using DateTime, because it mixes up issues of calendar and coordinate system

Frankie: Can Chris and Simon check with the editorial team and see if he is happy with the answer then close the issue if he is



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OGC Naming Authority

111th OGC Technical Committee
Leuven, Belgium
Gobe Hobona
27 June 2019

The most important thing for this WG is...



The need to update the Geologic Time datum in the OGC
Definitions Server

Agenda



- Reminder of motions from February 2019 telecon
- Motion on Geologic Time – Simon Cox / Gobe Hobona
- Definitions Server Update – Rob Atkinson
- Work Plan for Q3

Activity Summary



- Discussion topics

- Datums for Geologic Time
- Clarification of proposal submission process
- Updates to the Definitions Server
- Work to be done in the next quarter

- Upcoming deliverables

- Registration of GeoTIFF MIME type with IANA
- Updates to OGC-NA policy on proposal submission

- Coordination (ongoing and planned)

- PipelineML SWG
- LandInfra SWG
- SWE DWG
- Temporal DWG

- Future meetings

- Next TC Meeting

Key activities



- Current
 - App Schema ontology development
 - Sensor Model and Parameter Registers
- New
 - LandInfra Codelists
 - Registration of GeoTIFF MIME type

Redirection of requests for EPSG definitions to the EPSG registry API



Requests for EPSG definitions, sent to the OGC Definitions Server, shall be redirected to the EPSG registry Application Programming Interface (API).

- Result: No objection to unanimous consent

Background Summary: Historically the OGC Definitions Server has proxied requests for EPSG definitions to SECORE, a server managed by Jacobs University. By proxying to the EPSG registry API, users of the OGC Definitions Server will benefit from access to the latest version of the EPSG dataset as soon as it is released.

Handling Previous Versions of Definitions



The OGC Naming Authority (OGC-NA) Subcommittee recommends that the OGC Technical Committee (TC) approve a qualification to OGC-NA policies that version 0 of the definitions registered with the OGC-NA should always point to the most recent version of that definition.

- Result: No objection to unanimous consent

Background Summary: For CRS definitions, Version ‘0’ is indicated by a zero placed after the authority identifier e.g. ‘EPSG’ segment of the Uniform Resource Identifier (URI) e.g. <http://www.opengis.net/def/crs/EPSG/0/4326>

The use of a version ‘0’ was originally devised for consistency with the OGC Uniform Resource Name (URN) namespace (detailed in IETF RFC 5165) `urn:ogc:def:crs:EPSG::4326`

Motion to task Temporal DWG to Review Options on the Datum for Geologic Time



- The OGC Naming Authority tasks the Temporal DWG to review the options on Geologic Time and to put forward a recommendation in time for the September 2019 Technical Committee meeting
 - Result: No objection to unanimous consent

Motion to clarify Proposal Submission Process



- The OGC Naming Authority (OGC-NA) approves a change to OGC-NA policy so that all proposals are first reviewed by the appropriate Control Body before they will be considered by the OGC-NA.
 - Result: No objection to unanimous consent



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Marine DWG Report

111th OGC Technical Committee

Leuven, Belgium

Jonathan Lewis & Sebastian Carisio

27 June 2019

The most important thing for this WG is...



The kick off of the S-121 Maritime limits and boundaries pilot project demonstrating collaboration between the OGC and the International Hydrographic Organization (IHO) Working Groups

Agenda



- Key outcomes from the Marine Summit in Singapore
- Data cataloging and interoperability profiling
- Use cases of vector tiles in the marine environment
- UN-GGIM - Guide to the use of Geospatial Standards in marine data
- MSDI Concept Development Study (CDS) Update
- Maritime Limits and Boundaries/IHO S-121 Pilot Project
- Marine GeoPackage Update

Activity Summary



- Discussion topics

- Data cataloguing and interoperability for data and services
- Use of vector tiles within the marine domain for IHO S-57 data

- Upcoming deliverables

- Approval of Marine CDS by TC
- Initial results of the MLB pilot project to be presented at Banff

- Coordination (ongoing and planned)

- Working with UN-GGIM to create guide for geospatial standards
- MLB project with IHO
- Looking for WGs who would be interested in commenting on the MLB engineering report

- Future meetings

- At the next TC meeting

Key activities



- Updating Working Group wiki following Marine Summit in Singapore, to focus work group activities.
- Encouraging more participation from Hydrographic Community and OGC groups
- Working on “best of both worlds” approach in IHO / OGC collaboration on standards

Document Approval Motion



- The Marine DWG recommends that the OGC Technical Committee approve release of 19-025 “Development of Spatial Data Infrastructures for Marine Data Management” as an OGC Engineering Report.
 - Pending any final edits and review by OGC staff
 - International Hydrographic Organization (IHO) edits have been applied that do not change the nature of the document.
 - There was no objection to unanimous consent
- This engineering report (ER) presents the results of a Concept Development Study (CDS) on a Marine Spatial Data Infrastructure (MSDI). The goal of this study was to demonstrate to stakeholders the diversity, richness and value of a MSDI – specifically data, analysis, interoperability and associated IT services - including web services - in addressing needs of the marine domain. This ER will serve as the basis for improvement of SDIs’ to support the marine domain.



Sponsors



Interoperable Simulation and Gaming DWG

111th OGC Technical Committee

Leuven, Belgium

David Graham, Ron Moore

27 June 2019

The most important thing for this WG is...



Wide communication and coordination with other OGC WG's
and the larger MS&G stakeholder community

Agenda



Intro; Agenda; reminder to badge in; remind online attendees to add their name on the attendance 'tab'	David Graham, Ron Moore, Colin George, David Ronnfeldt	Co-Chairs
Mixed Reality to the Edge Concept Development Study Engineering Report	Carl Reed	
CDB Vector Data in Geopackage Interoperability Experiment Engineering Report	Carl Reed	
Simulations in 3D Platforms for Cities	Sai Ramesh	Cyient
Use of Geospatial Data in Game Based Simulations	Tim Pokorny	Calytrix
Possible OGC Interoperability Experiment with proposed CDB Basemap Extension	Glen Johnson	VATC
CDB SWG Roadmap Update	David Graham	CAE Inc.

CDS ER Abstract



- "Mixed reality (MR), also referred to as hybrid reality, is the merging of real and virtual worlds to produce new environments and visualizations where physical and digital objects co-exist and interact in real time"
- This OGC Engineering Report summarizes information and findings provided during the Mixed Reality [1: The term mixed reality was originally introduced in a 1994 paper by Paul Milgram and Fumio Kishino, "A Taxonomy of Mixed Reality Visual Displays." From Microsoft technical note "What is mixed reality?" <https://docs.microsoft.com/en-us/windows/mixed-reality/mixed-reality>] at the Edge Concept Development Study (CDS). The primary objective of executing an OGC Concept Development Study (CDS) is to assess emerging technologies and architectures capable of supporting possible future OGC Interoperability Initiatives and Standards activities. A CDS may also examine alternative mechanisms that enable commercial technology to interoperate to meet sponsor requirements.

Document Approval Motion

Mixed Reality to the Edge CDS ER



- The Interoperable Simulation and Gaming Domain Working Group recommends that the OGC Technical Committee approve release of [OGC 19-030] “Mixed Reality to the Edge CDS ER” as an OGC Engineering Report.
 - Pending any final edits and review by OGC staff
 - There was no objection to unanimous consent

CDB Vector Data in Geopackage

IE ER Abstract



- This OGC Engineering Report (ER) documents the results of the CDB Vector Data in GeoPackage Interoperability Experiment (IE). The participants in this IE tested the encoding of vector data into one or more GeoPackage(s) and storing the result in a CDB data store. GeoPackage Version 1.2 and CDB Version 1.1 and related Best Practices were the standards baseline used for this experiment. The IE builds on the work described in the OGC "CDB, Leveraging GeoPackage" Discussion Paper.

