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Closing Plenary

113th OGC Technical Committee
Toulouse, France
Scott Simmons
21 November 2019

Agenda



- Thanks to Sponsor
- Quorum confirmation
- TC Member presentations
 - Location Powers recap: George Percivall
 - UMI3D: Julien Casarin
 - IMDF: Apple
 - CityGML Challenge: Carsten Rönsdorf
- TC Motions
 - Abstract Specification Topic 0: George Percivall
 - OGC API – Features - new tasks: Clemens Portele
 - Styles API SWG: Matt Sorenson
 - I3S Community standard revision: Keith Ryden
 - Moving Features JSON encoding: Nobu Ishimaru
- Upcoming TC Meetings
- TC Chair announcements and motions
- Working Group reports with motions: Z to 3
- “Important Things” discussion

Thanks to our sponsor



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Thanks to OGC staff



- Marie-Françoise Voidrot
- Greg Buehler
- Gobe Hobona
- Athina Trakas
- Trevor Taylor
- Bart De Lathouwer
- George Percivall
- Ingo Simonis
- Josh Lieberman
- Martin Klopfer



TC Member Presentations



George Percivall

Location Powers Recap



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Location Powers: Data Science

Nov 13&14, 2019 Google, Mountain View, CA USA

113th OGC Technical Committee

Toulouse, France

21 November 2019

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Location Powers - Summit Series

- Brings together industry, research, government experts from globe communities
- For interactive discussions that assess location technologies and applications
- To recommend technology innovation, standards development and applications with beneficial outcomes

Location Powers summits are organized by the Open

  
Communities Geospatial Consortium
Tech & Domain Partnerships & Alliances Process for Standards & Innovation

Using location, we connect people, communities, technology and decision making to create a sustainable future for us, our kids and future generations

LP_DS Organizing Committee



- Ed Parsons
 - Google's Geographer
- Patrick Griffiths
 - European Space Agency
- Don Sullivan
 - NASA
- Caroline Bellamy
 - Ordnance Survey
- Roy Rathbun
 - NGA
- Kyoung-Sook Kim
- Tracey Birch
 - SOFWERX
- Shaowen Wang
 - UIUC
- Kumar Navular
 - Maxar
- Adam Martin
 - Esri
- Joe Francica
 - Pitney Bowes
- George Percivall
 - OGC

Location Powers: Data Science

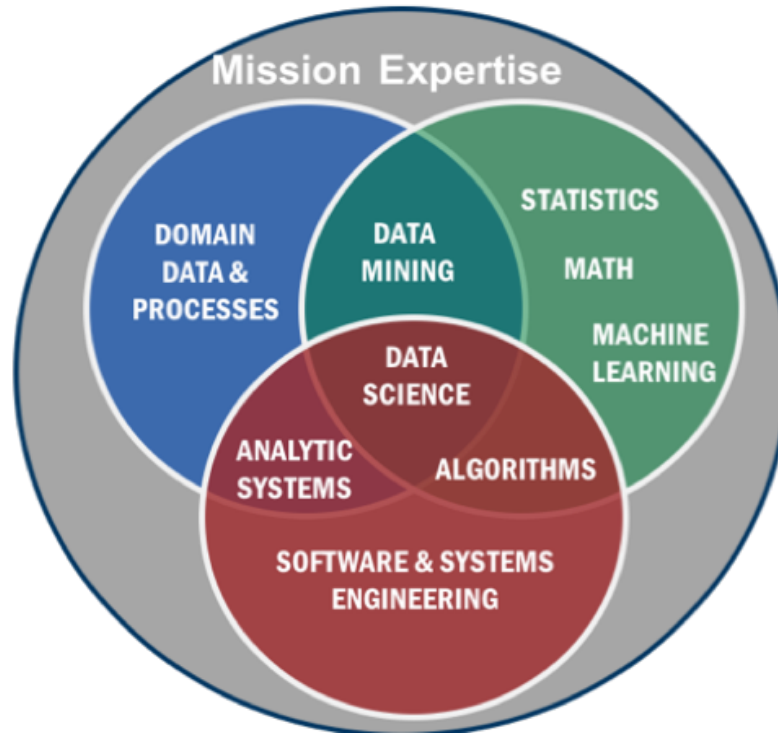


Explosive availability of data about nearly every aspect of human activity along with revolutionary advances in computing technologies

- Shift from data-scarce to data-rich environment comes from mobile devices, remote sensing and the Internet of Things
- Innovations in cloud computing and big data provides methods to perform data analytics at exceedingly large scale and speed
- Nearly all of this data has components of location and time

Golden Age of Geospatial Data Science

Location Powers: Data Science



Data Science – source NIST

LP_DS Sessions



Wednesday, November 13

Session 1: Foundations

- Data abundance, big data analytics, Location enabled

Session 2: Analytics and Representations

- Mathematical methods, computer algorithms and data structures

Session 3: Ripe Trends:



Thursday, November 14

Session 4: Outcomes/Applications

- How can geospatial data science make a difference?

Session 5: Actions to Take

- What should organizations do to advance geospatial data science and its outcomes?

Summary: Rapporteur Reports

Session 1: Foundations



- Moderator: Ed Parsons, Google
- Rapporteur: George Percivall, OGC
- Marc Armstrong, Univ Iowa - Presentation:
 - Fundamental Issues in Geospatial Data Science: Emerging Trends in Data & Analytics
- Nils Lahr, OrionsSystems - Presentation:
 - Scaling machine learning to handle visual data will result in more powerful AI
- Panel on Foundations/Motivations :
 - Kathleen Stewart, UMCP/CGIS - New opportunities through big mobility data analytics
 - Anand Padmanabhan, University of Illinois
 - Mark Korver, AWS

Session 2: Analytics and Representations



- Moderator: Kumar Navulur, Maxar
- Annie Burgess, ESIP Federation
- Yolanda Gill, USC - Presentation:
 - Knowledge-Powered Data Science for Integrated Modeling in Geosciences
- Panel on Analytics
 - Todd Mostak, OmniSci (formerly MapD)
 - Lauren Bennett, Esri - Perspective: Spatial data science moves from the avant garde to the mainstream
 - Keith Hare, JTC 1 SQL/GQL convener - Perspective: Analytics And Representations in SQL and GQL
 - Hamed Alemohammad, Radiant Earth
 - (Robert Hijmans, UC Davis R-Spatial – planned but he was not able to attend)

Session 3: Ripe Trends



- Moderator: Jay Theodore, CTO, Enterprise Technologies, Esri
- Rapporteur: K. Kim, AIST and GeoAI DWG chair
- Philippe Cases, ReadWrite Labs - Presentation: AI at the Edge
- Panel on Ripe Trends:
 - Anand Kannan, Pitney Bowes - Perspective: Data science, an interdisciplinary approach
 - Milind Naphade, CTO, Metropolis – NVIDIA
 - Devaki Raj, CrowdAI
 - Jim Stokes, MAXAR

Session 4: Outcomes/Applications



- Moderator: Jeremy Morley, Ordnance Survey UK
- Rapporteur: Ajay Gupta, chair of OGC Health WG
- Wendy Martinez, US BLS - Presentation: Integration of Geospatial Data: Examples and Implications
- Panel on Outcomes :
 - Regan Smyth, NatureServe - Perspective: The Age of Precision Conservation: Applying AI and Collaborative Science to Prevent Species Extinctions
 - Megan Furman, Defense Digital Service, OSD
 - Steven Ward, The Climate Corporation
 - Edward Strocko, USDOT Bureau of Transportation Statistics
- Discussion Groups on Outcomes

Session 5: Actions to Take



- Moderator: Nadine Alameh, OGC
- Rapporteur: Adam Martin, Esri
- Satoshi Sekiguchi, AIST - Presentation:
 - When HPC met AI - Next generation of Geospatial Intelligence powered by the ABCI
- Andy Brooks NGA - Presentation:
 - Designing the Future of Data Science
- Panel on Actions
 - Patrick Griffiths, ESA - Perspective: Earth Observation data and analytics supporting policy and geospatial industries
 - Jeanne Holm, City of Los Angeles - Perspective: Building a Generation of Government Data Scientists
 - Stephanie Shipp, U. of Virginia - Perspective: Harnessing the Power of Data to Support Community Health and Well-Being

Initial conclusions – Draft (1 of 2)



Communities

- Triple Helix: Government, Research, Commercial
- Geospatial Data Science Education

Data Sci process – “D-School”

- Stories, Experiences
- How should data scientists work with subject matter experts?

Applications

- AI to Automate Compliance (e.g. EU agricultural policy)
- Key use cases: Transportation
- Most Meaningful: Disaster response

Computing

- Cloud Computing and Computing at the Edge
- Still early stages of IoT deployment; we can expect it to increase around 2021 and 2022.
- New geospatial sampling strategies and analytical methods to support high-velocity data streams.
- Heterogenous computing architectures (GPU, FPGA, TPU, etc.) and higher-level interfaces
- Petaflop computing

Initial conclusions - Draft (2 of 2)



Tools

Merging *Standardized* Data from Disparate Sources:

Timeseries, change identification

MISB works now, but will not meet future needs

Linked data, e.g, GQL

More work on the 'raster side' of standards

Jupyter Notebooks

Science-based Models

AI/Machine Learning

Standards for Reference datasets for Training; Data license clarity

Quality of models: performance (accuracy?), fairness, robustness, any other?

Benchmarking

Not a "Human Replacement" but a "Force Multiplier"

Government investments in infrastructure to accelerate use of AI

Ethics, Privacy

Will ethics, explainability or the 'fear of unknowns' slow the pace of AI?

Data-Use Code of Ethics in Geo Community.

Next Steps



- ✓ Post the video recording to LocationPowers.net
- Post the presentations to LocationPowers.net
- Develop a summary as an OGC White Paper
- Implement the “Actions to Take”



Julien Casarin

UMI3D



Guillaume Crouigneau

IMDF



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CityGML Challenge 2019

113th OGC Technical Committee
Toulouse, France

Peter Parslow, Carsten Roensdorf
21 November 2019

Introduction



- The Challenge
 - Configuration of visualization software tools to support the capabilities of version 3 of CityGML, including dynamic data feeds from a range of sensors
- Sponsors
 - **Ordnance Survey**
 - **Manchester City Council**
 - **Triangulum Project** - funded by the **European Commission (EC)**

Judging



- Judging panel from Ordnance Survey, Manchester City Council and OGC.
- Criteria
 - How well does the tool meet the stated requirements?
 - How intuitive and enjoyable is the tool to use?
 - How confident are we that it will be available and supported for 12 months?
 - To what extent does it offer innovation or originality in concept or application?

Participants



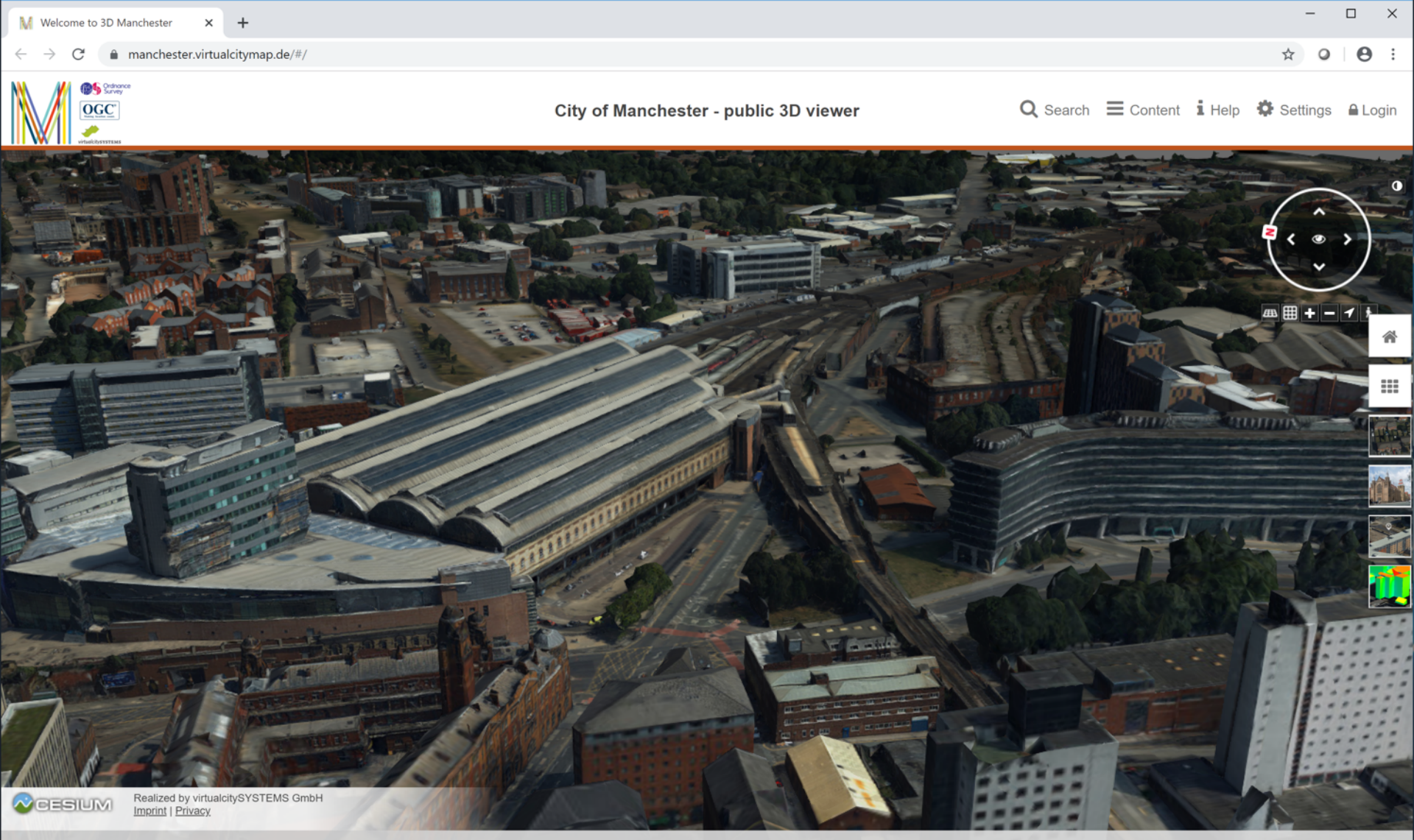
- Individuals from 12 organizations registered
- Final participants were from:
 - HFT Stuttgart
 - virtualcitySYSTEMS GmbH
 - CSI Piemonte

Challenge Winner

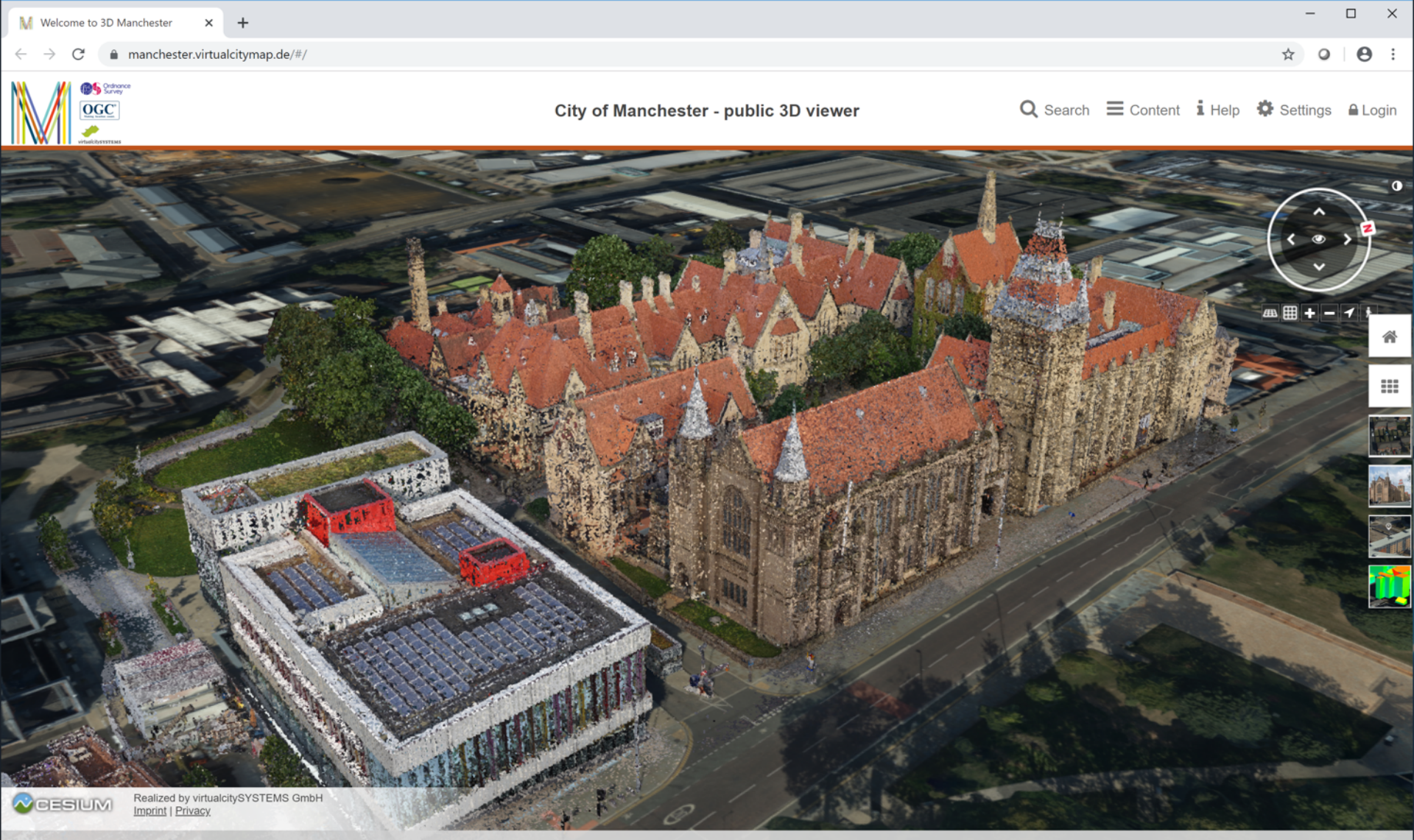


Claus Nagel, Thomas Adolphi
virtualcitySYSTEMS GmbH

Textured 3D Visualization (3D Tiles)