Document Approval Motion

CDB Vector Data in Geopackage IE ER



- The Interoperable Simulation and Gaming Domain Working Group recommends that the OGC Technical Committee approve release of OGC 19-007r1 “OGC CDB Vector Data in GeoPackage Interoperability Experiment ER” 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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Earth Observation Exploitation Platform – EOXP DwG

111th OGC Technical Committee

Leuven, Belgium

C.Lopes, C. Lynnes

27 June 2019

Agenda



- 1) Introduction
- 2) "OGC Testbed: Earth System Grid Federation (ESGF) Compute Challenge ER" - *Tom Landry***, *CRIM* (ca 8m)
- 3) "OGC Testbed-15: Scaling Units of Work (EOC, SCALE, SEED) ER" - *Alexander Lais*, *Solenix* (ca. 5m)
- 4) "Introduction to T15 - Catalog ER" - *Yves Coene*, *Spacebel* (ca 5m)
- 5) "Common Architecture interfaces for analysis and platform integration" - *Richard Conway*, *TVUK* (ca 15m)
- 6) "openEO – An API for Standardised Access to Big Earth Observation Data in a Landscape of a Growing Number of EO Cloud Providers" – *Alexander Jacob***, *Eurac Research* (ca 15m)
- 7) "EOPEN - A platform for big data processing and analytics using multiple sources of data and processing resources" - *Bernard Valentin*, *Space Application Services* (ca 15m)
- 8) "Automated deployment and Chaining of operational EOXP Micro-Services in Cloud" - *Koushik Panda*, *Deimos* (ca 15m)
- 9) Discussion & AOB

The most important thing for this WG is...



Session confirmed that convergence around open, interoperable standards (profiles, best practices) is needed given the large number of on-going parallel activities.

The DwG needs to identify the areas where this convergence is both achievable and necessary so that all interested players can contribute.

Activity Summary



- Discussion topics

- Lots of on-going activities; little convergence around standards or tailoring of standards.
To be further explored in teleconferences.

- Upcoming deliverables

- OGC Testbed-15: Scaling Units of Work (EOC, SCALE, SEED) ER to be reviewed
- 19-003 “OGC Testbed: Earth System Grid Federation (ESGF) Compute Challenge” (Motion to vote)

- Coordination (ongoing and planned)

- WPS (planned)
- Opensearch (planned)
- OGC API Common (planned)

- Future meetings

- DwG Ramping up
- Plan to start regular discussions
- Banff session is being planned

Document approval motion



- The Earth Observation Exploitation Platform DWG recommends that the OGC Technical Committee approve release of 19-003 “OGC Testbed: Earth System Grid Federation (ESGF) Compute Challenge” as an OGC Engineering Report.
 - Pending any final edits and review by OGC staff
 - The ER was created post Testbed-14 and complements the original findings with experience from the Climate domain.
 - There was no objection to unanimous consent.



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Big Data DWG

111th OGC Technical Committee

Leuven, Belgium

John Herring

27 June 2019

The most important thing for this WG is...



Geospatial Data Cubes Community Practice

Agenda



- Data Cubes Community Practice
 - Motion to recommend Public RFC
 - Pending document (18-095r) edited this week
Geospatial_Data_Cube_Community_Practice_v0.4.docx
 - <https://portal.opengeospatial.org/files/83980>
- Cloud Computing Toolchains (Heazel)

Activity Summary



- Discussion topics

- Geospatial Data Cubes Community Practice
- Cloud Computing Toolchains
 - Mature the EOC Testbed 14 architecture

- Upcoming deliverables

- Geospatial Data Cubes Community Practice for Public RFC

- Coordination (ongoing and planned)

- <other WG>
- <other SDO>
- <other organization>

- Future meetings

- <next TC Meeting>

Key activities



- Data Cubes Community Practice
 - Motion to advance the CP as a Public RFC
 - Organize future discussions to advance topics in the practice, e.g., analytics – action on George Percivall
 - Concern that the document based on a narrow community, may not be understood that it does not apply to the wider area.
- Mature the EOC Testbed 14 architecture
 - Promote coordination OGC IP initiatives



“Important Things” discussion

Topics



- Managing Change in a widely implemented ‘legacy’ standard
- maintain & continuously enhance a flexible, easy-to-use, but powerful service suite for multi-dimensional coverages, in particular: datacubes, and preserve assets of the many tools & services existing



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Closing Plenary reports without motions

111th OGC Technical Committee

Leuven, Belgium

Scott Simmons

27 June 2019



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3DIM

111th OGC Technical Committee
Leuven, Belgium

J Stoter, D Graham, C Roensdorf
27 June 2019

The most important thing for this WG is...



Coordination between related standards in the 3D space

Agenda



- Indexed 3D Scene Layers (I3S) community standard evolution and its significance to the 3DIM DWG (Tamrat Belayneh)
- 3D standardisation developments in NL (Friso Penninga)
- GeoBIM Benchmark: testing available technical solutions for the interoperability of CityGML and IFC (Francesca Noardo)
- Towards IndoorGML 2.0 (Sisi Zlatanova)
- Utility Network ADE - towards version 1.0 (Tatjana Kutzner)
- BIM/Geo integration using CityGML in Estland (Rick Klooster)
- CityGML ADE for public safety (Mohsen Kalantari)
- i-Urban Renovation" and CityGML: Comprehensive Urban Planning using 3D Visualization ADEs (Kentaro Akahoshi, Reo Iijima)
- Summary of OGC CityGML 3 Hackathon (Carsten Roensdorf)

Activity Summary



- Discussion topics

- Need for better documentation on ADE creation (perhaps based Linda van der Brinck's paper)

- Upcoming deliverables

- IndoorGML coordination

- Coordination (ongoing and planned)

- IndoorGML
- CityGML
- LandInfra

- Future meetings

- Next TC



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Joint sessions 3DP and SLD/ SE SWG

111th OGC Technical Committee

Leuven, Belgium

<Name of presenter>

27 June 2019

The most important thing for this WG is...



- Discussions around the needs on symbology regarding domains.
- What about the application of the core model made by SLD/ SE SWG regarding domains groups (3DP SWG, ...)
- How to make experimentations to improve this work for 2D/ 3D use cases.

Agenda



- In this (short) session, we have discussed on symbology for geospatial data with a focus on 3D.
 - Topic 1 : OGC Symbology Conceptual Model: one core, many extensions / one conceptual model, many encodings. Erwan Bocher and Olivier Ertz (15 min)
 - Topic 2 : Needs of symbology for 3D Portrayal. Gilles Gesquière, Volker Coors (15 min)
 - Presentation of Portrayal DWG. Matt Sorenson (5 min)
 - a dedicated slot was scheduled in the same room after this session
 - Discussions

Activity Summary



- Discussion topics
 - Symbology and dedicated use cases

- Upcoming deliverables
 - Portrayal DWG Chartering (see Portrayal DWG reporting)

- Coordination (ongoing and planned)
 - 3D portrayal SWG
 - Portrayal DWG
 - SLD/ SE SWG
 - P4 portrayal DIGWG

- Future meetings
 - OGC TC Canada, September 2019



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Agriculture DWG Report

111th OGC Technical Committee

Leuven, Belgium

Karel Charvat

27 June 2019

The most important thing for this WG is...



Agriculture address number of technical standardisation effort inside of OGC, we need made link between Agriculture DWG and Technical groups

Key topics recognized during meeting



- Semantic, Ontologies and Linked Data (not only Open Linked Data) – in this direction seems to be important build harmonized models for soil and parcels (plot information). JSON formats, WFS 3.0 and other activities has to be considered
- Trust and security of information and methods of data sharing
- New visualization methods including 3D
- Metadata standard and linkage of metadata and data using new standards GeoDCAT IP, etc., how to search metadata using search engines
- IoT technology and standardization in this domain

Key topics recognized during meeting



- Maps as object in relation to An Open Format Linking Geospatial Web Services and Information
- Mobile access and citizens science methods or VGI methods
- Cloud and HPC computing
- FAIR data principles
- EO is one from key sources of information for agriculture
- ISOBUS and standards for machinery monitoring

Current situation in Europe



- In Europe is number of large projects, which can contribute to standardization effort
 - DataBio
 - IoF2020
 - EUXDAT
 - EO4Agri
 - Demeter
 - CYBELE
 - SIEUSOIL
 - STARGATE
- We need use potential of this project to help implementing standards in agriculture

Next steps



- Organize similar event on next TC meeting in Canada with focus on research and commercial activities on American continent
- Build strong link with Asia, Australia and New Zealand (we had presentation on this meeting)
- Organize regular virtual meetings focused on single topics like semantic, IoT and prepare from this meetings suggestion for next TC meetings
- Elaborate ideas and look for sponsors for Precision Farming Test Beds



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Architecture DWG

111th OGC Technical Committee

Leuven, Belgium

Joan Maso, Gobe Hobona

27 June 2019

The most important thing for this WG is...



How should we resolve query parameter collisions in paths
between OGC APIs?

Agenda



- Lessons learnt from the “WFS work week” – Frank Terpstra
- Update on the Tiling Conceptual and Logical Model Abstract Specification – Carl Reed
- Weather on the Web based on the OGC API resources - Mark Burgoyne
- Coverages and OpenAPI: status & some preliminary lessons learnt – Peter Baumann
- Discussion on architectural implications of the emerging OGC APIs – Joan Maso & Gobe Hobona

Activity Summary



- Discussion topics

- WFS 3.0 work week and lessons learnt
- Draft Abstract Tiling standard
- Weather-on-the-Web API based on OGC APIs, should it use filtering or subsetting
- Coverages and the emerging OGC APIs

- Coordination (ongoing and planned)

- OWS Common SWG
- WFS/FES SWG
- WCS SWG
- WPS SWG

- Upcoming deliverables

- Inviting contribution to the **OGC Tiling Conceptual Model and Logical Model for 2-D Planar Space** Abstract Standard

- Future meetings

- Next TC Meeting

Key activities



- OGC API Hackathon 2019



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Aviation DWG Report

111th OGC Technical Committee

Leuven, Belgium

Hubert LEPORI, EUROCONTROL, A-DWG co-chair

27 June 2019

Agenda



- GML profile for Aviation
- WFS temporal extension for AIXM
- Complementing OGC PubSub spec with an AMQP 1.0 binding
- A-DWG co-chairmanship – vacant position

Activity Summary



- A-DWG co-chairmanship

- Vacant co-chair position
- Call for candidates / interest

- Upcoming deliverables

- GML Profile for Aviation, as OGC Best practice
- [TBC] WFS temporal extension for AIXM, as OGC Best practices (for potential reference by ICAO)

- Coordination

- **UxS DWG** on subjects such as geospatial sorting, ATM UTM common altitude reference system, and EUROCAE's ongoing work on UAS zone modelling
- Opportunity for the **Pub/Sub SWG** to complement the OGC Pub/Sub spec. with an AMPQ 1.0 binding to satisfy the requirements for Air Traffic Management

- Future meetings

- During the next TC Meeting



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Blockchain & Distributed Ledger Technologies DWG

111th OGC Technical Committee

Leuven, Belgium

Anna Burzykowska, Andreas Matheus

27 June 2019

The most important thing for this WG is...



... is to stimulate the engagement from the community members

Agenda



- Election of Chairs
- Initial overview of the OGC Testbed-15: Federated Cloud Provenance ER
- Next steps for the DWG

Activity Summary



- Discussion topics

- Use cases selection and definition
- Role of standardization and coordination with ISO

- Upcoming deliverables

- None at the moment
- Indirect Deliverable : OGC Testbed-15: Federated Cloud Provenance ER will require review and motion to publish

- Coordination (ongoing and planned)

- Coordination with Security DWG
- ISO 307 Working Group
- 2 Issues (Use Cases, Standardization) created on the Tracker to facilitate exchange/contributions (email will go out to the group to create content)

- Future meetings

- Online to review the contributions to the Issues raise
- Next TC Meeting
- 2019 ESA Phi-Week Blockchain Workshop (September 12)

Key activities



- Continuing review of the Discussion Paper OGC 18-041r1 “Geospatial Standardization of the Distributed Ledger Technologies”
- Prepare for the review of the OGC Testbed-15: Federated Cloud Provenance ER
- Collection of use cases
- Liaison with ISO on standardization aspects
- Exchange with other WGs

Election of Co-Chairs: Anna Burzykowska



- The Blockchain & Distributed Ledger Technologies (BDLT) Domain Working Group (DWG) appoints Anna Burzykowska as a co-chair of the DWG.
 - Result: NOTUC
- Anna Burzykowska is a Projects Specialist at the European Space Agency as well as a leader of the emerging practice on Blockchain, Distributed Ledgers and EO at the ESA's Directorate of Earth Observations Programmes (D/EOP). She has been spearheading several community blockchain workshops and high level events at the D/EOP in 2018 and 2019, in particular drafting and release of the ESA Blockchain and EO White paper in April 2019 (<https://eo4society.esa.int/2019/04/09/blockchain-and-earth-observation-a-white-paper/>).

Election of Co-Chairs: Andreas Matheus



- The Blockchain & Distributed Ledger Technologies (BDLT) Domain Working Group (DWG) appoints Andreas Matheus as a co-chair of the DWG.
 - Result: NOTUC
- Andreas Matheus is the founder and Managing Director of Secure Dimensions GmbH, a SME located in Munich Germany. The business focus is to architect and develop enterprise security solutions based on main stream IT standards applied to use cases for managing geospatial data. As an active OGC member since 2001, Andreas is the chair of the Security DWG since 2006, the OWS Common - Security SWG and a re-elected member of the Architecture Board since its formation. He also has written two OGC standards: GeoXACML 1.0 and OGC Web Services Security.



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CDB Standards Working Group

111th OGC Technical Committee

Leuven, Belgium

David Graham

27 June 2019

The most important thing for this WG is...



Managing Change in a widely implemented 'legacy' standard.

Agenda



- **Turn on GTM recording**; Patent Call; roll call; quorum;
- Overview: CDB Roadmap update;
- Update from CDB2 Working Group Meeting in June;
 - Basemap Extension discussion; potential Interoperability Experiment
- Update from Vector Data in Geopackage Interoperability Experiment (ER to be briefed in tomorrow's ISG DWG)
- Discussion / Consensus? / roadmap for CDB Vector Data in Geopackage as part of the OGC CDB Standard and Best Practices
- CRP update
- Related 'external' activities:
 - Interoperable Simulation & Gaming Domain Working Group
- Short term meeting schedule
- Other Business / New Business

Activity Summary



- Discussion topics

- Recommendations of the CDB Vector Data in Geopackage IE into the work of the SWG
- Finalizing scope and work for a minor revision: CDB V1.2
- SWG voted with NOTUC to 'bring' the IE recommendations into the SWG as a work item

- Upcoming deliverables

- Draft document(s) for OGC CDB V1.2
- Draft requirements and documents for encoding CDB Vector Data in Geopackage

- Coordination (ongoing and planned)

- Geopackage SWG
- ISG DWG
- D&I DWG

- Future meetings

- Monthly online SWG meetings
- Monthly online technical working meetings
- Face-to-face meeting at the Banff TC



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CITE SubCommittee

111th OGC Technical Committee

Leuven, Belgium

Chuck Heazel

27 June 2019

The most important thing for this WG is...



Compliance tests for profiles of OGC standards should have their own test repository. Two repositories should be established, one for the NSG and one for DGIWG. Additional communities can be accommodated as needed.

Agenda



- OGC Validation Tools – Status Report (Stenger)
- Process for prioritizing TEAM engine features (Stenger)
- Authoritative Profile Tests (Heazel)
- European validation tools update (Heidi Vanparys)
- API Hackathon (Heazel, Stenger)
- Interoperability Testing – Proposal and Discussion

Key activities



- Updates on OGC and INSPIRE compliance testing.
- Report on the API Hackathon.
- Discussion on making NSG and DGIWG compliance tests more available.
 - Currently these tests are only available from the “beta” site
 - It is appropriate that these tests should be moved to a final state.
 - Separate sites can be established for completed compliance tests for Profiles developed by NSG, DGIWG, and potentially others.