Point Cloud Visualization (3D Tiles)



CityGML 3.0 and POIs (3D Tiles)

Welcome to 3D Manchester

manchester.virtualcitymap.de/#/legend

City of Manchester - public 3D viewer

Search Content Help Settings Login

Content

Points of Interest

- Bars and restaurants
- Business and services
- Construction, architects and services
- Culture, Monuments and services
- Education, schools and services
- Healthcare and medical services
- Sleeping and services
- Shopping, Food and Stores
- Sports
- Transport & Traffic
- Money, Banking and related services
- Music
- WiFi and Internet services

Create PDF

Create Link

Reset settings

Metadata Information

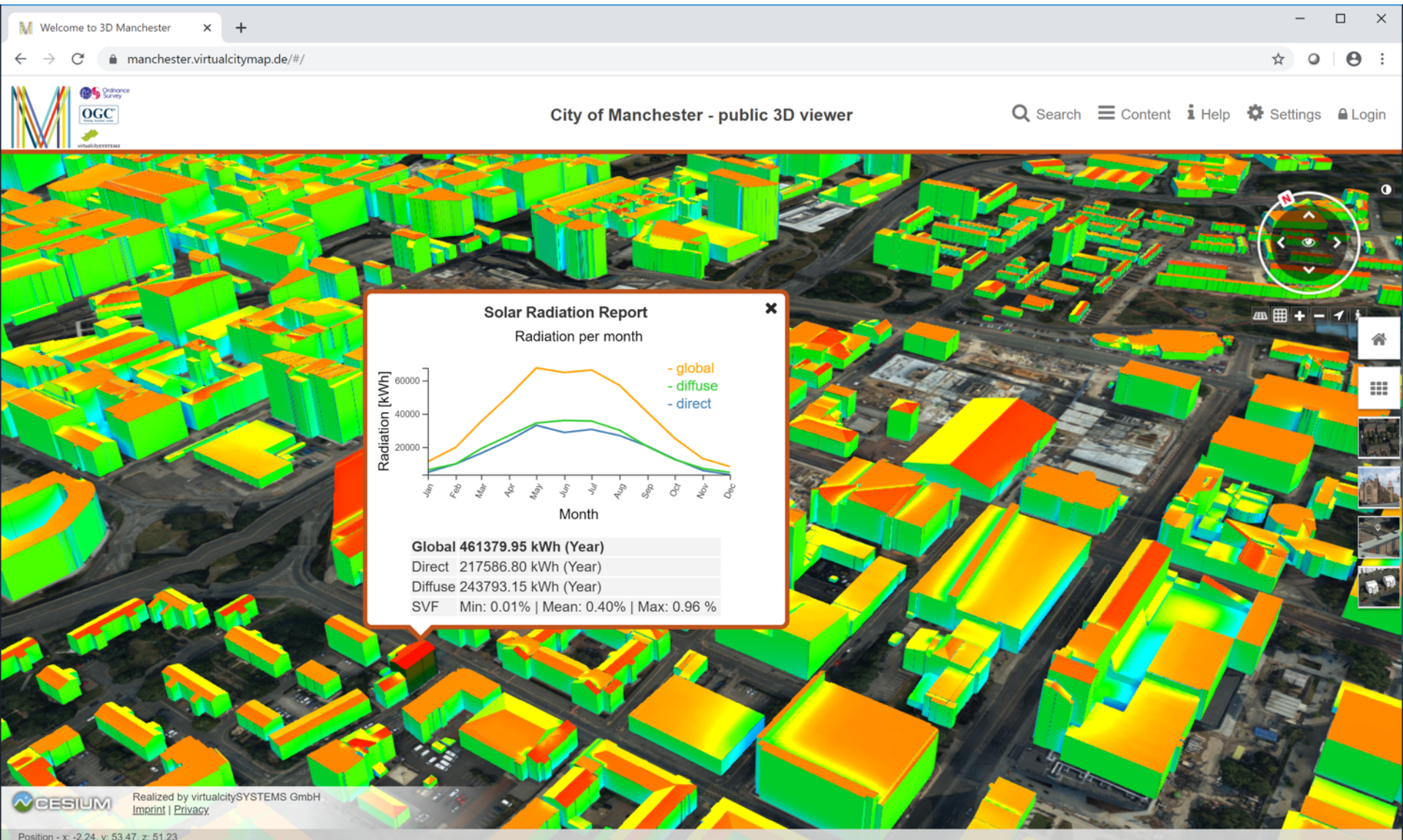
- creationDate : 2019-10-07
- gml:description :
- gmlId : osgb1000024080291

Realized by virtualcitySYSTEMS GmbH

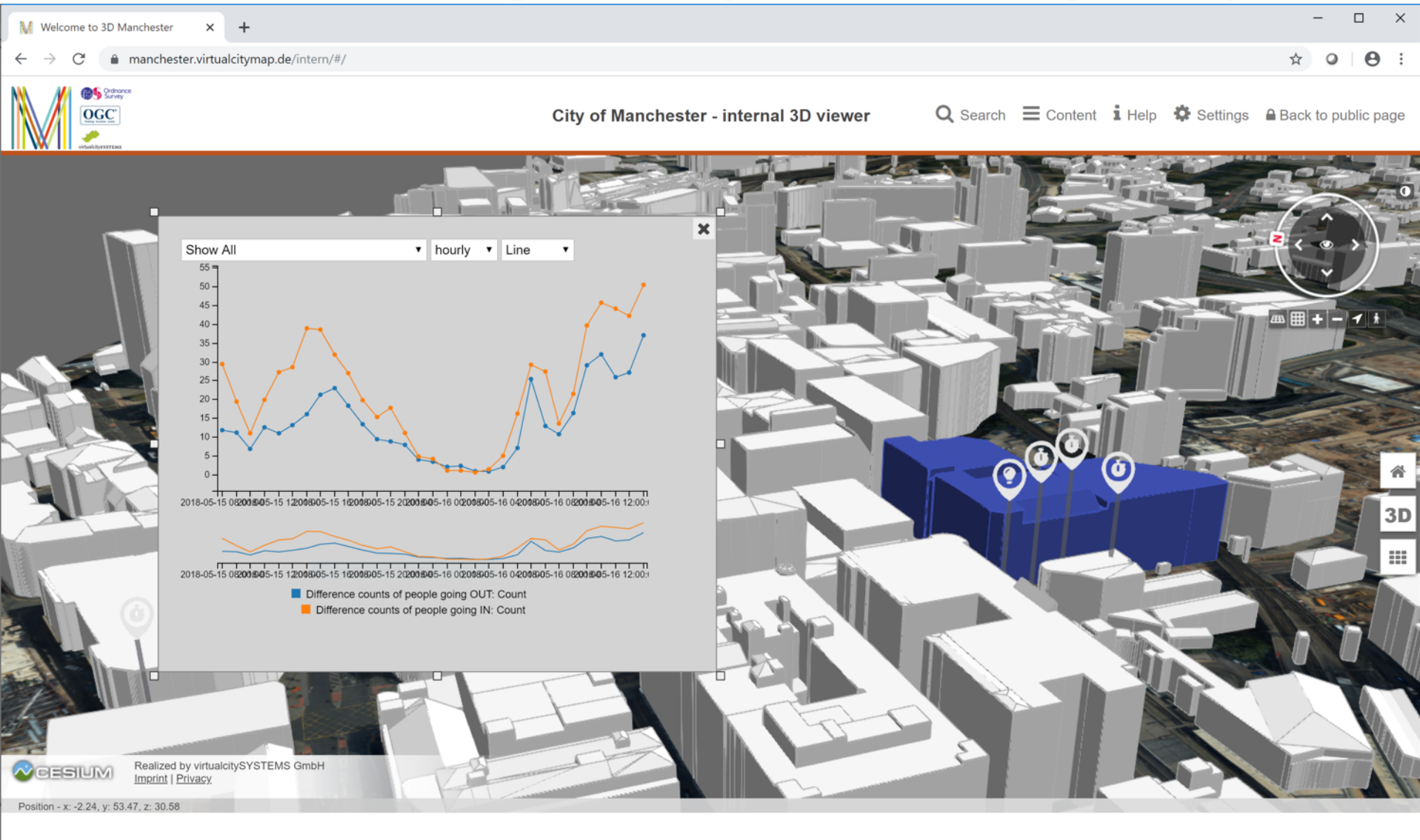
Imprint | Privacy

Position - x: -2.24, y: 53.46, z: 42.37

Solar Radiation Analysis (CityGML Dynamizer)



Sensor integration (SensorThingsAPI)



WFS-based queries, edits, and downloads in industry formats

The screenshot displays the 'City of Manchester - internal 3D viewer' web application. The browser's address bar shows the URL 'manchester.virtualcitymap.de/intern/#/export'. The interface includes a top navigation bar with links for Search, Content, Help, Settings, and a Back to public page button. A left sidebar contains a selection menu with various export formats: 2D Shape, 3D Shape - PolygonZ, 3D Shape - Multipatch, CityGML, KMZ, DXF, DWG, 3DS, ESRI FGDB, OBJ, 3DPDF (highlighted), VRML, FMEAR, and 2D Shape. Below the menu, there are fields for 'LoD level' (set to LoD2) and 'Thematic classes' (set to Building). A 'Send request' button is at the bottom of the sidebar. The main view shows a 3D city model with several buildings highlighted in blue. A right sidebar contains a 3D navigation control and a '3D' button. The bottom of the page features the Cesium logo, the text 'Realized by virtualcitySYSTEMS GmbH', and links for 'Imprint' and 'Privacy'. The position coordinates are displayed as 'Position - x: -2.23, y: 53.46, z: 36.95'.

Welcome to 3D Manchester

manchester.virtualcitymap.de/intern/#/export

City of Manchester - internal 3D viewer

Search Content Help Settings Back to public page

2D Shape
3D Shape - PolygonZ
3D Shape - Multipatch
CityGML
KMZ
DXF
DWG
3DS
ESRI FGDB
OBJ
3DPDF
VRML
FMEAR
2D Shape

LoD level:
LoD2

Thematic classes
(Select several by pressing the CTRL-Key)
Building

Send request

Realized by virtualcitySYSTEMS GmbH
Imprint | Privacy

Position - x: -2.23, y: 53.46, z: 36.95

Uploading 3D designs in industry formats (CAD, BIM, GIS, ...)

The screenshot displays the 'City of Manchester - internal 3D viewer' web application. The browser's address bar shows the URL: `manchester.virtualcitymap.de/intern/#/planning/edit/v95QpbEvfJYkQapE/`. The page header includes navigation links: Search, Content, Help, Settings, Back to public page, and Logout. The main interface features a large 3D visualization of a city model with the Gherkin building highlighted in blue. On the left, a sidebar contains a 'Demo' section with a 'Planning layers' dropdown, instructions for importing 3D models (collada/KMZ, glTF, Shape, GeoJSON, or georeferenced plan), and buttons for 'Import planning object' and 'Draw new object'. Below this is a '3D Models' list with entries like 'WindTurbine.glb', 'Manchester Train Station (KMZ)', 'Beetham Tower (KMZ)', 'WindTurbine.glb', 'model.dae', and '30+St+Mary+Axe+(Gherkin)_+Lo...', each with edit, view, and delete icons. A 'Vector layers' section at the bottom left shows a 'Vector' layer with similar icons. The bottom status bar displays the Cesium logo, the text 'Realized by virtualcitySYSTEMS GmbH' with links to 'Imprint' and 'Privacy', and the coordinates 'Position - x: -2.23, y: 53.46, z: 36.87'. A file name '30+St+Mary+Axe....kmz' is shown in the bottom left, and an 'Alle anzeigen' button is in the bottom right.

Welcome to 3D Manchester

Search for 30 St Mary Axe | 3D W | london egg tower - Google-Such | +

manchester.virtualcitymap.de/intern/#/planning/edit/v95QpbEvfJYkQapE/

City of Manchester - internal 3D viewer Search Content Help Settings Back to public page Logout

Demo

> Planning layers

Import a 3D Models (collada/KMZ, glTF), Shape, GeoJSON, or a georeferenced plan (eg. geoTIFF).

Import planning object Draw new object

3D Models

WindTurbine.glb			
Manchester Train Station (KMZ)			
Beetham Tower (KMZ)			
WindTurbine.glb			
model.dae			
30+St+Mary+Axe+(Gherkin)_+Lo...			

Vector layers

Vector			
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Position - x: -2.23, y: 53.46, z: 36.87

30+St+Mary+Axe....kmz

Alle anzeigen

Try it out!



<https://manchester.virtualcitymap.de/>



TC Motions



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OGC Abstract Specification: Topic 0 - Overview

113th OGC Technical Committee
Toulouse France
21 November 2019

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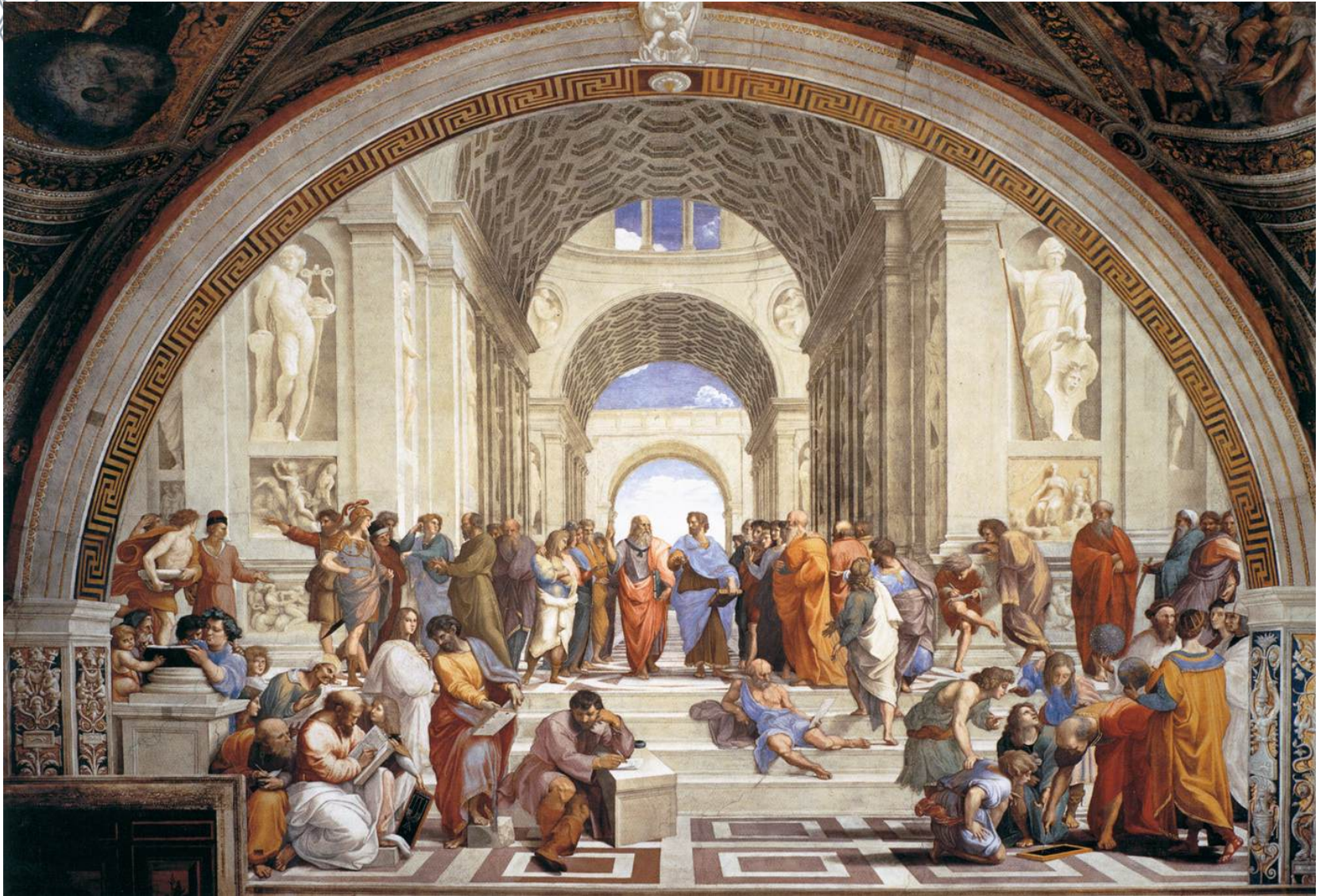
OGC Abstract Specification: Topic 0 – Overview



- Public RFC May/June 2019
 - Comments received from IGN
- Posted before the 3 week:
 - OGC Document Number OGC 04-084r4

Now ready to consider starting an e-vote after this presentation

OGC Abstract Specification: Topic 0 - Overview





Plato

- Pointing to the heavens
- Carries his [*Timaeus*](#): a treatment of space, time, and change, including the Earth



Aristotle

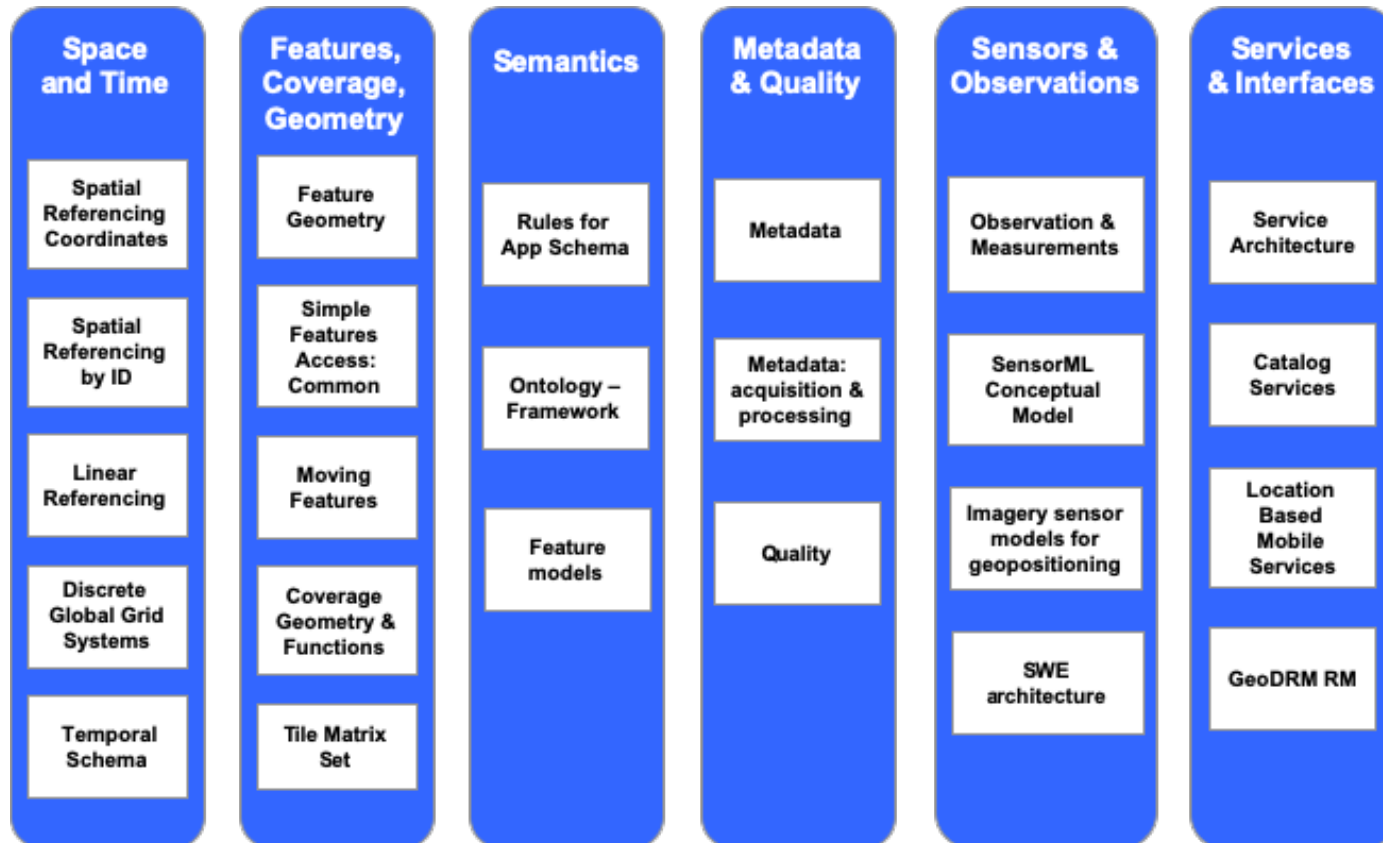
- Open hand facing the earth
- Carries his [*Ethics*](#), which he denied could be reduced to a mathematical science.

OGC Abstract Specification: Topic 0 – Overview



1. Introduction
2. The OGC Abstract Specification - Overview of the Topics
3. Specification Architecting Guidelines
4. Future Work

Figure 1. OGC Abstract Specification Topics



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Specification Architecting Guidelines



- Purpose of the Abstract Specification
- Relationship to external organizations
- Approval of Abstract Specification Topics
- Modular Spec
- Conceptual Modeling
- Core and Simple Standards
- OGC Innovation Guidance
- OGC Reference Model (ORM)



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Portrayal DWG

113th OGC Technical Committee

Toulouse, France

Matt Sorenson

21 November 2019

The most important thing for this WG is...



The OGC Testbed 15 Open Portrayal Framework provided a comprehensive review of new ways to portray geospatial information. Continued development of these capabilities and enabling APIs will help modernize an open, online/offline portrayal environment.

Read the OPF ERs, Join the Styles API SWG!

Agenda



- OGC Testbed 15 Portrayal Summary ER
 - Martin Klopfer, OGC
- OGC Testbed 15 Open Portrayal Framework ER
 - Martin Klopfer, OGC
- OGC Testbed 15 Encoding and Metadata Conceptual Model ER
 - Andrea Aimee, GeoSolutions
- OGC Testbed 15 Styles API ER
 - Clemens Portale, interactive instruments
- OGC API Styles Charter
 - Matt Sorenson, SACI
- Towards a Style & Symbology Encodings SWG?
 - Olivier Ertz, HEIG-VD
- ~~Initial Experiences from Developing a Reusable style2style library~~
 - ~~Paul van Genuchten, GeoCat~~

Activity Summary



- Discussion topics

- Testbed 15 Open Portrayal Framework ERs
- Styles API Charter
- Recharter SLD / SE SWG

- Upcoming deliverables

- Style & Symbology Encodings SWG Recharter
- Portrayal Abstract Specification
- Styles API Specification

- Coordination (ongoing and planned)

- SLD/SE SWG
- 3DP SWG
- DGIWG

- Future meetings

- Styles API SWG meetings starting in January
- Portrayal DWG meetings to discuss Portrayal Abstract Specifications TBD

T-15 Open Portrayal Framework



T-15 Open Portrayal Framework ER Approval Motion



- The Portrayal Working Group recommends that the OGC Technical Committee approve release of 19-018 “Testbed-15 Open Portrayal Summary ER” as an OGC Engineering Report.
 - There was no objection to unanimous consent
- Abstract: Detailed summary of the T-15 Open Portrayal Framework Thread scenario, approach and results

T-15 Portrayal Summary ER Approval Motion



- The Portrayal Working Group recommends that the OGC Technical Committee approve release of 19-019 “Testbed-15 Portrayal Summary ER” as an OGC Engineering Report.
 - There was no objection to unanimous consent
- Abstract: Marketing oriented summary of the T-15 Open Portrayal Framework Thread scenario, approach and results

Document Approval Motion, 19-023r1



- The Portrayal DWG recommends that the OGC Technical Committee approve release of 19-023r1 “OGC Testbed 15 Style Encoding and Metadata Conceptual Model Engineering Report” as an OGC Engineering Report.
 - There was no objection to unanimous consent
- Abstract: This ER describes a conceptual model for style encoding and metadata that provides information on a styles intended usage, availability, compatibility with existing layers, as well as style search. The model also provides a way to express and locate multiple encodings for each style (e.g. SLD, SE, CSS, and Mapbox GL styles).

Document Approval Motion



- The Portrayal DWG recommends that the OGC Technical Committee approve release of 19-010r2 „OGC Testbed-15: Styles API Engineering Report“ as an OGC Engineering Report.
 - There was no objection to unanimous consent
- Abstract: OGC is currently missing a robust conceptual model and APIs capable of supporting styles with multiple style encodings. The Open Portrayal Framework (OPF) task in Testbed-15 investigated this issue, building on previous portrayal activities in the OGC. This document specifies building blocks for Web APIs consistent with the OGC API series to manage and fetch styles.



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Styles API SWG Charter

113th OGC Technical Committee

Toulouse, France

Matt Sorenson

21 November 2019

Styles API Business Value



- The proposed API provides the methods and apparatus to support:
 - Discovery of style resources and metadata;
 - Execute basic commands to GET, PUT, PATCH, POST, and DELETE style resources and their metadata; and
 - Interface with other web resources using OGC API capabilities and OGC web services.
- For providers of styles
 - The API provides a uniform means to publish and offer those styles as resources for use by other systems.
- For developers building infrastructures to host and manage geospatial resources
 - The API standard will define the core requirements needed to describe and leverage existing styles and publish new or edited styles.
- For users of geospatial resources
 - The API will allow for discovery, access, and application of multiple style resources offered through the API.
 - The API will provide resources to allow them to construct specialized or unique styles.

Existing and Related Efforts



- The starting point for the work will be the OGC 19-010: OGC Testbed 15: Styles API (draft specification) Engineering Report. SWG work will commence on approval of this charter and approval of the Testbed 15 ER.
- The work shall also be informed by the following specifications and by recommendations found in:
 - OGC/W3C Spatial Data Working Group on the Web Best Practices (<https://www.w3.org/TR/sdw-bp/>);
 - OGC Geospatial API White Paper [OGC 16-019r4];
 - OGC API - Features - Part 1: Core standard, [OGC 17-069r3]; and
 - OGC Symbol Encoding Conceptual Model: Core Part candidate standard [OGC 18-067r2].
- Each of these documents recommends an emphasis on resource-oriented APIs in future OGC standards development including use of tools such as OpenAPI.

Styles API Scope



- Styles API demonstrated in the OGC Vector Tile Pilot and in OGC Testbed 15.
 - OpenAPI frameworks have helped make describing and sharing API definitions more suitable for interoperability standardization.
- The OGC API - Styles SWG will build on those preliminary efforts
 - More fully develop and document a Styles API candidate standard that will provide a modernized, common, and consistent interface to services that aligns with the current architecture of the Web and the Spatial Data on the Web Best Practices
- Styles API candidate standard informed by emerging OGC API best practices and prior API standards examples (e.g., OGC API - Features)
 - Define core API functions of GET, PUT, PATCH, POST, DELETE applied to styles as resources.
 - Document metadata requirements for styles to enhance discovery and exchange of styles.
- Implementer and standards development interaction
 - Developers encouraged to implement the draft API specification early and provide feedback.
 - Public access to draft versions of the standard using GitHub
 - Before finalizing versions of the "OGC API - Styles", completion of goals should be verified:
 - Working implementations of all capabilities must be available and tested; and
 - Implementation feedback must be taken into account.

Styles API Scope: Modularization



- Primary goal of the Styles API SWG is to develop the core of API as quickly as possible and work on extensions after that, driven by community interest.
- OGC API - Styles - Part 1: Core
 - Defines a basic set of capabilities organized in multiple conformance classes building on each other.
 - Minimal conformance class will specify a simple interface to access metadata from style resources that is sufficient for interfaces to exchange and perform basic web functions with the style resources.
 - Additional conformance classes will define additional capabilities based on the requirements and requirements classes defined in the core to meet the specific needs of use cases
- Identified extensions to be worked within the initial SWG charter scope:
 - Managing and validating styles (to include styles for features, coverages, and 3D data)
 - Accessing and managing style resources like symbols
 - Extensions for data resources (links to applicable styles, identification of “queryables”).
 - Other extensions may be proposed and addressed in revisions to this charter.



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Candidate I3S Community Standard Version 1.1

113th OGC Technical Committee
Toulouse, France

Carl Reed, Keith Ryden, Tamrat Belayneh
21 November 2019

I3S Community Standard



- I3S specification was first released by Esri as an open format in early 2015
 - Released under Creative Commons License
 - Submitted to the OGC February 2017
 - Snapshot date for version 1.0 is also February 2017
- Approved as an OGC Community Standard in August 8, 2017
 - Published as version 1.0 September 5, 2017
- Adding Point Clouds to I3S – Version 1.1
 - *How do we update a Community Standard?*

Updating a Community Standard



- Revisions of a Community Standard go through the same process as a new Community Standard

Submitting a new Community Standard



- ✓ Submission team prepares an OGC Work Item document that justifies why the specification should be considered as a possible Community Standard.
 - Work Item document is reviewed by the Technical Committee (TC) Chair
 - Submission Team iterates with the TC Chair as required until approved
- ✓ Submission Team presents the proposed work item to the OGC TC
- ✓ TC Chair starts 45 day electronic vote for approval of the proposed work item
- ✓ Submission team prepares the Standard Document
- ✓ OGC Architecture Board (OAB) review, seeking approval for public comment
 - Submission Team present proposed Community Standard to the OAB.
 - Submission Team iterates with the OAB as required until approved for release for public comment
- ✓ TC Chair releases proposed Community Standard for 30 day public comment
- ✓ Submission Team responds to ALL public comments
- ➡ TC Chair seeks TC approval to start Community Standard adoption vote
 - TC Chair starts 45 day electronic vote for adoption of the Community Standard
 - TC Chair seeks Planning Committee (PC) approval
 - Public announcement and publication of the standard document

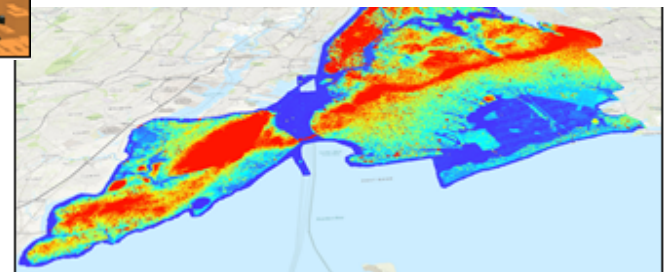
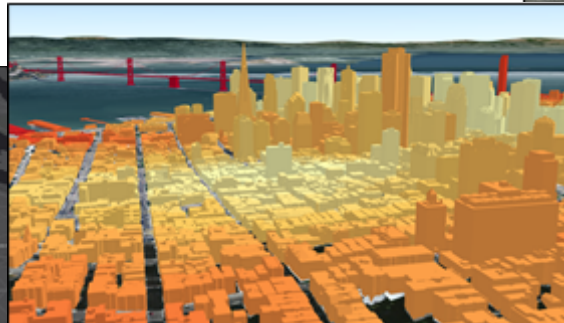
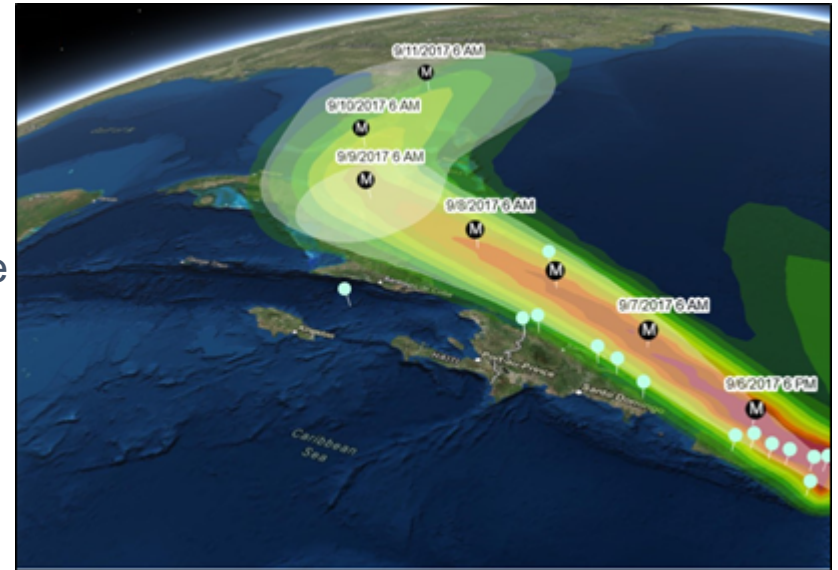
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I3S Layer Types



- 3D Objects such as Building Exteriors from geospatial data and 3D models.
- Integrated Meshes such as a mesh surface with high resolution imagery textures representing the skin of the Earth, typically created from satellite, aerial or drone imagery.
- Point Features such as geolocated hospitals or schools, trees, street furniture, and signs.
- **Point Clouds** such as large point data from LiDAR.



I3S Extensible Format



- I3S defines a concept of Profile and Layer types

Layer Type	Profile	Attributes
3D Object	Meshpyramids	Yes
Integrated Mesh	Meshpyramids	Triangle attributes
Point	Point	Yes
Point Cloud	PointCloud	Yes

Approved

OGC work item

- The format is extensible with new layer types and/or profiles following the same design principles

Point Cloud Scene Layer (PCSL)

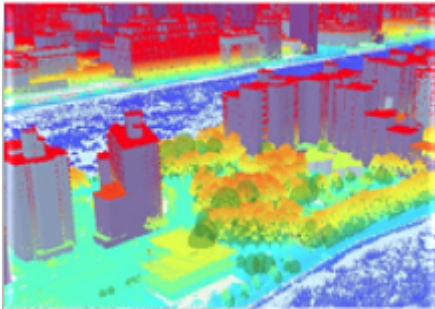


- Designed to support the display of large volumes of symbolized and filtered point cloud data.
- Optimized for the displaying and sharing a variety of sensor data, including LiDAR.
- Efficient for streaming and rendering at optimized point resolution for the specified area.
- Support caching attributes such as RGB, Intensity, Flags, Class Code, Returns, User Data, Point Source ID, GPS Time, Scan Angle and Near Infrared.