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Citizen Science DWG

111th OGC Technical Committee

Leuven, Belgium

Joan Maso

27 June 2019

The most important thing for this WG is...



We are working towards the second edition of the Citizen Science IE that will experiment with the OGC Definition Service

Agenda



- The LandSense Authorization Server - High Availability in the Cloud
 - Andreas Matheus. Secure Dimensions
- First Citizen Science IE Conclusion and Preparations for the Next One
 - Joan Maso. UAB-CREAF
- Status of the Project Metadata vocabulary and the PPSR v2
 - Sven Shade, JRC
- Discussions on how to connect cit Sci projects into GEOSS
 - Sven Shade, JRC
- Updates on interoperability challenges for Earth Challenge 2020
 - Anne Bowser, Winson Center
- ~~OGC Definition Server to store Cit Sci relevant vocabularies,~~
Towards Semantic Interoperability in Citizen Science:
Role of OGC
 - Ingo Simonis, OGC

Activity Summary



- Discussion topics

- The importance of the definitions for CitSci and the Earth Challenge 2020
- How to better integrate CitSci contributions to GEOSS
- The Landsense federation is moved to the cloud

- Upcoming deliverables

- First CitSciE ER

- Coordination

- Data quality DWG (and User Feedback)

- Future meetings

- next TC Meeting
- Next week in the EuroGEOSS workshop in Lisbon the topic about GEOSS integration will be discussed.



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CityGML SWG

111th OGC Technical Committee
Leuven, Belgium
C Nagel, S Smyth, C Roensdorf
27 June 2019

The most important thing for this WG is...



Arriving at a stable and frozen draft conceptual model and
Publication of CityGML 3

Agenda Modelling Sub-group



- Progress so far
 - Online meetings
 - Hackathon
- Remaining work to finish
- Timeline first thoughts
- Open GitHub issues
- Issues to report to SWG
 - CodeLists
 - Profiling
 - 2.0 -> 3.0
- Future model and sample data releases
- Timeline best estimate

Agenda Main meeting



- Rotterdam 3D requirements (Maarten Vermeij)
- Outcomes from CityGML Hackathon (Carsten)
- Modelling Subgroup report on Conceptual Model
 - Progress so far
 - Remaining work
 - UML model releases available and forthcoming
 - Sample data
 - Conversion tools
 - Timeline
 - Issues for wider SWG
- Path forward
 - Additional experimentation
 - Modelling subgroup
 - Modular specification (support from Josh)
- Timeline for CityGML 3



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CRS SWG/DWG Joint Meeting

111th OGC Technical Committee

Leuven, Belgium

Keith Ryden

27 June 2019

The most important thing for this WG is...



Completion and publication of ISO 19111 and ISO Standards. Change the focus to getting implementations into the field.

Agenda



A joint meeting of the CRS SWG and DWG:

- Roger Lott:
 - ISO/OGC 19111/Topic 2
 - ISO/OGC 19162 CRS WKT
 - EPSG Database/Repository updates
- Even Rouault:
 - PROJ updates for 19111 and 19162
- Martin Desruisseaux:
 - GeoAPI updates to support PROJ and 19111/19162
- Keith Ryden:
 - Patterns of implementation for CRS WKT2
- Clemens Portele:
 - WFS SWG request for new CRS in OGC registry

Next Quarter WG Communications Plan



- Work on plan to communicate significant CRS concepts:
 - With rollout of CRS WKT2, consumers will need to work with their suppliers to update software in the field to process WKT2. The messaging here is that software should be kept current, and to provide FAQ/Examples of issues that may arise over time if WKT2 support is not deployed
 - General education – people do not understand the difference between planer/sphere/spheroidal calculations and the implications the different results can have for different use cases. Consider preparing educational material for use inside and outside of OGC.



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Data Preservation DWG

111th OGC Technical Committee

Leuven, Belgium

<Name of presenter>

27 June 2019

The most important thing for this WG is...



There is a whole world of archivists that care about geospatial information and what to preserve it. It could be good to liaise with them

Agenda



- Standards for data preservation in the EARK4AL project [1]
Gregor Zavrsnik Geoarh
- Developing an implementation of the ISO19165 Information Package. Joan Masó UAB-CREAF

[1] <https://github.com/DILCISBoard/E-ARK-Geodata>.

Activity Summary



- Discussion topics

- How to reactivate the group in OGC?
- Could we bring some of the work in DILCIS as community standards in the OGC?

- Upcoming deliverables

- A community standard based on DILCIS work?

- Coordination (ongoing and planned)

- The DILCIS community
- The E-ARK project

- Future meetings

- It will depend on the interest of the community.



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Data Quality DWG

111th OGC Technical Committee

Leuven, Belgium

Ivana Ivanova, Sam Meek

27 June 2019

The most important thing for this WG is...



The data quality DWG is still going through a period of finding identity, the most important thing for this working group is the revision of ISO 19157 starting shortly as it presents an opportunity to include geospatial user feedback.

Agenda



- Ivana Ivánová (DQ DWG/Curtin University): Update on DQ DWG's work.
- Joan Masó (UAB-CREAF): Generating quality indicators from the client side in a SWE architecture.
- Ilkka Rinne (QoS DWG): QoS DWG - summary of work and links to DQ DWG
- Cindy Mitchell (NRCan/RN/Can): Data Quality and Usability Assessment at Canada's Federal Geospatial Platform
- Alaitz Zabala (UAB-CREAF): The Geospatial User Feedback implementation in the NextGEOSS project. Progress and new ideas

Activity Summary



- Discussion topics

- Update on data quality work, whether NAD should continue
- Whether QoS DWG should join with Data Quality
- Where GUF fits

- Upcoming deliverables

- none

- Coordination (ongoing and planned)

- QoSE DWG
- Citizen Science DWG
- Geospatial User Feedback SWG

- Future meetings

- Face-to-face meeting at Banff TC.

Key activities



- The main topics of discussion included:
 - The revision of ISO 19157 with potential to include geospatial user feedback standard.
 - Generation of quality indicators using SWE.
 - Geospatial User Feedback implementation in NextGEOSS
 - User feedback.



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Defense and Intelligence DWG

111th OGC Technical Committee

Leuven, Belgium

<Name of presenter>

27 June 2019

The most important thing for this WG is...



1. D&I DWG to membership to begin mapping emerging technologies against DGIWG requirements.
2. D&I DWG members to coordinate their engagement with OGC Interoperability Initiatives to move emerging technologies forward in a way that they will address DGIWG requirements.
3. DGIWG maintains a Use Case registry. It does not have any content. Explore using this resource to help bring new capabilities and requirements into the DGIWG process.

Continued..



- Questions of scope, cost, and contracts has slowed progress.
- OGC is moving off GitHub to GitLab.
 - Similar capabilities
 - GitLab has lower cost and more control.
- OGC will stand up an interim capability to support DGIWG coordination.

Agenda



WebMT progress Rob Smith

Future of NSG GeoPackage and Profiles - Heazel and Rathbun

Exploiting Motion Imagery Content, C. Hazel, L. Colaiacomo

Smart UAVs and safe flying environments - Ricky, GIS FCU

Spatio-Temporal Security Down To Pixel Level

Sensor Model Registry , Rob Atkinson

Mixed Reality to the Edge Engineering Report, C. Reed

CDB GeoPackage Interoperability Experiment ER Summary

DGIWG Vienna Recap - DGIWG Rep



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DGGS DWG

111th OGC Technical Committee

Leuven, Belgium

Matthew Purss

27 June 2019

The most important thing for this WG is...



Discussion and scoping of Domain topics related to DGGS including DGGS APIs, DGGS applications, DGGS Implementation Profiles and the DGGS Registry.

Activity Summary



- Discussion topics

- Digital Earth Canada – DGGs APIs Update
- Australian DGGs Activities Update – the Location Index Project and the value adding to Digital Earth Australia using DGGs

- Upcoming deliverables

- Digital Earth Canada DGGs APIs will be showcased during the Banff TC
- DGGs Registry implementation and integration with OGC CITE infrastructure – next milestone is Banff TC

- Coordination (ongoing and planned)

- Coverages DWG, OWS Common, CRS SWG/DWG, Simple Features, Big Data/Datacubes DWG, CDB DWG, Interoperability and Model Simulation DWG, JAG, NA, OAB, CITE
- ISO/TC 211

- Future meetings

- Next Telecon 24 July 2019
- Next TC: Banff, Canada TC (September 2019)

Key activities



- DGGS APIs
- DGGS Registry
- Engagement with UN-GGIM through the Global Statistical Geospatial Framework initiative
- Engagement with the Marine community on DGGS applications through the GEBCO 2030 Project



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Closing Plenary Report 2019 Leuven EDM/LEAPS DWG

111th OGC Technical Committee

Leuven, Belgium

Don Sullivan

27 June 2019

Agenda



- Disasters Resilience Pilot status – Terry Idol
- Brief on NASA Disasters Program – Dave Borges
- ESIP Disaster Cluster report – Karen Moe
- WebVMT update – Rob Smith
- UN-GGIM Disasters Update – Denise McKenzie

Activity Summary



- Discussion topics

- WebVMT
- Disaster Pilot
- Operational Readiness Lever

- Upcoming deliverables

- None

- Coordination (ongoing and planned)

- ESIP Disaster Cluster
- OGC Disaster Response Pilot

- Future meetings

- ESIP Summer meeting
- Next TC Meeting



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EO Product Metadata and OpenSearch SWG

111th OGC Technical Committee

Leuven, Belgium

Uwe Voges – con terra GmbH

27 June 2019

Agenda



- Current status of the 3 specifications in the OGC process (Uwe, Yves)
 - outstanding todos
 - Schedule
 - wrap-up...
- OGC testbed-15 EOPAD regarding discovery and metadata (Yves)
- Outlook / future development (Uwe)
 - e.g. possible alignment with OGC Common API, STAC / SDW ...
- Discussion (All)



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GeoAI DWG Report

111th OGC Technical Committee

Leuven, Belgium

Kyoung-Sook Kim

27 June 2019

The most important thing for this WG is...



To Elect Co-Chairs



PhD. Kyoung-Sook Kim
AIST
Japan



Prof. Tien-Yin (Jimmy) Chou
Feng Chia University (FCU)
Taiwan



PhD. Anneley Hadland
Deimos Space
UK



Prof. Dimitris Kotzinos
Université de Cergy-Pontoise
France

Agenda



10:15 - 12:00, Wed. Jun 26 @ Room 2+3 (local time)

- 10:15 - 10:25 Charter introduction and election of co-chairs
- Presentations
 - 10:25 - 10:45 GeoAI Applications and related technologies in Taiwan: Tien-Yin (Jimmy) Chou (Feng Chia University)
 - 10:45 - 11:05 Testbed-15 Machine Learning Engineering Report : Sam Meek (HELYX)
 - 11:05 - 11:25 The Smart Point Cloud: Florent Poux (Liege University)
 - 11:25 – 11:45 A deep learning approach to symbolic indoor map matching : Taehoon Kim (AIST)
- 11:45 – 12:00 Discussion for future activities

Activity Summary



- Discussion topics

- Testbed 15 Machine Learning
- Pilot setup
- Future Activities we have to focus on:
 - Standardization for Training Sets
 - Vocabularies, Corpus, etc.
 - Data types, catalogs, formats, etc.
 - Frameworks, Tools, etc.

- Upcoming deliverables

- DWG Wiki, GitLab(?)

- Coordination (ongoing and planned)

- ISO/IEC JTC1 SC42

- Future meetings

- Continuous offline discussion through TC meeting and online discussion
- TC meeting @ Banff, Canada

Election of Co-chairs



- The GeoAI DWG appoints Dr. Kyoung-Sook Kim, Prof. Tien-Yin (Jimmy) Chou, Dr. Anneley Hadland, Prof. Dimitris Kotzinos as Co-chairs of the DWG.
 - Discussion: There was no objection to unanimous consent

Key activities



1. Collect and analyze AI-related applications and use cases in the geospatial community.
2. Assess the existing (or lack of) geographic learning databases and the adequacy of learning databases with the use cases identified in this document.
3. Discuss and identify primary GeoAI use cases and applications that would benefit from OGC standards.
4. Identify geospatial requirements in different AI applications for inclusion in existing or new OGC standards.
5. Identify other practice areas in the OGC that support or could be influenced by AI technologies.
6. Identify GeoAI-related use cases and workflows for Interoperability Experiments or Testbeds.
7. Provide guidance and best practices for managing, processing and sharing geospatial data for easily adapting to AI algorithms, tools, or applications.
8. Determine OGC goals and organizational issues that impact GeoAI datasets, technologies, and markets.
9. Promote a robust and traceable GeoAI by defining the quality or metadata elements where reliability/conformance testing results can be stored as well as lineage information for the algorithms and learning datasets.
10. Exchange with other AI related groups like ISO SC42 (which is mentioned in this document) but also IJCAI and others

Next Quarter WG Communications Plan



- Tele-meeting for discussing about the role sharing of DWG co-chairs
- TC meeting @ Banff, Canada
 - Scope of Interest: **Standardization for Training Sets**
 - Please bring your datasets for ML training and share your experience to create/collect them.
- Other events
 - [The 3rd ACM SIGSPATIAL International Workshop on AI for Geographic Knowledge Discovery \(GeoAI 2019\)](#)
 - [The 2nd International Workshop on Artificial Intelligence for 3D Big Spatial Data Processing \(AI3D 2019\)](#)



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GeoSciML SWG

111th OGC Technical Committee

Leuven, Belgium

Eric Boisvert

25 June 2019

Agenda



- Potential change to GeoSciML 4.2 (AbstractDescription missing)
- MappingFrame for Borehole
- WFS 3.0 and encodings
- Progress report on Borehole IE and potential impact of GeoSciML (borehole package)
- Progress report on some ontology work done by GSC



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GeoSemantics DWG Closing plenary report

111th OGC Technical Committee

Leuven, Belgium

Linda van den Brink

27 June 2019

The most important thing for this WG is...



Now collecting change requests for GeoSPARQL,
then starting up a SWG

Agenda



Topic: use cases for updates to the GeoSPARQL ontology and/or a Spatial Ontology

- 08:00: Startup & intro (Linda)
- 08:05: Geo linked data insights – LOCI (Nick Car)
- 08:20: Geo linked data insights - Kadaster (Erwin Folmer, Frans Knibbe)
- 08: 35: Working with Jena and GeoSPARQL - requirements for a 2.0 version (Timo Homburg)
- 08:50: Wrap-up of topic
- 08:53: David Blodgett - SELFIE IE plug
- 08:55: end

Activity Summary

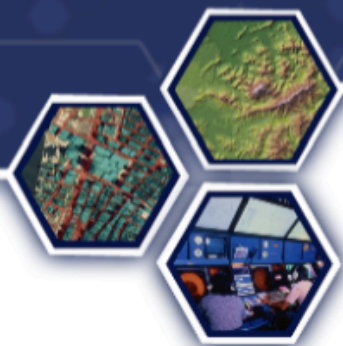


- Discussion topics
 - GeoSPARQL update
 - (cross-domain) spatial ontology

- Upcoming deliverables
 - Change requests for GeoSPARQL

- Coordination (ongoing and planned)
 - SDWIG
 - W3C

- Future meetings
 - Teleconference in the coming weeks to discuss change requests
 - Next TC meeting @ Banff



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Hydro Domain Working Group

111th OGC Technical Committee

Leuven, Belgium

Dave Blodgett

26 June 2019

Agenda



- Updates on existing WaterML2 specifications.
 - Presented by the best rep present with opportunity to comment.
- Update on CHy and WMO process for GWML2
 - Presented by Silvano Pecora
- HDWG activities in Summer / Fall 2019
 - Silvano and Dave lead discussion
- Discussion: Work related to existing specifications.
 - Better support for RDF/JSON-LD linked data applications.
 - JSON encodings to accompany OGC-API activities?