Sample Point Cloud Scene Layers



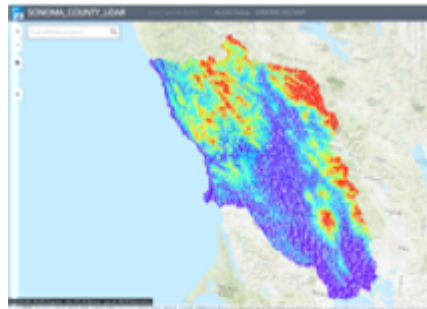
Click on images to access I3S data services



NYC DOITT 3D Buildings LoD2 :
1,083,529 3D Buildings, 1.7GB
SLPK

USGS NYC Post Sandy 2014
LiDAR Survey: 4,583,325,042
Points, LAS 119GB, PCSL SLPK
27.5GB

New York Tree Census 2015:
683,788 Points



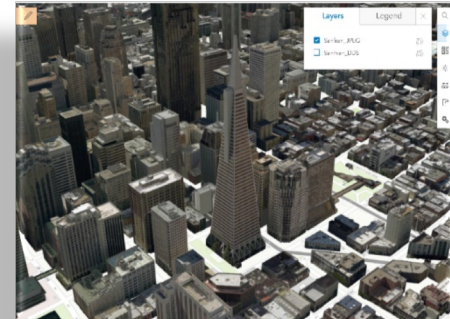
County of Sonoma, CA:
60,126,758,533 Points, LAS
1.9TB, PCSL SLPK 444GB



**The Netherlands AHN1 and
AHN3 LiDAR surveys**

AHN1, 638,843,557,990 Points,
LAS 9.3TB

AHN3, Friesland
43,367,747,861 Points PSCL
SLPK 300GB



**Textured Buildings for San
Francisco**

(Precision Lightworks)
80k buildings
SLPK: 29GB

Point Cloud Scene Layer: Structure



- PCSL is structured into a tree of multiple JSON files as well as binary buffers for storing geometry and attribute content
- PCSL relies on using a bounding volume driven tree hierarchy (BVH) to organize a multi-LOD representation of the point cloud data
- PCSL uses a paged node access pattern which allows for bundling of numerous nodes preserving minimal structural elements such as bounding volume, first child reference, child count, level of detail and selection criteria

Point Cloud Scene Layers: Structure



- PCSL is well suited for supporting standards such as LAS and other formats such as ASCII, LAZ, zLAS ...
- A Point Cloud Scene Layer contains the following:
 - Layer description, Coordinate Reference System (CRS), attribute storage information, Geometry Schema, Statistics, Tree-hierarchy, Bounding volume structure and selection criteria all stored in JSON format
 - Geometry and Attributes: Stored in an efficient binary encoding
 - Node pages : bundles of numerous nodes
 - Simple Statistics including histograms

I3S Community Standard version 1.1



- No critical changes to the standard
- No backwards compatibility issues created by changes/additions to the standard
- Numerous editorial updates/corrections – mostly rewording informative clauses for clarity
- All I3S layers, including PCSL, can be used to create a scene layer package (*.slpk) or an I3S service. An *.slpk file can contain millions of documents; fast access facilitated thru a hash file
- All changes documented in the I3S Version 1.1 Release notes
 - https://portal.opengeospatial.org/files/?artifact_id=89693&version=1



Sponsor

AIRBUS

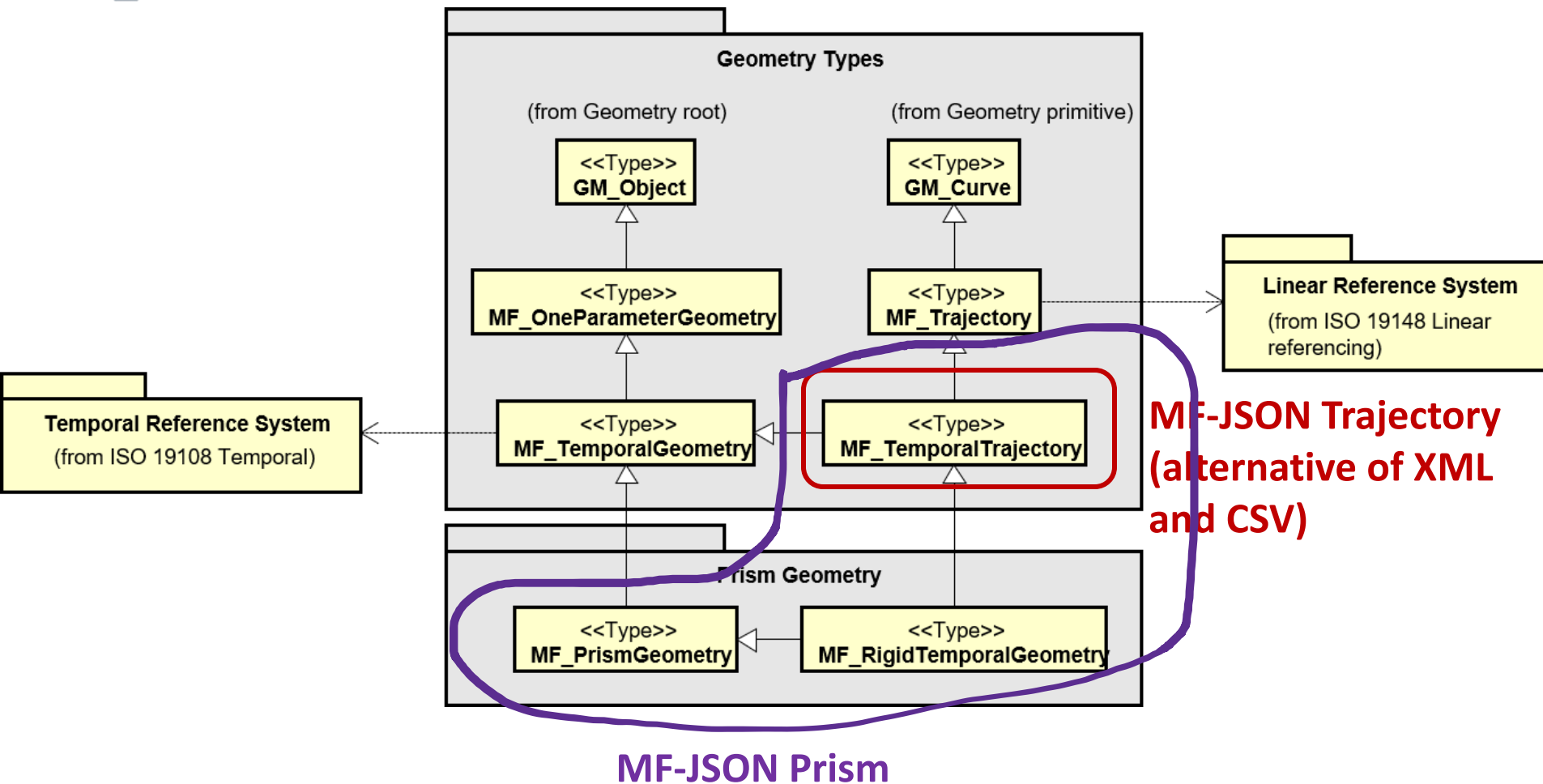
TC briefing “OGC Moving Features Encoding Extension – JSON” (19-045r2)

113th OGC Technical Committee
Toulouse, France

Kyoung-Sook KIM, Nobuhiro ISHIMARU

21 November 2019

ISO 19141:2008



Two Ending Formats



(a) MF-JSON Trajectory

```
{
  "type": "Feature",
  "geometry": {
    "type": "LineString",
    "coordinates": [[...],[...],...]
  },
  "properties": {
    "datetimes": [...],
    ....
  },
  "bbox": ...
}
```

(b) MF-JSON Prism

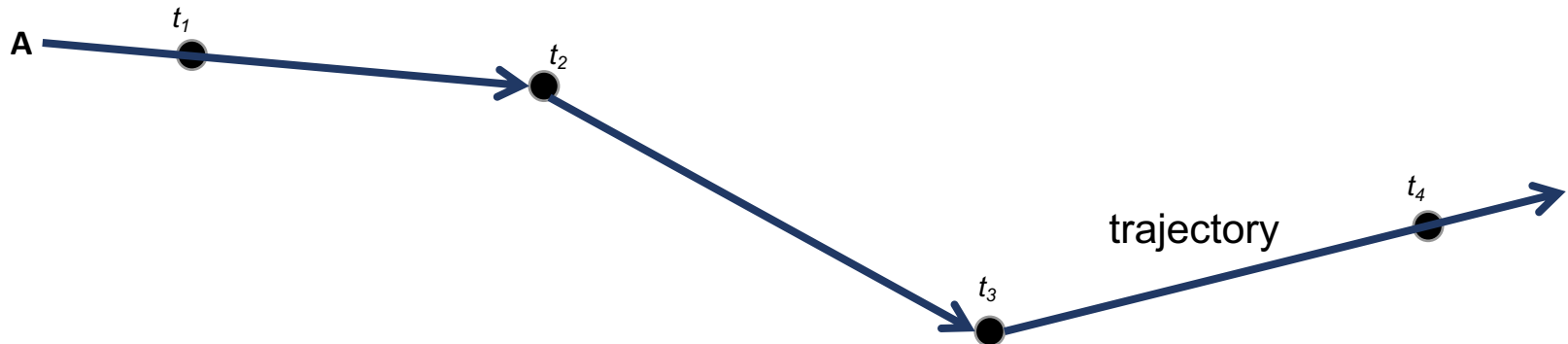
```
{
  "type": "Feature",
  "geometry": ...,
  "properties": ...,
  "bbox": ...,
  "crs": {...},
  "trs": {...},
  "temporalGeometry": {
    "type": ...,
    "coordinates": [...],
    "datetimes": [...],
    ...
  },
  "temporalProperties": [...],
  "time": [...]
}
```

New members

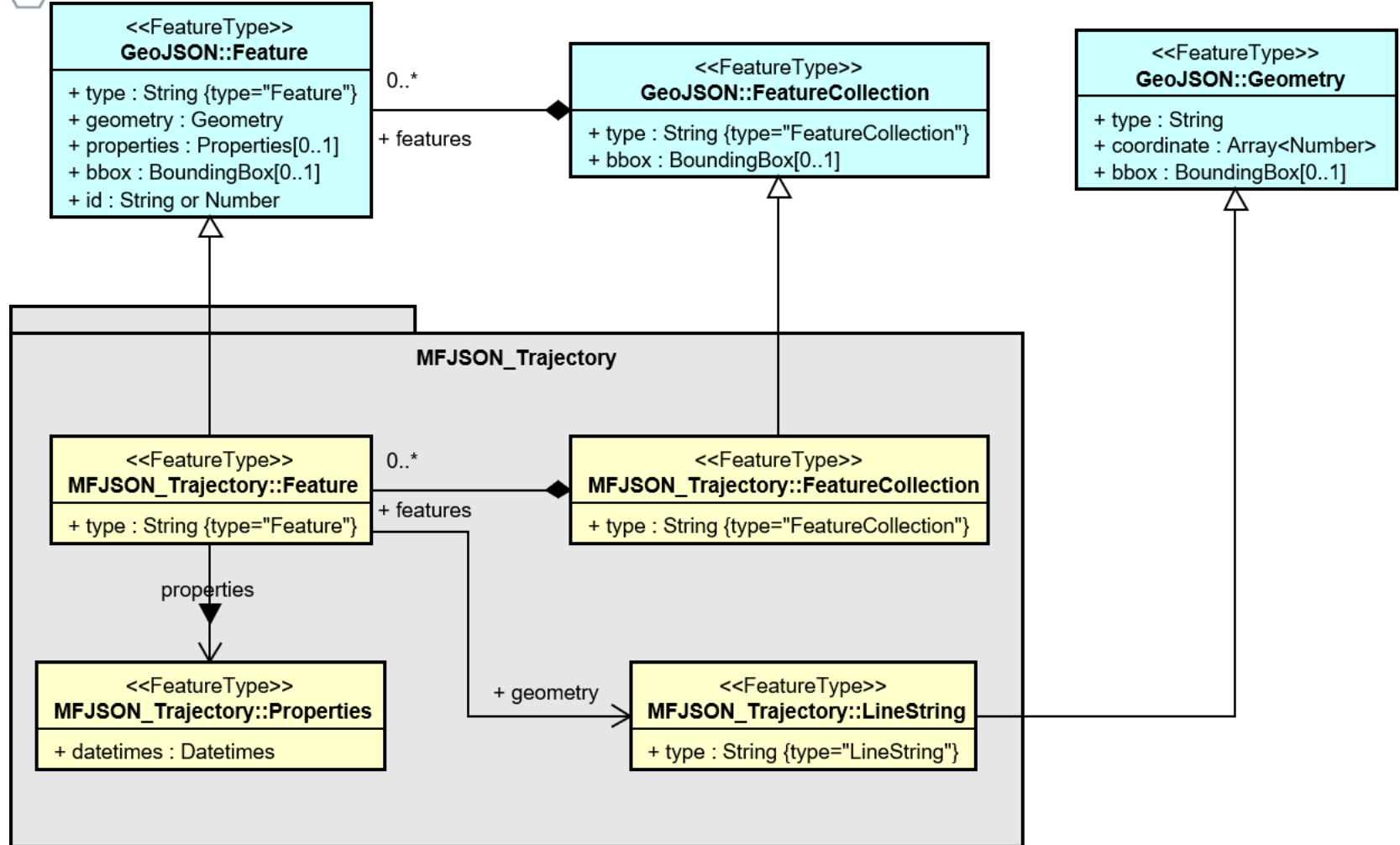
MF-JSON Trajectory



- Recommending for sharing
 - Simple trajectory data of point objects with linear interpolation.
 - By only the IETF GeoJSON encoding [[IETF RFC 7946](https://tools.ietf.org/html/rfc7946)] without any extension.



MF-JSON Trajectory: Schema



MF-JSON Trajectory: Example

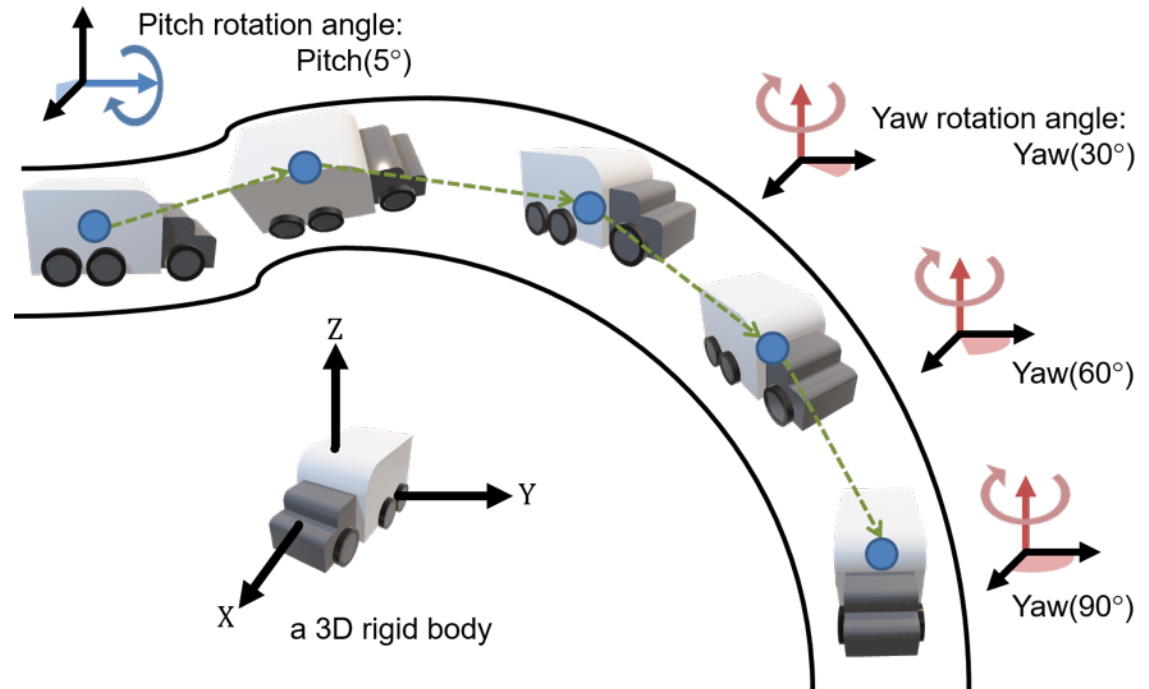
JAVAS

```
{
  "type": "FeatureCollection",
  "features": [
    {
      "type": "Feature",
      "id": "A",
      "geometry": {
        "type": "LineString",
        "coordinates": [[11.0,2.0], [12.0,3.0], [10.0,3.0]]
      },
      "properties": {
        "datetimes": ["2012-01-17T12:33:51Z", "2012-01-17T12:33:56Z", "2012-01-17T12:34:00Z"],
        "state": ["walking","walking"],
        "typecode": [1, 2]
      }
    },
    {
      "type": "Feature",
      "id": "B",
      "geometry": {
        "type": "LineString",
        "coordinates": [[10.0,2.0], [11.0,3.0]]
      },
      "properties": {
        "datetimes": ["2012-01-17T12:33:51Z", "2012-01-17T12:34:00Z"],
        "state": ["walking"],
        "typecode": [2]
      }
    }
  ]
}
```