Report



- See twiki for powerpoints and notes.
 - https://external.opengeospatial.org/twiki_public/HydrologyDWG/LeuvenTC2019
- Major decisions:
 - Will hold remote mixed participation sessions instead of a face to face annual meeting.
 - Will submit some change requests to HY_Features based on experience using the spec.
 - GWML2 is on track to WMO adoption this winter.
 - Need to continue work on publishing feature models as simple OWL ontologies.



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IndoorGML SWG Report to TC

111th OGC Technical Committee

Leuven, Belgium

Ki-Joune Li

27 June 2019

Agenda



- Progress Report by Ki-Joune Li (5 min.)
- Presentations
 - From Point Clouds to IndoorGML - Sung-Hwan Kim (15 min.)
- Report on IndoorGML 2.0 by Jeremy Morley (20 min.)
- Introduction of CityGML 3.0 and Space Concept by Tatjana Kutzner (20 min.)
- Discussion on IndoorGML 2.0 (30 min.)
- SWG voting on IndoorGML 1.1 (Level) (10 min.)
- Closing (5 min.)



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LandInfra DWG

111th OGC Technical Committee

Leuven, Belgium

Leif Granholm

27 June 2019

The most important thing for this WG is...



At the moment the by far most important thing is to make implementations of InfraGML happen

Agenda



- Report from ISO TC 127 SC 3 WG 2 in Munich Data transfer between design sw and earth moving machinery
Leif Granholm
- Presentation from PipelineML SWG of the soon to published standard
Jan Stuckens
- Discussion of how to go forward with relation to buildingSMART and IFC Road, Rail and common schema efforts.
All
- Discussion on content of LandInfra next version
All
- (Extra) Muddy presentation (short)
Joshua Lieberman

Activity Summary



- Discussion topics

- buildingSMART developing IFC as “one size fits all” standard to cover “everything”, what to do about that
- Federated and linked approach to handling data
- Multikernel sw architecture, use standard data in as is without conversion

- Upcoming deliverables

- none

- Coordination (ongoing and planned)

- discussion whether Pipeline SWG should be hosted here
- **Merging of some DWG’s to built environment DWG**
- **collaboration with buildingSMART international, IDBE**

- Future meetings

- next TC Meeting
- **proposed workshop for working on LandInfra DWG and SWG charter and scope**
- **Participate in LI SWG meetings that will restart**

Key activities



- based on Joshua's Muddi presentation we had a lengthy discussion on centralized versus federated approach to information management.
- I presented my multikernel sw architecture which means that an application is capable to use several datasets in different schemas simultaneously and make integration (mergning, create new data based on several sources) dynamically on the fly and at different abstraction levels (f.ex. feature, geometry, graphics). This aligns well with the thoughts in Muddi.
- I think promoting this is the key in persuading bSi to avoid duplication and refer more to existing standards.



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LandInfra SWG

111th OGC Technical Committee
Leuven, Belgium
HC Gruler
27 June 2019

Agenda



- bSI and IFC Road
 - Feedback sent for draft of conceptional model
 - work on implementation of superelevation and Road design package
 - Linking data missing and the workshops of IDBE is missing
- LandInfra 2.0
 - Workpackage of cant
 - Superelevation
 - site
 - WUPI
 - How to start project and add active resources to it
- DWG input
- Jason implementation
- Next steps
- Ambassador for new implementations



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MetCat DWG

111th OGC Technical Committee

Leuven, Belgium

Frédéric Houbie

27 June 2019

The most important thing for this WG is...



Analyze evolution of metadata encoding, linked to open data
and future Catalogue API

Agenda



- DGIWG metadata profile for the Defense community (Stéphane Garcia, IGNF)
- Towards one metadata management system: DCAT plugin (Geraldine Nolf, Mathias De Schrijver and Dirk Debaere, Information Flanders)
- Harvesting Belgian Federal Geoportal using GeoDCAT-AP (Anuja Dangol, KU Leuven)

Activity Summary

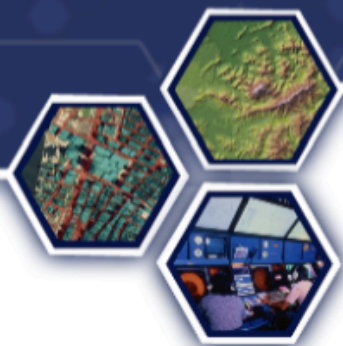


- Discussion topics
 - GeoDCAT
 - DMF

- Upcoming deliverables

- Coordination (ongoing and planned)
 - OGC Testbeds
 - WFS3 SWG
 - W3C DXWG
 - DGIWG for DMF
 - CSW(4), STAC, ...

- Future meetings
 - Banff meeting



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Mobile Location Services DWG

111th OGC Technical Committee

Leuven, Belgium

Josh Lieberman

27 June 2019

The most important thing for this WG is...



The need to review and update the MLS DWG charter

Agenda



- Review of Charter
- Overview of the current related OGC initiatives

Activity Summary



- Discussion topics

- Charter status
- Current Chairs
- Related IP initiatives

- Upcoming deliverables

- Routing Pilot ERs
- Indoor navigation ER

- Coordination (ongoing and planned)

- TNITS – INSPIRE transport networks and ITS community
- TC 204
- NDS association
- NIST
- DGIWG

- Future meetings

- Teleconference
- Next TC Meeting

Key activities



- Teleconference to review the Charter
- To update the Charter
- Consider and review engineering reports from various IP initiatives

Election of Chair: Jeff Harrison



- The Mobile Location Services DWG appoints Jeff Harrison as Chair of the DWG.
 - Result: NOTUC
- Jeff Harrison has been involved in various OGC Innovation Program initiatives.



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Moving Features SWG Report

111th OGC Technical Committee

Leuven, Belgium

Nobuhiro Ishimaru, Kyoung-Sook Kim

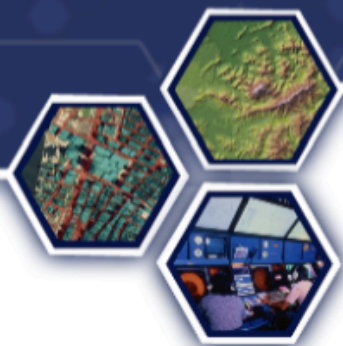
27 June 2019

Agenda



14:45-15:30 Tuesday June 25 @ Pressroom

- Roll call; Nobuhiro Ishimaru; Hitachi; [5 min]
- Follow-up Report: Promotion on OGC Moving Features with tutorial materials; Yoshihiro Osakabe; Hitachi; [5 min]
- Introduction on Web Video Map Tracks (WebVMT); Rob Smith; Away Team; [5 min]
- Review of Moving Features JSON Encoding; Kyoung-Sook Kim; AIST; [30 min]



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OGC Korean Forum

111th OGC Technical Committee

Leuven, Belgium

Ki-Joune Li

27 June 2019

The most important thing for this WG is...



- We have a meeting for OGC Korea Forum on March 12, 2019 in Seoul Sponsored by LX
- 38 participants from Geospatial Community (Government, Industry, and Academia)



Agenda



- Benefits of OGC Standards for Industry and Government by Trevor Taylor
- Governance Structure of Geospatial Standards in NSDI by LH
- Future Actions for NSDI Geospatial Standards by Ki-Joune Li
- Use-Case: Producing IndoorGML data from Point Cloud by Nathan Doh from TeeLabs.
- Panel Discussion



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O&M Revision (open)

111th OGC Technical Committee

Leuven, Belgium

Ilkka Rinne

27 June 2019

The most important thing for this WG is...



We have a good set of interested members, willing chairs and set of issues to address in the O&M abstract data model and the encodings!

The big open question is how to actually coordinate the O&M revision with ISO/TC 211, and to split the work between OGC and ISO/TC 211 to keep things as efficient and open as possible while keeping both organizations reasonable happy.

Agenda



1. Introduction: ISO 19156 / OGC Abstract Topic 20 revision
 - Summary of the submitted Change Requests
 - ISO/TC 211 systematic review comments
 - Other possible drivers for change
2. Open discussion: Feedback and revision/standardization needs related to O&M within OGC
3. Activation of the Joint OGC ISO/TC 211 O&M SWG
 - Operating the joint ISO/TC 211 - OGC SWG
 - Chairs & WG voting members
 - O&M SWG charter revision needs

Activity Summary



• Discussion topics

- How to orchestrate the O&M revision work between ISO/TC 211 and OGC?
- What can we develop in open, what need to be drafted in a closed WG?
- IE to ensure that proposed changes in O&M abstract model actually work in the implementations?

• Upcoming deliverables

- Revision of the O&M SWG charter
- Revision of the ISO 19156:2011
- Revision of the OGC O&M XML Implementation (10-025r1)

• Coordination (ongoing and planned)

- OGC WGs: Change Requests for the ISO 19156 (OGC AS topic 20) in the Standards Tracker ASAP
- Clear plan of the roles, timelines and coordination of the ISO/TC 211 WG9 and the OGC O&M SWG

• Future meetings

- Remote meeting of the O&M SWG in the next few weeks
- Chair to talk by Mats Åhlin from ISO/TC211 about the timings and WG roles.
- O&M SWG meetings the Banff TC in September and in Toulouse in November.

Key activities



- Clarify the roles of the ISO/TC 211 WG9 and the OGC O&M SWG:
 - Are these actually just a single joint WG or an expert team? If so, under OGC or ISO/TC 211?
 - Openness of the revision process? At OGC we would like to revise the implementation (encoding) standard(s) in parallel to make sure the changes made to the abstract model actually work and solve the identified issues.
 - Should we try to have the same group of people in the ISO and OGC WGs and address the 19156 changes in the ISO group and the implementations (encodings) in the OGC group (to be worked parallel)?

Key activities (cont.)



- Re-charter the O&M SWG based on the outcome of the previous point.
- Decide a cut-off dates for the Change Requests for the ISO 19156 and 10-025r1. Needs to be inline with the ISO/TC 211 and CEN revision work schedule.
- Issue a survey on how the O&M parameter property has been used in practice to present missing Observation properties.

O&M SWG Chairs and Charter Members



- SWG chair and co-chairs:
 - Chair: **Ilkka Rinne** / Spatineo
 - Co-chairs:
 - **Kathi Schleidt** / DataCove
 - **Alistair Ritchie** / Landcare Research New Zealand Limited
- Charter members:
 - **Andrew Mcleod** / Federation University Australia
 - **Hylke van der Schaaf** / Fraunhofer-Gesellschaft
 - **Sylvain Grellet** / BRGM
 - **Steve Liang** / University of Calgary / SensorUp
 - **Clemens Portele** / Interactive Instruments

O&M SWG Re-charter



- Renaming the O&M 2.0 SWG -> O&M SWG
- Scope of initial work
 - Revision of the ISO 19156 (unless delegated to a ISO/TC 211/WG9 expert team with OGC representation under liaison agreements or appointed by the national standardization bodies).
 - Revision of the OGC O&M XML Implementation (10-025r1)
 - Additional documents as tasks (see <http://docs.opengeospatial.org/pol/05-020r27/05-020r27.html#swg-task-process>)
- Update the charter members
- The updated version for TCC approval after the Leuven TC



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OWS Common SWG

111th OGC Technical Committee

Leuven, Belgium

Joan Maso

27 June 2019

Agenda



- Hackathon report on OGC API-Common.
 - Chuck Heazel, Heazeltech
- API for Processes.
 - Benjamin ProB, 52 North
- Other reports on the OGC API Hackathon and next steps.
 - Discussion



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Perspective Imagery DWG

111th OGC Technical Committee

Leuven, Belgium

Eric Hirschorn

27 June 2019

The most important thing for this WG is...



Jan Hjelmager (Danish Agency for Data Supply and Efficiency) was elected co-chair of the Perspective Imagery DWG.

Agenda



- Election of co-chair
- Updates from the Danish Agency for Data Supply and Efficiency
 - Draft document “Perspective Imagery OGC Proposal” placed on OGC portal under the Files tab in Perspective Imagery DWG / Discussion Paper Drafts
- Proposed survey
 - on an oblique imagery collection and distribution standard
 - OGC TC would support this work (Google Forms)

Activity Summary



- Discussion topics

- Election of co-chair
- Perspective imagery collection and distribution prototype developed by Danish Agency for Data Supply and Efficiency was presented
- Use of WMS versus WCS-EO for perspective imagery distribution

- Upcoming deliverables

- Draft report: “Perspective Imagery OGC proposal” under Files tab: [OGC Portal](#) / [Standards Program](#) / [Perspective Imagery DWG*](#) / **Discussion Paper Drafts**
- Survey

- Coordination (ongoing and planned)

- WMS.SWG, Coverages.DWG

- Future meetings

- Banff TC

Key activities



- The chairs need to put together questions for survey on perspective imagery collection and distribution system requirements
- A prototype imagery collection and distribution system was implemented by the Danish Agency for Data Supply and Efficiency. The presentation was placed under Files tab: [OGC Portal](#) / [Standards Program](#) / [Perspective Imagery DWG*](#) / Presentations / “Perspective Imagery System Prototype”

Motion



- The motion is to elect Jan Hjelmager (Danish Agency for Data Supply and Efficiency) co-chair of the Perspective Imagery DWG.

There were no objections to unanimous consent.



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Point Cloud DWG Report to TC

111th OGC Technical Committee

Leuven, Belgium

Stan Tillman, Hexagon

27 June 2019

The most important thing for this WG is...



Discussion around whether we know enough to begin an effort to standardize a point cloud service interface.

Agenda



- I3S Point Cloud Scene Layer proposed update to the I3S Community Standard
 - Tamrat Belayneh, Esri
- Point Cloud Isovist/Viewshed Applications
 - Edward Verbree, Delft University of Technology
- Native extension of LASzip for compressing new Point Types of LAS 1.4
 - Martin Isenburg, OSGeo

Agenda (cont.)

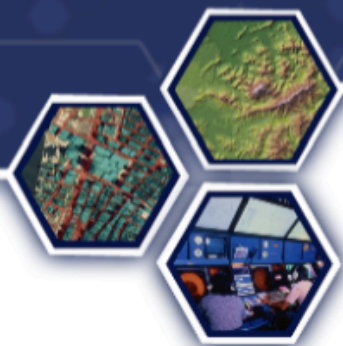


- The Smart Point Cloud
 - Florent Poux, Liege University
- What's next for the Point Cloud DWG?
 - Stan Tillman, Hexagon

Next Quarter WG Communications Plan



- < Are there any upcoming events (e.g., conference papers) related to your WG that you would like OGC to promote? >
 - No
- <Is there a new project or outcome that you think is worthy of an article or blog post? Please add a short description.>
 - No
- <Have there been any articles published online/in magazines that reference the work your WG is doing?>
 - No



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Portrayal Domain Working Group Report

111th OGC Technical Committee

Leuven, Belgium

Matt Sorenson, Keith Ryden, Iain Burnell

27 June 2019

The most important thing for this WG is...



The Portrayal DWG is officially established with an approved charter, elected co-chairs, and work items

We are open for business!

Agenda



- Review of DWG charter
- Election of chairs
- Testbed 15 ER Reviews
- Discussion Topics
 - Style API specification
 - ISO 19117 and portrayal abstract specification
 - Other
 - 3D portrayal
 - Computer graphics design
 - Tiles
 - Metadata

Activity Summary



- Discussion topics

- Chairs
 - Matt Sorenson, SACI
 - Keith Ryden, Esri
 - Iain Burnell, DSTL
- Testbed 15 Open Portrayal Framework ERs
- Future Topics

- Upcoming deliverables

- Review Testbed 15 ERs
- Establish OGC API Style SWG
- Portrayal Abstract Specification

- Coordination (ongoing and planned)

- SLD/SE SWG
- 3DPS SWG
- DGIWG
- Others (TBD)

- Future meetings

- Web meeting (TBD)
- DWG meeting in Sep 2019 in Banff



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QoSE DWG

111th OGC Technical Committee

Leuven, Belgium

Ilkka Rinne

27 June 2019

The most important thing for this WG is...