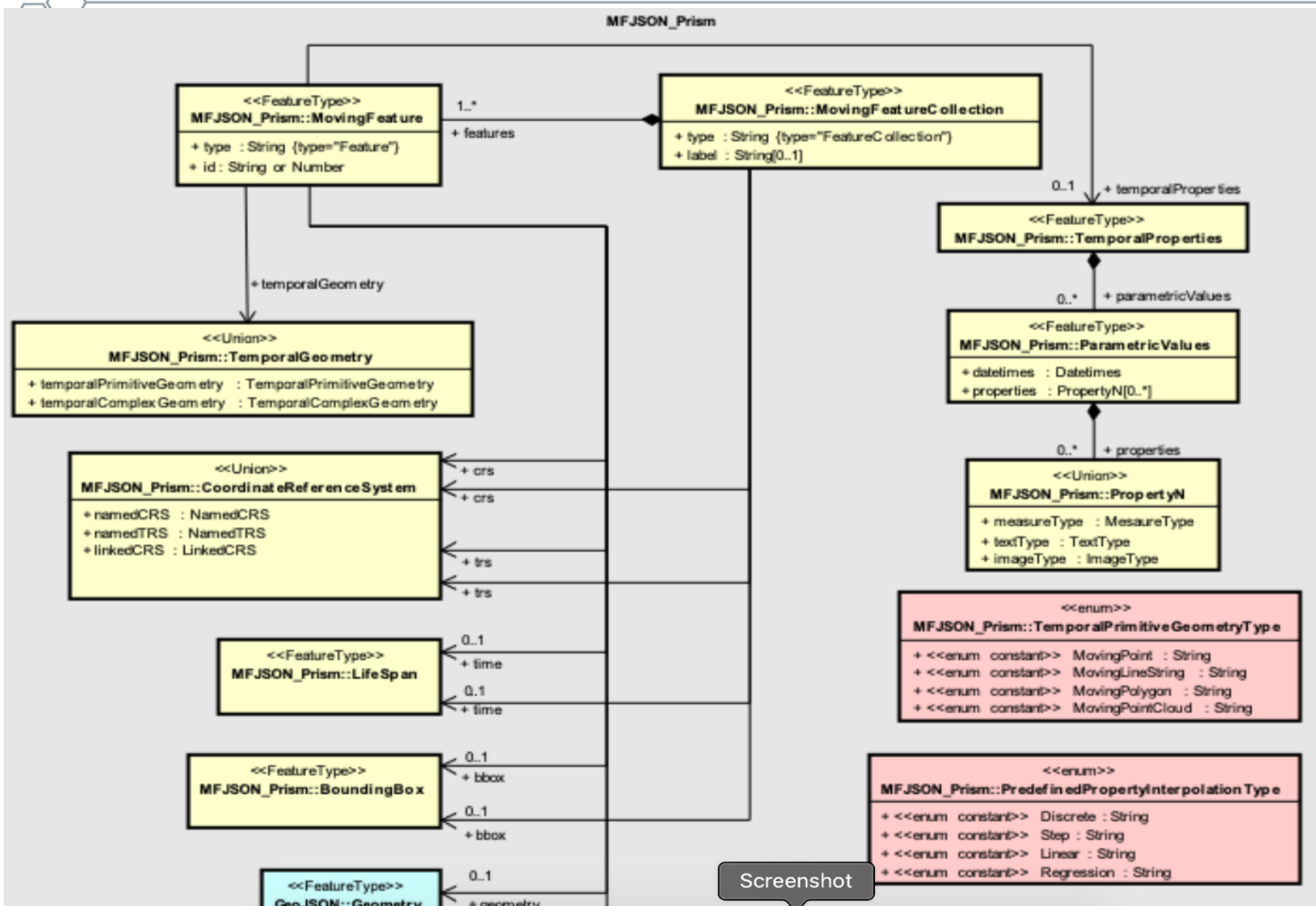

MF-JSON Prism



- Recommending for sharing
 - Prism (trajectory) data of various types of geometry, such as linestrings, polygons, 3D solids, as well as points
 - Prism (trajectory) data with various types of interpolation, such as discrete, step, linear, quadratic, cubic, and user-defined interpolation

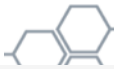


MF-JSON Prism: Schema



Screenshot

MF-JSON Prism: Example



JAVASCRIPT

```
{
  "type": "Feature", //(MANDATORY)
  "crs" : { //(DEFAULT) If there is no "crs" member, the default crs is "WGS84" with longitude and
    latitude units of decimal degrees
    "type": "Name",
    "properties": {"name": "urn:ogc:def:crs:OGC:1.3:CRS84"}
  },
  "trs" : { //(DEFAULT) If there is no "trs", the default trs is "Gregorian".
    "type": "Link",
    "properties": {
      "type": "OGCDEF",
      "href": "http://www.opengis.net/def/uom/ISO-8601/0/Gregorian",
    }
  },
  "temporalGeometry": { //(MANDATORY) one parameter set of geometries of a moving feature
    "type": "MovingPoint",
    "datetimes": ["2011-07-14T22:01:01Z", "2011-07-14T22:01:02Z", "2011-07-14T22:01:03Z", "2011-07-14T22:01:04Z", "2011-07-14T22:01:05Z"],
    "coordinates": [ [139.757083, 35.627701, 0.5], [139.757399, 35.627701, 2.0], [139.757555, 35.627688, 4.0], [139.757651, 35.627596, 4.0], [139.757716, 35.627483, 4.0] ],
    "interpolation": "Linear",
    "base": "http://www.opengis.net/spec/movingfeatures/json/1.0/prism/example/car3dmodel.zip",
    "orientations": [
      [0.000012, 0.0, 0.0, 0.0,
       0.0, 0.0000089, 0.0, 0.0,
       0.0, 0.0, 1.0, 0.0,
       0.0, 0.0, 0.0, 1.0], // same as original
      [0.00000119543363771009, 0.0, 0.0871557427476583, 0.0,
       0.0, 0.0000089, 0.0, 0.0,
```

MF-JSON Prism: MovingGeometry



TemporalPrimitiveGeometry Object

```
{
  // vbar | as a means to select ONE type.
  "type": "MovingPoint | MovingLineString | MovingPolygon | MovingPointCloud", //(MANDATORY)
  "datetimes" : [...],      //(MANDATORY)
  "coordinates": [...],      //(MANDATORY)
  "interpolation": "...",    //(DEFAULT)
  "base": "...",             //(OPTIONAL)
  "orientations": [...],     //(OPTIONAL)
  "crs": {...},              //(DEFAULT)
  "trs": {...}               //(DEFAULT)
}
```

TemporalComplexGeometry Object

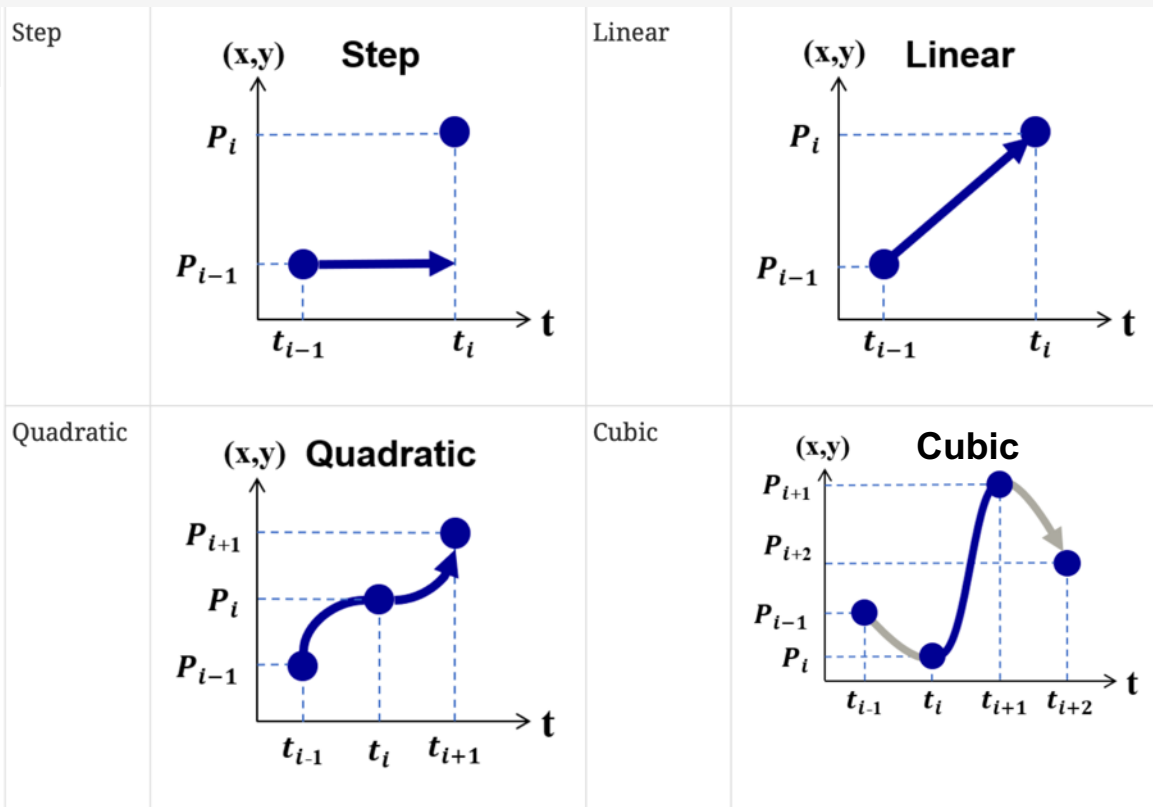
```
{
  "type": "MovingGeometryCollection", // (MANDATORY)
  "prisms": [ //(MANDATORY)
    {
      "type": "MovingPoint | MovingLineString | MovingPolygon | MovingPointCloud",
      as a means to select ONE type.
      "datetimes" : [...],      //(MANDATORY)
      "coordinates": [...],      //(MANDATORY)
      "interpolation": [...],    //(DEFAULT)
      ...
    },
    ...
  ],
  "crs": {...}, //(DEFAULT)
  "trs": {...}  //(DEFAULT)
}
```

MF-JSON Prism: Interpolation of Movement



- Predefined MotionCurve objects

```
{  
  ....,  
  "datetimes": [...], //T={t_0, t_1, ..., t_n}  
  "coordinates": [...], //G={G_0, G_1, ..., G_n}  
  "interpolation": "Discrete|Step|Linear|Quadratic|Cubic", // vbar | as a means to select ONE.  
  ....  
}
```



MF-JSON Prism: Interpolation of Movement



- Predefined MotionCurve objects

```
{
  .....,
  "datetimes": [...], //T={t_0, t_1, ..., t_n}
  "coordinates": [...], //G={G_0, G_1, ..., G_n}
  "interpolation": "Discrete|Step|Linear|Quadratic|Cubic", // vbar | as a means to select ONE.
  ....
}
```

- User-defined MotionCurve object

```
"temporalGeometry": {
  "type": "MovingPoint",
  "datetimes": [...], //T={t_0, t_1, ..., t_n}
  "coordinates": [...], //G={G_0, G_1, ..., G_n}
  "interpolation": "http://www.opengis.net/spec/movingfeatures/json/1.0/prism/example/motioncurve",
  ....
}
```

Out of Scope



- This specification does not address partial motions of parts of bodies in a primitive movement and the dimensional deformation of the feature (e.g., from 1-d geometry to 0-d geometry). Also the succession of either features or their association is out of scope in this specification.



Upcoming TC Meetings

Technical / Planning Committee Meetings



Date	Location	Host/Sponsor
18-22 Nov 2019	Toulouse, France	Airbus
2-6 March 2020	Hong Kong	Several, still sorting!
June 2020	Montreal, Canada	CAE
14-18 Sept 2020	Munich, Germany	TUM
Dec 2020	Palo Alto, CA USA (TBC)	EPRI
Feb or March 2021 (or 2022)	Offer from India (TBC)	NRSC, DST, SOI
June 2021	Madrid, Spain (TBC)	FOMENTO
October 2021	Americas	



TC Chair Announcements and Motions

Final OAB motion for TC Policy Directive



- The OGC Architecture Board (OAB) recommends that the OGC Technical Committee approve an OGC Policy Directive to direct any OGC API SWG to work on its respective standard with other OGC API SWGs and the OWS Common SWG and report on the interaction with those SWGs to ensure coherence (with respect to OGC Web API Guidelines, OGC API - Common, and reusability of extensions) of standards in advance of OAB review. OAB will develop a template for the review. If the OAB determines that sufficient review has not taken place, the submitting SWG will be instructed to perform further review.
- OAB will deliver a template by the end of 2019. OGC API SWGs currently working will perform coherence review as described above over at least the time required to receive the template.
- This motion does not preclude formation of a SWG, it only applies to work undertaken by an existing SWG.
- This coordination effort occurs after the formation of a SWG and before OAB review of a candidate standard for public RFC.
- NOTUC



SWG to DWG assignments

Assignments 1/2



SWG	Parent DWG	Comment	Inactive?
3D Portrayal SWG (3DP SWG)	Portrayal DWG		
ARML 2.0 SWG (ARML 2.0 SWG)	Interoperable Simulation and Gaming DWG (ISG DWG)		Y
Catalogue Services - ISO Metadata Application Profile 2.0 SWG	Metadata and Catalogue DWG (MetaCat DWG)		
Catalogue Services 3.0 SWG (Cat 3.0 SWG)	Metadata and Catalogue DWG (MetaCat DWG)		
CDB SWG (CDB SWG)	Interoperable Simulation and Gaming DWG (ISG DWG)		
CityGML SWG (CityGML SWG)	3D Information Management DWG (3DIM DWG)		
Common Object Model Container SWG (COMC SWG)	GML DWG		Y
CRS SWG (CRS SWG)	CRS DWG		
CRS Well Known Text SWG (CRS WKT SWG)	CRS DWG		
Discrete Global Grid Systems SWG (DGGS SWG)	DGGS DWG		
Earth Observation Extension Package of ebRIM profile 1.0 SWG	EO Exploitation Platform DWG (EOEP DWG)		Y
ebRIM AP of CSW SWG (ebRIM AP of CSW)	Metadata and Catalogue DWG (MetaCat DWG)		Y
ebXML RegRep SWG (ebXMLRegRepSWG)	Metadata and Catalogue DWG (MetaCat DWG)		Y
EO Product Metadata and OpenSearch SWG (EO PMOS SWG)	Metadata and Catalogue DWG (MetaCat DWG)		
Features API SWG (FeatAPI SWG)	Architecture DWG	This one needs either an API-centric or feature-centric DWG	
GeoAPI SWG (GeoAPI SWG)	Architecture DWG		
Geocoding API SWG (GeocodeAPISWG)	Architecture DWG		
GeoPackage SWG (GeoPackage SWG)	Architecture DWG	Should the GML DWG become a Data Encoding DWG?	
GeoSciML SWG (GeoSciML SWG)	Geoscience DWG		
Geospatial User Feedback SWG (GUFswg)	Data Quality DWG		
GeoSynchronization 1.0 SWG (Geosync SWG)	Workflow DWG		Y
GeoTIFF SWG (GeoTIFF SWG)	Architecture DWG	Or do we change the Coverages DWG to be "Coverages and Rasters?"	
GeoXACML SWG (GeoXACML SWG)	Security DWG		
GML 3.3 SWG (GML 3.3 SWG)	GML DWG	Should the GML DWG become a Data Encoding DWG?	
GMLJP2 SWG (GMLJP2-SWG)	GML DWG	Should the GML DWG become a Data Encoding DWG?	
Groundwater SWG (GroundwaterSWG)	Hydrology DWG		
HDF SWG (HDF SWG)	Big Data DWG		

Assignments 2/2



Hydrologic Features SWG (HydroFeat SWG)	Hydrology DWG		
I15 Extension Package of ebRIM Profile of CSW 1.0 SWG (I15 SWG)	Metadata and Catalogue DWG (MetaCat DWG)		Y
IndoorGML SWG (IndoorGML SWG)	3D Information Management DWG (3DIM DWG)		
KML 2.3 SWG (KML SWG)	GML DWG	Should the GML DWG become a Data Encoding DWG?	
Land and Infrastructure SWG (LandInfraSWG)	Land and Infrastructure DWG (LandInfra DWG)		
Moving Features SWG (MovFeat SWG)	3D Information Management DWG (3DIM DWG)		
NetCDF SWG (NetCDFSWG)	Big Data DWG		
O&M 2.0 SWG (OM 2.0 SWG)	Sensor Web Enablement DWG (SWE DWG)		
OLS 1.3 SWG (OLS 1.3 SWG)	Mobile Location Services DWG (MLS DWG)		Y
OWS Common - Security SWG (ComSecuritySWG)	Security DWG		
OWS Common 1.2 SWG (OWSCommon1.2SWG)	Architecture DWG		
OWS Context SWG (OWScontextSWG)	Architecture DWG		
PipelineML SWG (PipeML SWG)	LandInfra DWG	Discussion in Charlotte suggested LandInfra over Energy and Utilities	
Points of Interest SWG (Pol SWG)	Mobile Location Services DWG (MLS DWG)	MLS might best fit the business purpose, but a Data Encoding DWG would fit the content	
PubSub SWG (PubSub SWG)	Architecture DWG		
RESTful Services Policy SWG (RESTful SWG)	Architecture DWG		Y
Sensor Model Language (SensorML) 2.0 SWG (SensorML2.0SWG)	Sensor Web Enablement DWG (SWE DWG)		
Sensor Observation Service (SOS) 2.0 SWG	Sensor Web Enablement DWG (SWE DWG)		
Sensor Planning Service (SPS) 2.0 SWG	Sensor Web Enablement DWG (SWE DWG)		
SensorThings SWG (SensorThings)	Sensor Web Enablement DWG (SWE DWG)		
Simple Features SWG (SF SWG)	Architecture DWG		
Styled Layer Descriptor and Symbology Encoding 1.2 SWG (SLDSE 1.2 SWG)	Portrayal DWG		
Table Joining Service SWG	Geosemantics DWG	Table joins are based on a semantic relationship	
Temporal WKT for Calendars SWG (TemporalWKT)	Temporal DWG		
TimeseriesML SWG	Temporal DWG		
WaterML 2.0 SWG (WaterML2.0SWG)	Hydrology DWG		
Web Coverage Service (WCS) SWG (WCS.SWG)	Coverages DWG		
Web Coverage Tile Service (WCTS) SWG (WCTS.SWG)	Coverages DWG		
Web Mapping Service 1.4 SWG (WMS 1.4 SWG)	Architecture DWG		
Web Processing Service 2.0 SWG (WPS 2.0 SWG)	Workflow DWG		
WFS Gazetteer Profile 1.0 SWG (WFSgaz1.0 SWG)	Architecture DWG		

SWG-DWG assignment



- See [OGC 19-074]
- The assignments are a first pass to cover all existing SWGs
- Some DWGs are overloaded (e.g., Architecture) and this alignment suggests that there may be a need to recharter or create a DWG or two
 - For instance, there is a GML DWG: should this be rechartered to be a Data Encoding DWG?
- SWGs approved between now and the next revision to the TC Policies and Procedures (TC PnP) will be added to the assignments
- The next revision of the TC PnP will include a process for initialization and update of assignments, linked to a persistent assignment table

Policy Approval Motion



- The TC Chair recommends that the OGC Technical Committee approve release of [OGC 19-074] “SWG to DWG assignment” as an OGC Policy Directive.
 - There was no objection to unanimous consent
- The Policy Directive will make an initial assignment of SWGs to parent DWGs. The next revision of the TC Policy and Procedures will include a process for making and updating assignments.
- SWGs can have one or more parent DWGs.



TC Meeting week agenda

TC Meeting week agenda – the good news



- More joint sessions
- Agendas being populated earlier
- Chairs are releasing sessions if the agendas are thin

TC Meeting week agenda – the not-so-good news



- Agenda reservations have been compared to “**The Hunger Games**”
- The TC Meeting week agenda now fills in 2 days; 80% full in 2 hours
- Many WGs do not get on the schedule



Proposal for 2020 TC Meetings



- Add some more half-sessions through the week
- No WGs can reserve more than a single session in the first week of reservations
- Hold staff-facilitated trading session after 1 week
- Please don't make us come up with some crazy point system!





WG Reports not to be briefed

Not being briefed today, saving you **151** slides



- 3D Portrayal SWG
- Agriculture DWG
- Joint Aviation-UXS DWGs
- CDB SWG
- CityGML SWG
- CITE SC
- Coverages DWG / WCS SWG
- CRS Joint DWG/SWG
- Data Quality DWG
- DGGs DWG
- DGGs SWG
- EDR API ad hoc
- GeoAPI SWG
- GeoSciML SWG
- GeoTIFF SWG
- IndoorGML SWG
- Joint IndoorGML-CityGML SWGs
- ISG DWG
- LandInfra SWG
- Met Ocean DWG
- O&M SWG
- OGC Naming Authority
- Point Cloud DWG
- SensorThings SWG
- Spatial Data on the Web SC
- TimeseriesML SWG
- Transportation ad hoc



Z - 3

WG Reports with TC Motions



Sponsor

AIRBUS

Joined WPS/Workflow meeting

113th OGC Technical Committee
Toulouse, France
Benjamin Pross
21 November 2019

The most important thing for this WG is...



How should the OGC API – Processes look like

Agenda



- WPS REST/JSON binding extension/OGC API - Processes update and discussion (15 min), Benjamin Pross (52° North GmbH)
- OGC API Processes - process description proposed evolution (20 min), Christophe Noel (Spacebel)
- Testbed-15 Delta Updates ER (15 min), Benjamin Pross (52° North GmbH)
- ~~OGC Testbed-15 (D020): Federated Clouds Analytics Engineering Report (10 min), Pedro Goncalves (Terradue)~~

Activity Summary



- Discussion topics
 - OGC API – Processes: should we enforce our own JSON schemas?
- Upcoming deliverables
 - N/A
- Coordination (ongoing and planned)
 - Other OGC APIs
- Future meetings
 - SWG telecons

Document Approval Motion



- The WPS 2.0 SWG recommends that the OGC Technical Committee approve release of OGC 19-012 “OGC Testbed-15: Delta Updates Engineering Report” as an OGC Public Engineering Report.
 - There was no objection to unanimous consent
- The goal of this OGC Testbed 15 Engineering Report (ER) is to document the design of a service architecture that allows the delivery of prioritized updates of features to a client, possibly acting in a DDIL (Denied, Degraded, Intermitted or Limited Bandwidth) environment



Sponsor

AIRBUS

WMS SWG

113th OGC Technical Committee

Toulouse, France

Joan Masó

21 November 2019

19-069 Testbed-15 Maps and Tiles API Draft Specification ER (D014)



- The WMS SWG recommends that the OGC TC approve the release of 19-069 “Testbed-15 Maps and Tiles API Draft Specification ER” (formerly “D014”) as an OGC Public Engineering Report.
 - NOTUC
- OGC API - Tiles draft specification describes a service that retrieves data representations as tiles (generally small compared with the extent of the data). The OGC API Maps describes how to retrieve rendered maps. Both are the seed for the new OGC API Tiles and OGC API standard candidates.

Motion to Make API Tiles public (informative)



- The WMS SWG agrees on making both OGC API - Tiles and OGC API - Maps GitHub repositories public.
 - Currently OGC API *Maps and Tiles* repository is public and has been renamed as *OGC API Maps*. **OGC API Tiles** is newly created and has become private by default (WMS.SWG members have to opt-in to see it).
 - NOTUC
- This implies an action for the OGC staff



Sponsor

AIRBUS

Security DWG Report to the TC

113th OGC Technical Committee
Toulouse, France
Andreas Matheus
21 November 2019

Agenda



- OGC Testbed-15: Federated Clouds Security ER
 - Héctor Rodríguez Campo (Deimos Space)
- Security Measures followed in building the Abu Dhabi unified Geo Municipal Hub
 - Nedal Al Hanbali (Department of Urban Planning and Municipalities)
- TB15 - Data Centric Security ER
 - Michael Leedahl (Maxar)
- Demonstration of results on Testbed 15 Data Centric Security and discussion
 - Andreas Matheus (Secure Dimensions)

Activity Summary



- Discussion topics

- Would it be easy to leverage the Testbed 15 solution on DCS for domains other than defense & intelligence?
- How costly would such an implementation be and which skills are needed?

- Upcoming deliverables

- Testbed 15 – Data Centric Security ER
- Testbed 15 Federated Clouds Security ER

- Coordination (ongoing and planned)

- Coordinate with the OAB regarding CR614 (later slide)

- Future meetings

- Next TC meeting in Hongkong

Key activities



- Coordinating activities to look into the aspects of “Digital Signatures in OGC Encoding Standards”

Document Approval Motion #19-024r1



- The Security DWG recommends that the OGC Technical Committee approve release of 19-024r1 “**OGC Testbed-15: Federated Clouds Security ER**” as an OGC Engineering Report.
 - NOTUC
- The ER focuses on how federated membership, resource and access policy management can be provided within a security environment.

Document Approval Motion #19-016r1



- The Security DWG recommends that the OGC Technical Committee approve release of 19-016r1 “**Testbed-15 – Data Centric Security ER**” as an OGC Public Engineering Report.
 - NOTUC
- The ER discusses the current state of security in protecting data in a geospatial environment.

The most important thing for this WG is...



Bring the Testbed 15 CR [#614](#) (recommended in the Data Centric Security ER) to the OAB's attention.

[First](#) [Last](#) [Prev](#) [Next](#) This request is not in your last search results.

Request 614 -

Request Title: Support for XML Digital Signature in OGC encoding standards

Status: NEW

Standards Body: OGC

Standard: .New Requirement - A requirement is a request for an organization to add or support something that they do not already cover or support. These might be in the form of a new feature or a new standard. It might need to spawn an New Work Item (ISO), or new Standards Working Group (OGC).

Version: unspecified

Region: World

Component: All

Reported: 2019-10-08 07:46:18
UTC by Andreas Matheus

Modified: 2019-10-08 07:49 UTC
([History](#))

CC List: 0 users

Importance: --- enhancement

Assigned To: OGC Tracker Admin

URL:

Depends on:

Blocks:

Show dependency [tree](#) / [graph](#)

Next Quarter WG Communications Plan



- We plan to meet next during the TC Meeting in Hongkong
- Results from Testbed 15 on Data Centric Security describing the ability to use NATA STANAG and OGC API for Features and Encodings might be a new topic for DIGWG / NATO...



Sponsor

AIRBUS

Mobile Location Services (MLS) DWG

Document Approval Motions

113th OGC Technical Committee

Toulouse, France

Jeff Harrison, Army Geospatial Center

20 November 2019

Agenda

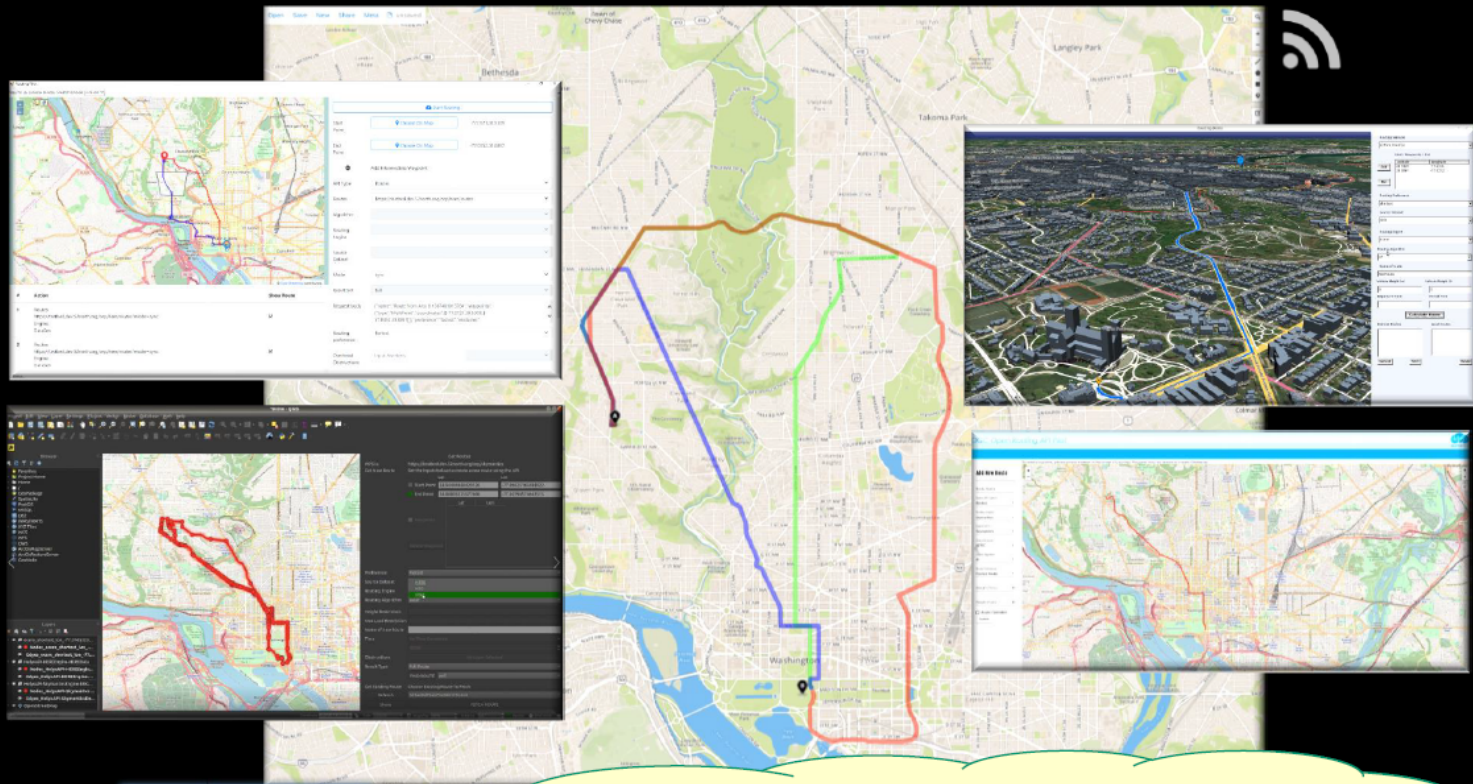


- Open Routing API and Route Exchange Model - Clemens Portele, Interactive Instruments
- Open Routing API Extensions for SCIRA Pilot - Ignacio Correias, Skymantics
- Document Approval Motions
- Discussion

Just a Quick Recap...



Open Routing API and Route Exchange Model...



Document Approval Motion



- The MLS DWG recommends that the OGC Technical Committee approve release of 19-041r3 “Open Routing Pilot ER” as an OGC Engineering Report.
 - There was no objection to unanimous consent
- This document describes the implementations to support the OGC Routing API Pilot. The purpose of the work was to utilize the new and emerging OGC API standards to support routing applications in denied, degraded, intermittent or low bandwidth (DDIL) environments. A secondary requirement was to define and implement an exchange model for routing information that is GeoJSON based and lightweight to support exchange in DDIL environments.

Document Approval Motion



- The MLS DWG recommends that the OGC Technical Committee approve release of 19-040 “WPS Routing API ER” as an OGC Engineering Report.
 - There was no objection to unanimous consent
- The ER documents the specification of an API which supports geographic routing. The specification includes two alternative approaches to such an API, one based on the current draft of the OGC API - Processes specification and another based on the OGC API principles (and a future OGC API - Common standard). Both approaches facilitate a common Route Exchange Model.



Sponsor

AIRBUS

Metadata & Catalog DWG

113th OGC Technical Committee
Toulouse, France
Frédéric Houbie
21 November 2019

The most important thing for this WG is...



Convince the world that metadata is important for discovery

Agenda: **November 18th, 13:00 - 14:30** (Salle Cassiopée)



- ICMP analysis for capturing Coordinate Epoch in metadata - *Byron Cochrane (OpenWork Ltd)* (20 min)
- OGC - Catalog / Record API status - *Peter Vretanos (Cubewerx)* (20 min)
- Data Discoverability through Metadata - *Clara Boyd (Ordnance Survey)* (30 min)

GotoMeeting info : <https://www4.gotomeeting.com/join/902527613>

Access Code: 902-527-613

Agenda: **November 19th, 16:30 PM - 18:00** (Salle Diamant)



- Opensearch Catalogue based on geoJSON Metadata in ElasticSearch - *Martine Paepen (VITO)* (30 min)
- Evolution of OpenSearch-EO in the direction of OGC API Common / Features - *Uwe Voges (Conterra)* (20 min)
- EO Collection Metadata GeoJSON(-LD) Encoding Standard - *Yves Coene (Spacebel)* (20 min)
- TB-15 EOPAD Engineering Report - *Yves Coene (Spacebel)* (20 min)

Activity Summary



- Discussion topics
 - Metadata models & profiles
 - Discovery workflow
 - Future API

- Upcoming deliverables

- Coordination (ongoing and planned)
 - OGC API
 - ISO
 - DGIWG

- Future meetings
 - Probably HKG

Document Approval Motion



- The Metadata and Catalog DWG recommends that the OGC Technical Committee approve release of OGC 19-020r1 “OGC Testbed-15 Catalogue and Discovery ER” as a Public OGC Engineering report.
 - There was no objection to unanimous consent.



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Health Domain Working Group Report

113th OGC Technical Committee

Toulouse, France

Ajay K Gupta, CISSP, MBA

21 November 2019

Release of Health SDI White Paper, 19-076

Approval Motion



- The Health DWG recommends that the OGC Technical Committee approve release of [19-076] “Health SDI: Application Areas, Recommendations, and Architecture” as an OGC White Paper.
 - There was no objection to unanimous consent
- This White Paper provides a discussion about the collection, exchange, integration, analysis, and visualization of health and non-health data to support health applications. Applications that address health issues at global, population scale as well as at the local, individual patient scale. The paper identifies opportunities to advance OGC Standards towards building a framework to support Health SDIs.