What would be the minimum/recommended content and structure of Quality of Service information to be made available via OGC APIs?

Agenda



1. QoS service metadata for OGC Web Services

- OWS Common SWG is working on the new common OGC API Common "building blocks", should the QoS metadata be part of this? Or should we aim for QoS metadata for any OpenAPI service endpoint?
- TB 14 tested the QoS metadata publishing in Geoserver, what about the other service types (WMTS, WFS, CSW, WCS,...)? Should we aim for a best practice document? Future of the Geoserver QoS extension development?

2. Best practice on measuring and improving the Quality of Experience of OGC Web Services

- Strategy and resources for creating an OGC Best Practice document for the QoE based on the discussion paper (17-049), and the TB14 experiences.
- Comments from the OGC Data Quality DWG, common topics to address?

3. Other issues

Activity Summary



- Discussion topics

- Should the group concentrate to how the QoS service metadata should be expressed in the current OGC Web Services or the new OGC API/OpenAPI style standards?
- Very limited resources and active members, makes progress difficult. Consider merging with Data Quality again?

- Coordination (ongoing and planned)

- OWS Common: discussions on what and how the QoS metadata should be formulated as an OGC API building block.

- Upcoming deliverables

- None in the near future due to lack of active members with time to spend in best practice work.

- Future meetings

- The regular online meetings cancelled for now, arrange meetings on specific topics when there is demand.
- Banff TC meeting

Key activities



- Several members feel that communicating the expected Quality of Service is very important for the customers using their services. However, it has been difficult to get members to actually participate in the WG work planning or implementation. Perhaps this is a communication issue between the DWG and the OGC Membership.
 - Thus tight focus on a relatively small, but important issue: the QoS metadata content for OGC APIs.
- Currently there seems to be no members resources to drive the work forwards for drafting a best practice document for evaluating and improving the quality of user experience of the OGC Web Services.
 - The discussion paper 17-049 as the basis, and the TB14 ER 18-028r2 as additional input.



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Security DWG

111th OGC Technical Committee

Leuven, Belgium

Andreas Matheus

27 June 2019

Agenda for 25th



- OGC Encoding formats and authenticity, integrity, etc.
- Secure financial transactions (Heazel)
- Data Centric Security
- Access Control with geo-graphic conditions
- OGC Web API and security (Heazel)
- Lightning Talks

Agenda for 27th



- Security Federation for OGC Web Services and Applications in Smart Cities, Thomas Kolbe, TUM
- Access Control Policy Language for a JSON binding, Michael Leedahl, DigitalGlobe
- TB15 Data Centric Security, Andreas Matheus, Secure Dimensions and George Elphick, Helyx
- GeoXACML 3, Andreas Matheus, Secure Dimensions

Activity Summary



- Discussion topics

- OGC Encoding formats and authenticity, integrity, etc.
- Secure financial transactions
- Data Centric Security
- Access Control - GeoXACML
- OGC Web API and security

- Upcoming deliverables

- Vetting the Data Centric Security ER from TB15

- Coordination (ongoing and planned)

- Future meetings

- next TC Meeting

Key activities



- Involved in TB15 Data Centric Security
- Discuss topics for future standardization

Next Quarter WG Communications Plan



- Meet at the TC in Banff



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SensorThings SWG

111th OGC Technical Committee

Leuven, Belgium

Steve Liang

27 June 2019

Agenda



- BRGM / Inspire presentation & demo (Kathi / Hylke / Sylvain)
- GeoJSON resultFormat (Steve / Tania, SensorUp)
- Stateless Sensorthings (Steve / Tania, SensorUp)
- Digital Twin in AMS (Erik / Bert, GeoDan)
- OpenAPI / Hackathon report (OGC Staff)
- Sensing V1.1 (Hylke / Everyone)



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SWE DWG

111th OGC Technical Committee

Leuven, Belgium

Steve Liang

27 June 2019

The most important thing for this WG is...



Promote adoptions of SWE standards around the world.

Key topics recognized during meeting



- The importance of SWE Compliance Suite, and there are progresses on SensorThings, SOS, SensorML and SWE Commons.
- OGC Sensor Registry represents an opportunity for OGC and SWE to be the go to place for sensor models.
- Important to share more SWE use cases and applications.

Next steps



- Organize IoT Summit at Banff, TC.
- Keep developing SWE compliance suites.
- Call for presentations in future SWE DWG meetings.

Activity Summary



- Discussion topics
- The importance of SWE Compliance Suite
- OGC Sensor Registry represents an opportunity for OGC and SWE to be the go to place for sensor models.
- Important to share more SWE use cases and applications.

- Upcoming deliverables
 - Sensor Registry
 - SWE compliance suite

- Coordination (ongoing and planned)
 - IoT Summit in Banff

- Future meetings
 - Banff TC



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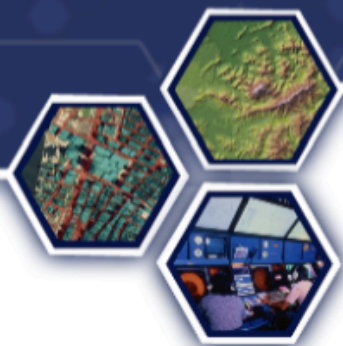
Timeseries SWG Closing Plenary Report

111th OGC Technical Committee
Leuven, Belgium
Steve Olson, Paul Hershberg
27 June 2019

Agenda



- Recap on TimeseriesML Versions 1.3 (Proposal)
 - *Status of NDFD Web Service using TSML*
- Gather TimeseriesML Version 2.0 Requirements
 - *Github area created to list these*
- NASA's Time Series Working Group Final results status
 - *Requirements Derived from NASA's Use Cases*
- Harmonizing Differences in TimeSeriesML/O&M with WCS Coverage model/CIS1.1 and OGC
- New development on a new OGC Temporal Abstract Specification



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Closing Plenary Report 2019 Leuven UxS DWG

111th OGC Technical Committee

Leuven, Belgium

Don Sullivan

27 June 2019

Agenda



- WebVMT update – Rob Smith
- Drone Data API project - Jane Wyngaard
- GIS TW update on UAS detection and interdiction – Ricky
- Common Altitude Reference System for Low Altitude UASs, and GeoFence update – Hubert Lepori

Activity Summary



- Discussion topics
 - Drone API Hackathon
 - WebVMT
 - Drone Interdiction
 - New standards for drone altitudes and Geo-fencing
- Upcoming deliverables
 - None
- Coordination (ongoing and planned)
 - RDA Drone Data WG
 - Eurocontrol
 - RTCA
- Future meetings
 - ESIP Summer meeting
 - Next TC Meeting



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WMS SWG

111th OGC Technical Committee

Leuven, Belgium

Joan Maso

27 June 2019

Agenda



- Announcements
 - TileMatrixSet has been approved and will be published in the OGC website soon. Short announcement
 - Tiling Conceptual Model and Logical Model for 2-D Planar Space by Carl Reed is ready to review. Short announcement
 - Joan Maso, UAB-CREAF
- W3C RDF Data Cube
 - Chris Little MetOffice UK
- OGC API hackathon results and inputs to WMS
 - Joan Maso, UAB-CREAF



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Workflow/WPS

111th OGC Technical Committee
Leuven, Belgium
Benjamin Pross
27 June 2019

The most important thing for this WG is...



REST API

Agenda



- WPS REST/JSON, Benjamin Pross, 52° North
 - Findings from the OGC API Hackathon
 - Roadmap
- WPS Compliance Tests, Dirk Stenger, lat/lon

Activity Summary



- Discussion topics
 - WPS REST/JSON Binding/OGC API – Processes
 - WPS tests

- Upcoming deliverables
 - N/A

- Coordination (ongoing and planned)
 - CITE team

- Future meetings
 - TBA

Key activities



- Work on WPS REST/JSON binding (or OGC API - Processes) will continue
- Parallel work in the Routing pilot on a Routing API based on OpenAPI
- Use September meeting to evaluate approaches
- A test suite for WPS 2.0 will be implemented