Sponsor

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GeoSemantics DWG

113th OGC Technical Committee

Toulouse, France

Linda van den Brink

21 November 2019

The most important thing for this WG is...



Working on a white paper about the benefits and limitations
of geospatial graphs

Agenda



- Esther Kok (Solenix Deutschland GmbH) : OGC Testbed-15 ER "OGC Testbed-15 19-021 Semantic Web Link Builder and Triple Generator" (15 min)
- Tobias Lindaaker (neo4j) : Graph Query Language (20 min)
- Hubert Lepori (Eurocontrol) : AIRM summary and lessons learned (15 min)
- Chairs, group: Discussion on the white paper on the value in graph data representation and linked data with strong(er) semantics for spatial data.

Activity Summary



- Discussion topics
 - Graph Query Language
 - White paper
 - <topic raised on email list>

- Upcoming deliverables
 - White paper, 2020

- Coordination (ongoing and planned)
 - Planned liaison with ISO/IEC JTC1 S32 WG3. **This needs to be set in motion**

- Future meetings
 - Web meeting in December 2019

Key activities



- The ISO/IEC JTC1 S32 WG3 working group, working on Graph Query Language, seeks a liaison with OGC in order to be able to have discussions on the geographical extension of GQL and in order to allow OGC members to comment on the CD version of GQL (planned for June 2020).

This was discussed in the GeoSemantics DWG with the outcome being that we believe this liaison would be beneficial and we would like it to be set in motion on the OGC side.

Document Approval Motion



- The GeoSemantics DWG recommends that the OGC Technical Committee approve release of OGC 19-021 “[OGC Testbed-15: Semantic Web Link Builder and Triple Generator](#)” as an OGC Engineering Report.
 - There was no objection to unanimous consent
- This ER describes a generalized approach towards to perform data fusion from multiple heterogeneous geospatial linked data, with a specific use case of semantic enrichment of hydrographic features provided by Natural Resources Canada (NRCan). The ER attempts to define and formalize the integration pipeline necessary to perform the fusion process producing semantically coherent fused entities.



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Joint GeoScienceDWG + GeoSciMLSWG + BoreholeIE closing plenary report

113th OGC Technical Committee

Toulouse, France

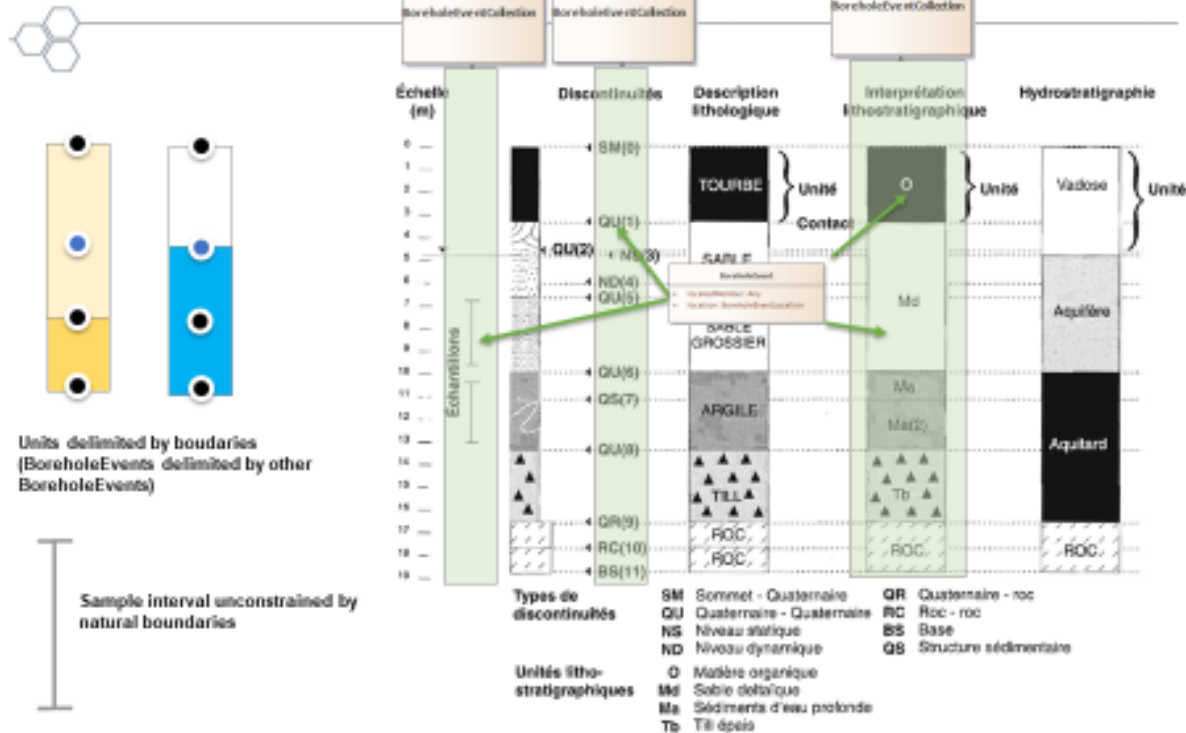
Mickaël Beaufiles (BRGM)

21 November 2019

The most important thing for this WG is...



NRCan example - Mapping



GeoScienceDWG
completed its first
(official)
Interoperability
Experiment

« BoreholeIE »

OGC®

(Version originale française.. Nous sommes en France après tout)

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OGC®

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Agenda



- Session 1:
 - Geoscience DWG information
 - EPOS results summary (S.Grellet & al.)
- Session 2:
 - GeoSciML update (E. Boisvert)
 - Extending BIM with geotechnics thanks to OGC standards (M. Beaufils)
 - 3D Model Discovery IE discussion
- Session 3:
 - Borehole IE final presentation



Activity Summary



- Discussion topics

- EPOS
- Encoding of actual GeoSciML model
- GeoSciML concepts represented with linked IFC geometry (demo provided)
- 3D Model Discovery IE launch
- Borehole IE follow-up

- Upcoming deliverables

- 3D Model Discovery IE charter?
- Borehole SWG charter?

- Coordination (ongoing)

- SELFIE
- OM
- Geosemantics
- building Smart International for Geotechnical data (IDBE Geotech)

- Future meetings

- Visioconference to discuss actions priorities, members and leaders commitment
- Montreal TC?
- Munich TC?

Template for Document Approval Motion



- The GeoScienceDWG recommends that the OGC Technical Committee approve release of 19-075r1 “Borehole Interoperability Experiment Engineering Report” as an OGC Engineering Report.
 - There was no objection to unanimous consent

The Borehole Interoperability Experiment Engineering Report describes a conceptual model, logical model, and GML/XML encoding schema for the exchange of borehole related data and especially all the elements that are positioned along a borehole trajectory. In addition, this document provides GML/XML encoding instances documents for guidance.



Sponsor

AIRBUS

GeoAI DWG Report

113th OGC Technical Committee
Toulouse, France

Kyoung-Sook Kim, Anneley Hadland, Tien-Yin (Jimmy) Chou, Dimitris Kotzinos
21 November 2019

The most important thing for this WG is...



DWG Internal Motion of 19-027r2 Testbed-15 Machine
Learning Engineering Report

To define the term of GeoAI
(Currently, it is just the abbreviation for
Artificial Intelligence in Geoinformatics DWG)

Agenda



November 19th, 4:50 PM - 6:00 PM

- Motion of Document
 - 19-027r2 - OGC Testbed-15 Machine Learning Engineering Report
- Presentations
 - 17:05 - 17:20 The role of Deep Learning and AI in massive mesh streaming standards (such as OGC's i3s) – from Geoscience point of view: Tamrat Belayneh (Esri)
 - 17:20 - 17:35 People-flow Simulation based on Pedestrian-path Learning: Yoshihiro Osakabe (Hitachi, Ltd.)
 - 17:35 - 17:50 The Applications of Deep Learning in Taiwan: Chih-Wei Kuan, Will (FIS/FCU)
 - 17:50 - 18:00 Discussion for future activities

Activity Summary



- Discussion topics

- I3S: classification of point clouds by using DL, 3D models for generating training datasets.
- Simulation model of people flows by Gradient Boosting Tree models
- Use cases in Taiwan: Identification Underground, Flooding Recognition

- Upcoming deliverables

- Collect open datasets for ML/DL (https://docs.google.com/spreadsheets/d/1AUulrMxKARS2rBKPYDa__wf9zcEOFwP8RkH2-9qD24o/edit?usp=sharing)
- Discussion paper?

- Coordination (ongoing and planned)

- ISO/IEC JTC1 SC42
- Point Cloud DWG

- Future meetings

- Continuous offline discussion through TC meeting and online discussion via ML
- TC meeting @ Asia(?)

Document Approval Motion



- The GeoAI DWG recommends that the OGC Technical Committee approve release of 19-027r2 Testbed-15 Machine Learning Engineering Report as an OGC Public Engineering Report.
 - There was no objection to unanimous consent
- This ER documents the results of the ML thread in OGC Testbed-15. This thread explored the ability of ML to interact with and use OGC web standards in the context of natural resources applications. The thread included five scenarios utilizing seven ML models in a solution architecture that included implementations of WPS, WFS, and CSW.



Sponsor

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Earth Observation Exploitation Platform – EOXP DwG

113th OGC Technical Committee

Toulouse, France

C.Lopes, C. Lynnes

21 November 2019

The most important thing for this WG is...



Session confirmed (once again) 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 areas where this convergence is both achievable and necessary so that all interested players can contribute.

Agenda



- 1) Welcome, Chairs
- 2) Scaling Units of work (EOC, SCALE, SEED) ER (T15, OGC 19-022)
Alexander Lais (Solenix) – 10m - remotely
- 3) Federated Clouds Analytics ER (T15, OGC 19-026),
Pedro Gonçalves (Terradue) – 10m
- 4) OGC Interfaces in Thematic Exploitation Platforms,
Pedro Gonçalves (Terradue) – 15m
- 5) PROBA-V MEP Standards & evolutions,
Jeroen Dries (VITO) – 15m
- 6) MAAP: The Multi-Mission Algorithm and Analysis Platform,
Sebastien Noubellon (Capgemini - in support of ESA and NASA) - 15m
- 7) Introducing the Earth Observation Applications Pilot, Richard Conway
(Telespazio Vega UK) – 10m
- 8) Discussion

Activity Summary



- Discussion topics

- Lots of on-going activities, lots of opportunity for convergence;
- little discussion on convergence around standards or tailoring of standards.
To be further explored.

- Upcoming deliverables

- OGC Application Pilot ER – to be reviewed.

- Coordination (ongoing and planned)

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

- Future meetings

- DwG Ramping up
- Need to start regular discussions:

First Discussion to be the use of WPS/API-Processes for EO Platforms

Key highlights



- Two ERs presented, both looking into how processing can be made using SCALE/SEED.
- Three Platforms presented (more counting the ones in Agri.DwG), with common themes:
 - Concept of executing user analysis “next to” EO data has been demonstrated in multiple different instances for a variety of EO data types and user communities.
 - WPS was uniformly used, indicating it as a workable protocol for EOXP processing.
 - The need for richer descriptions of software entities was identified, particularly the operations they perform.
- The OGC Earth Observations Applications Pilot was presented (call is open) – goal is to assess interoperable aspects of the analysis next to the data concept in a more operational setup.

Document Approval Motion



- The EO Exploitation Platform DwG recommends that the OGC Technical Committee approve release of [OGC 19-022] “OGC Testbed-15 Scaling Units of work (EOC, SCALE, SEED) ER” as an OGC Engineering Report.
 - There was no objection to unanimous consent
- This ER presents an analysis of the Earth Observation Cloud work of OGC T13/14 with the SCALE/SEED work of NGA. Both approaches have in common that they encapsulate workloads in Docker containers to be deployed close to the data.

Document Approval Motion



- The EO Exploitation Platform DwG recommends that the OGC Technical Committee approve release of [OGC 19-026] “OGC Testbed-15 Federated Clouds Analytics ER ” as an OGC Engineering Report.
 - There was no objection to unanimous consent
- This ER addresses the broad question on how to leverage Cloud architectures managing automated processing on a cluster of machines with OGC standards. Focusing on how WPS can be used as an API for cloud analytics and workflow automation.

Next Quarter WG Communications Plan



- OGC EO Application Pilot
 - Deadline for proposals: December 11, 2019
 - Kick-off meeting & Application developer workshop: January 21st/22nd ESRIN, Frascati, Italy
 - Demonstration meeting: May 19th ESA/ESRIN, Frascati



Sponsor

AIRBUS

Citizen Science Report (CitSci DWG)

113th OGC Technical Committee

Toulouse, France

Joan Masó

21 November 2019

The most important thing for this WG is...



We have ended the first phase
Citizen Science Interoperability Experiment
and we are starting the
second phase of it in Barcelona next week

Agenda



- JRC approach to collect, share and expose information about Citizen Science projects
 - Sven Schade (JRC)
- Interactive Map Making: Using a Collaborative and interoperable Citizen Science infrastructure
 - Frank Wassermann, Johannes Lauer (HERE Technologies)
- Standardization activities in the SCENT project
 - Valantis Tsiakos (ICCS)
- Sensor.Community - Platform for Environmental Data
 - Speaker: Lukas (Sensor.Community)
- CitSci IE ER and motion
 - Joan Maso (UAB-CREAF)

Activity Summary



- Discussion topics
 - The use of OGC standards in Citizen Science

- Upcoming deliverables
 - Citizen Science IE Engineering Report

- Coordination (ongoing and planned)
 - SensorThingsAPI
 - SWE-SOS
 - O&M
 - NA Definitions Server
 - Data Quality

- Future meetings
 - Barcelona Kick-off
 - Next TC Meeting



- Integration of the OGC definition server in Cit Sic projects
 - Including Data Quality definitions in there



- Experiment with the SensorThinks API
 - And compare it with the conclusion using SOS



- Design and architecture for a Cit Sci federation
 - That provides attribution and privacy

Candidate topics for Barcelona, Nov 25-27th, 2019

https://external.opengeospatial.org/twiki_public/CitSciE/CitSciE2

https://external.opengeospatial.org/twiki_public/CitSciE/F2FMeeting-BCN-Nov19



E-vote for OGC 19-083 Citizen Science IE ER



- The CitSci DWG recommends that the OGC TC approve an electronic vote to approve release of OGC 19-083 “Citizen Science Interoperability Experiment Engineering Report” as an OGC Public Engineering Report.
 - NOTUC
- This Engineering report is not part of the Testbed 15 and describes the first phase of the citizen science Interoperability experiment organized by the EU H2020 WeObserve project under the OGC innovation program and supported by the four H2020 Citizen Observatories projects (SCENT, GROW, LandSense & GroundTruth 2.0) as well as the EU H2020 NEXTGEOSS project. The activity covered aspects of data sharing architectures for citizen science data, data quality, data definitions and user authentication.

Next Quarter WG Communications Plan



- Please see the slide about the next phase about the Interoperability Experiment.
 - We will really appreciate if the OGC does some communication on that.



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Big Data DWG

113th OGC Technical Committee

Toulouse, France

John Herring

21 November 2019

The most important thing for this WG is...



Establishing a Community Practice for
Geospatial Coverage Data Cubes and
identification of broader topics on data cubes

Big Data DWG



- Geospatial Coverages Data Cube Community Practice
 - Review of updated document (18-095r5) based on comments from public RFC
 - Potential Motion: “Big DWG recommends that the TC approve the Community Practice”
- Coverage Processing and Analysis Sprint
 - ESIP and OGC organized; will happen at ESIP Winter Meeting, January 2020, Bethesda, MD USA
 - <https://2020esipwintermeeting.sched.com/event/Vabd/esip-and-ogc-api-coverage-analytics-sprint-day-1>
- Discussion: Toward more general specifications for data cubes for big geospatial data
 - Relation to other DWGs and SWGs

Big Data DWG motion for Geospatial Coverages Data Cube Community Practice



The OGC Big Data DWG recommends that the OGC Technical Committee approve an electronic vote for the OGC Geospatial Coverages Data Cube Community Practice (Version 0.6 – 18-095r5) as an approved OGC Community Practice

- There was no objection to unanimous consent

Activity Summary



- Discussion topics

- Geospatial Coverage Data Cube Community Practice
- Going beyond the Community Practice for Data Cubes

- Upcoming deliverables

- Results of ESIP/OGC Coverage and Processing Sprint, Jan 2020

- Coordination (ongoing and planned)

- coordinated with ESIP

- Future meetings

- Meet at Future TCs



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AIRBUS

Architecture DWG

113th OGC Technical Committee

Toulouse, France

Joan Maso, Gobe Hobona

21 November 2019

The most important thing for this WG is...



There is some urgency to move the Web API Guidelines forward and to send it to the OAB in the next TC. A *namespace scheme for the parameters specified by extensions of OGC API standards and avoid conflicting* could be a necessary addition.

Agenda



- Modeling metadata on properties in UML and their representation in encodings
 - Johannes Echterhoff, Clemens Portele
- Tiling Abstract Specification (draft)
 - Carl Reed
- OGC Testbed-15:Images and ChangesSet API Draft Specification
 - Joan Maso
- Qualifying OGC API parameters with namespaces
 - Gobe Hobona

Activity Summary



- Discussion topics

- An approach for modeling metadata on properties e.g. NSG metadata
- The draft Abstract Specification on Core Tiling Conceptual and Logical Models for 2d Euclidean Space
- The Images & ChangeSet APIs developed in Testbed-15
- The issue of managing OGC API parameters, raised in the STAC/OGC API Sprint

- Coordination (ongoing and planned)

- OWS Common SWG
- WCS, WMS, WFS/FES, CAT & WPS SWG

- Upcoming deliverables

- OGC Web API Guidelines
- JSON Best Practice

- Future meetings

- A teleconference to discuss the updates to the OGC Web API Guidelines
- A teleconference to discuss the JSON Best Practice
- Next TC meeting in March 2020

Key activities



- Sharing of lessons and experiences in support of OGC API
- Development of an Abstract Specification on Core Tiling Conceptual and Logical Models for 2d Euclidean Space
- OGC JSON Best Practice
- OGC Web API Guidelines

Motion for Release of 19-070 OGC Testbed-15: Images and ChangeSet API Draft Specification (D016)



- The Architecture DWG recommends that the OGC TC approve the release of 19-070 “Testbed-15 Images and ChangeSet API Draft Specification” (formerly “D016”) as an OGC Public Engineering Report.
 - Result: There was no objection to unanimous consent
- Provides an approach to a transactional Web Map Tiling Service 2.0 (WMTS-T) by combining an image service to manage (retrieve, add, modify or delete) a set of images in a server with a WMTS service that is able to communicate updates within a specified timeframe.
https://portal.opengeospatial.org/files/?artifact_id=90769&version=1

Motion for Tile Abstract Spec (19-014) review by OAB



- The Architecture Domain Working Group recommends that the draft Abstract Specification: Core Tiling Conceptual and Logical Models for 2d Euclidean Space (19-014) is forwarded to the OGC Architecture Board (OAB) for review.
 - There was no objection to unanimous consent



Sponsor

AIRBUS

3DIM – closing plenary report

113th OGC Technical Committee
Toulouse, France

Carsten Rönsdorf, David Graham, Jantien Stoter
20/21 November 2019

The most important thing for this WG is...



With a variety of 3D related activities in OGC it is becoming increasingly difficult to see how we can offer a consistent set of 3D standards.

Agenda 20 nov



- Quality management and validation of CityGML datasets, Volker Coors, HFT, 20 minutes
- 3D Data Container and Tiles API Pilot, Ryan Gauthier (Remotely) and Matt Sorenson, US Army Geospatial Center, 15 minutes
- CityJSON: proposal for OGC community standard, Claus Nagel, Virtual City Systems, 10 minutes
- Experiences in building the 3D model for Abu Dhab, Hamad Al Rashedi, Abu Dhabi Municipality, 15 minutes
- Vote on Public Safety ADE, Carsten Roensdorf, OSUK, 10 minutes

Agenda 21 nov



- Proposal for standardisation of the MUDDI conceptual model, Carsten Roensdorf, OSUK, 35 minutes
- CityThings, Joe (Thunyathep Santhanavanich), HfT, 20 minutes

Activity Summary



- Discussion topics

- Validation of CityGML data suggested to be key consideration for CityGML 3
- Unresolved: How does potential outcome from 3D container and tiles API relate to existing OGC 3D specifications specifications?
- CityJSON as an alternative encoding for CityGML

- Upcoming deliverables

- Vote on Public Safety ADE (completed)

- Coordination (ongoing and planned)

- LandInfra, IndoorGML
- CityGML and SensorThings

- Future meetings

- next TC Meeting

19-032 CityGML Public Safety ADE ER



- The 3DIM DWG recommends that the OGC Technical Committee approve release of 19-032 CityGML Public Safety Application Domain Extension (ADE) ER as an OGC Public Engineering Report.
 - Result: NOTUC
- This ER describes the results of the OGC Indoor Mapping & Navigation Pilot work to create a public safety CityGML ADE.
- The ER was discussed favorably at the Leuven TC 3DIM session:
 - https://portal.opengeospatial.org/index.php?m=projects&a=view&project_id=82&tab=2&artifact_id=84405: see *2019 Leuven 3DIM DWG meeting recording* (~54:30 mark).
 - ER download: https://portal.opengeospatial.org/files/?artifact_id=83929&version=1 .

Action



- Draft charter for MUDDI SWG (with 3DIM as a parent DWG)



“Important Things” discussion

Questions about other WG reports?



Topics



- Convince the world that metadata is important for discovery



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AIRBUS

Closing Plenary reports – no motions

113th OGC Technical Committee
Toulouse, France
Scott Simmons
21 November 2019



Sponsor

AIRBUS

3DP SWG

113th OGC Technical Committee
Toulouse, France
V. Coors, G. Gesquière
21st November 2019

The most important thing for this WG is...



3D is widely used by several (community) standards (I3S, 3DTiles, ...), but also in CDB, SLD/SE SWG, Land Infra, CityGML and discussed in Point Cloud DWG, Portrayal DWG, 3DIM DWG, Smart City DWG...

How may we manage the 3D delivery process in a common (OGC) way ?

Do we deliver features and/ or tiling ?

Agenda



- V. Jaillot, S. Servigne, G Gesquière (Univ. Lyon- LIRIS)
 - Visualisation and personalisation of multidimensional City models (15 min)
- Tamrat Belayneh (ESRI)
 - I3S OGC community standard evolution: an extendable framework for streaming massive meshes, point cloud, 3d points, BIM etc... (20 min)
- All (--)
 - Discussions (15 min)

Activity Summary



- Discussion topics

- The 2 presentations and discussions are around 3DTiles temporal extension, user-centered styling, and I3S new developments and possibilities,
- Role of conceptual and logical models and API to reach a common target

- Upcoming deliverables

- None

- Coordination (ongoing and planned)

- Ongoing discussions with Portrayal DWG, SLD/ SE, Point Cloud DWG

- Future meetings

- Next meeting : June 2020 TC meeting



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Agriculture

113th OGC Technical Committee

Toulouse, France

<Name of presenter>

21 November 2019

The most important thing for this WG is...



Agriculture domain is affected by number of standards coming from different standardization bodies. This lead to situation, that we have de facto no standards. On Agrisemantic was discussed number of semantic models, we need put different groups together to guarantee their interoperability. Similar situation is also in other domains. Agriculture DWG can play role of facilitator. Precision Agriculture Testbeds would be useful with focus on different domain.

Agenda



- Workshop dedicated to **AgriSemantic** – **November 19th, 10:15 AM – 12:00 PM (Salle Diamant)**
- **Indicative program:**
- Raul Palma (PSNC) – Talk about Linked Data involving hybrid services in agriculture (from CYBELE)
- Martin Klopfer (OGC Europe) – Semantic data sharing in DEMETER
- Daniel Martini, Katharina Albrecht (KTBL) – Towards semantic approaches in geospatial data modeling and standards: Case studies in the agricultural domain in Germany
- Karel Charvat (Plan4all) – Semantic metadata for agriculture?

Agenda



- Workshop dedicated to **Earth Observation (EO) for Agriculture Needs – November 19th, 1:00 PM – 2:30 PM (Salle Diamant)**
- Laurent Clergue (ATOS) – Potentials of the DIAS to increase the modeling of agriculture: the Mundi example
- Stephan Meißl (EOX) – EO4AGRI work in Task 3.5 (ICT support for Agri Monitoring, in particular DIAS utilization).
- Peter Baumann (Rasdaman) – OGC WCPS for Agricultural Datacube Analytics
- Raul Palma (PSNC) – Exposing ESA catalogues as Linked Data (Databio)
- Nino Pace (Space, Defence and Intelligence CGI Italy s.r.l) – ESA Food Security TEP
- Karel Charvat (Plan4all) – Yield potential for agriculture

Activity Summary



- AgriSemantic

- Two different ontologies was presented
- We need test, if we are able to translate this ontologies
- Connection of semantic data and metadata

- AgriSemantic

- We need common testbed
- Important include also other continent
- Demeter can help facilitate process

- Coordination (ongoing and planned)

- We need coordinate effort with GeoSemantic DWG
- We need organize meeting focused on other subjects like IoT

- Future meetings

- We need organize virtual meetings more often
- Probably Montreal and Munich
- For IoT we plan meeting in Munich

Activity Summary



- EO for Agriculture

- Number of platforms which could be consider as competing
- Most of them is implementing OGC standards
- Metadata important issue

- EO for Agriculture

- Number of application require more precise data, then are current open Landsat and Copernicus
- Cooperation with commercial systems is needed

- Coordination (ongoing and planned)

- EO Exploitation platform DWG
- Metadata and Catalogue DWG
- Big Data DWG
- Coverages DWG
- GEO AI DWG

- Future meetings

- For Asia and Oceania we need co chair from region
- Probably Montreal and Munich

Key activities



- AgriSemantic need regular discussion about different models
- Organize Monthly meetings including all continents is needed.
- Prepare list of existing semantic models and ontologies will be necessary
- Use Demeter for facilitating activities in Europe

Key activities



- Reflect of activities discussed on EO for Agriculture meeting in analysis of EO4Agri
- Share outputs from EO4Agri with rest of community
- Organise virtual meeting with other communities
- Invite key players for next meetings
- Communicat with activities outside of Europe
- Invite on board Commercial Satellite

Next Quarter WG Communications Plan



- DataBio is preparing book, where OGC standards will be promoted. Will be good to prepare also blog from Outputs
- Need communicate with number of new projects, which are financing
- Prepare presentation for meeting of Precision Farming Community as best possibility I ICPA conference in US next June



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Joint Aviation-UxS DWGS joint session

113th OGC Technical Committee
Toulouse, France
Hubert Lepori, Don Sullivan
21 November 2019

Agenda



- Thoughts on an interoperable geo-fence standardization effort
 - Scott Simmons, OGC
- FAA Participation in OGC Testbed-16
 - Mark Kaplun, US Federal Aviation Agency
- OGC Pilot Project on WFS Temporal Extension
 - Eduard Porosnicu, EUROCONTROL

Activity Summary



- Discussion topics
 - OGC Testbed-16
 - Candidate OGC Pilot project on WFS Temporal extension

- Upcoming deliverables

- Coordination (ongoing and planned)
 - Keep fostering synergies between UxS and Aviation DWGs

- Future meetings
 - next TC Meeting



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Compliance Interoperability & Testing Evaluation (CITE) Sub-Committee (SC) Closing Plenary Report

113th OGC Technical Committee

Toulouse, France

Chuck Heazel

21 November 2019

The most important thing for this WG is...



The Executable Test Suite for GeoTIFF 1.1 is making good progress.

Agenda



- OGC Validation Tools – Status Report (Dirk Stenger)
- GeoTIFF ETS – Status Report (Heazel)

Key activities



- Final delivery of the GeoTIFF ETS is expected in 5 months.
- Plan to release version 5.5 of TEAM Engine early next year.

We are looking for Test Leads



- A test lead is basically managing/ supporting a target test suite which requires good knowledge of specification and some technical skills.
- These are some benefits of becoming a test lead:
 - You will be recognized as an expert for target OGC standard.
 - You can advertise that you are working together with OGC.
 - You will get promotion from OGC.
 - You will be part of OGC CITE team and will get a good overview of OGC validation tools.
 - You will become a real expert for target standard as test suite covers all important aspects of specification.
 - You will become familiar with testing techniques and technologies.
 - You can bring in your own ideas.



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Coverages.DWG & WCS.SWG

113th OGC Technical Committee
Toulouse, France

Joan Maso, Peter Baumann, Stephan Meißl
21 November 2019

Agenda



- Coverages Update (P. Baumann)
- ISO 19123-1: doc draft, Japan meeting
- ISO SQL/MDA: Game Changer in Datacube Analytics (P. Baumann)
- ESIP/OGC Coverage / Grid Analytics Sprint (G. Percivall)
- Datacube Discussion Paper, in particular: Section 11 (G. Percivall?)
- T15 D016 OGC API – Images Draft (Joan Maso)
- Update of ReferenceableGridCoverage extension from 1.0.1 to 1.1 (E. Devys)
- Coverages and the OGC Web APIs (J. Maso)



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CRS Joint DWG/SWG

113th OGC Technical Committee

Toulouse, France

Keith Ryden

21 November 2019

Agenda



- Joint meeting of the CRS Domain and Standards Working Groups
 - Join the Features API SWG – Coordinate Reference Systems by Reference (30 minutes)
- CRS Agenda to start at approx. 5:00PM Local Time
 - Standard file format for the exchange of gridded geodetic data
 - Kevin M. Kelly, Esri
 - Roger Lott, IOGP



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Data Quality DWG

113th OGC Technical Committee
Toulouse, France

Joan Masó Pau, Ivana Ivánová, Matt Beare
21 November 2019

The most important thing for this WG is...



Engage with and support the ISO/TC211 revision process of
ISO 19157-1 Data Quality Pt.1: General Requirements

- Share, good and bad experience with ISO 19157 and its predecessors (ISO 19113/19114/19138)
- Highlight the relevance of related standards that have emerged in past 10 years, incl. GUF & UncertML

Agenda



- ISO 19157 Review
 - Ivana Ivánová, Curtin University
- Data Assurance Quality Standard for Municiple GeoSpatial PI Dashboard
 - Omar Al Shaiba / Nedal Al Hanbali, Dept of Urban Planning and Municipalities
- GUF/QualityML - experience with ISO 19157
 - Joan Masó Pau, CREAM
- T13 experience with ISO 19157 (*Cut short due to lack of time*)
 - Joan Masó Pau / Sam Meek, CREAM / Helyx
- Open Discussion

Activity Summary



- Discussion topics

- Entire meeting focused on ISO 19157 revision process to initiate future activity and cooperation
- From Dept of Urban Planning and Municipalities, we learned of their use of KPIs as Data Quality indicators

- Upcoming deliverables

- None

- Coordination

- DQ DWG to initiate regular telcons to share experiences and ideas relating to 19157 revision.

- Future meetings

- 9-13 Dec: ISO TC 211 Plenary
- Opportunity to learn more on approach to 19157 revision
- More details to follow on dq.wg mailing list

ISO 19157 Review



Project Leaders:

- Dr Ivana Ivánová(Standards Australia)
- Mr TorstenSvård(Swedish Standards Institute)

Timeline:

- Start – July 2019
- Committee Draft – June 2020
- Draft International Standard – June 2021
- International Standard – June 2022



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DGGS DWG

113th OGC Technical Committee
Toulouse, France
Matthew Purss
21 November 2019

The most important thing for this WG is...



Discussion and scoping of Domain topics related to DGGS including DGGS APIs, DGGS applications, the impact of Dynamic Datum's on Topic 21, DGGS Implementation Profiles and the DGGS Registry.

Agenda



- 14:45 – 14:50 – meeting open + logistics (~5 min)
- 14:50 – 15:20 – Continuation of the discussion on Dynamic Datum's and how they will interact with/affect Topic 21 (~30 min)
- 15:20 – 15:40 – The revised DGGS UML data model (~20 min)
- 15:40 – 16:00 – Discussion to begin consideration of “non-Equal Area DGGS” and what the term “non-Equal Area DGGS” should mean under the Topic 21 umbrella. (~20 min)
- 16:00 – 16:15 – Strategy discussion on how best to embed the concept of a DGGS data package into the wider OGC standards base. (~15 min)

Activity Summary



• Discussion topics

- Dynamic Datum's and DGGS – Should ISO 19170-1/Topic 21 support DGGS implementations built on a Static/Dynamic Datum or the underlying Earth Reference Model (or both)?
- The new modular UML model for DGGS that will be published in ISO 19170-1 and OGC Topic 21 – Part 1 v2.0

• Upcoming deliverables

- A position paper will be drafted and presented to the DWG during the next TC providing input from the geodetic community on the potential touch points and impacts of the new Dynamic Datum's (e.g. GDA2020) on DGGS infrastructures and the implications for either the DGGS Best Practice Guide and/or Topic 21.

• 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

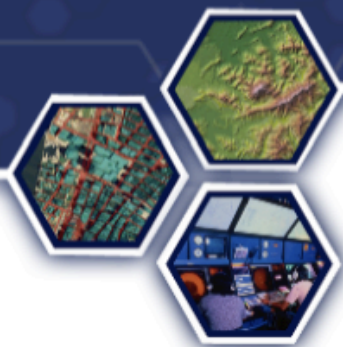
• Future meetings

- Telecon: ~15 January 2020
- Next TC: Hong Kong??? TC (March 2020)

Key activities



- DGGS APIs
- DGGS Registry
- Engagement with UN-GGIM through the Global Statistical Geospatial Framework initiative
 - DGGS was explicitly mentioned in the context of OGC-ISO-IHO collaboration by the President of IHO during the recent UN-GGIM meeting in August - [http://webtv.un.org/search/3rd-meeting-ninth-session-of-the-united-nations-committee-of-experts-on-global-geospatial-information-management-7-9-august-2019/6070431691001/?term=Ninth%20Session%20of%20the%20United%20Nations%20Committee%20of%20Experts%20on%20Global%20Geospatial%20Information%20Management%20\(7-9%20August%202019\)&cat=Meetings%252FEvents&sort=date#t=1h9m](http://webtv.un.org/search/3rd-meeting-ninth-session-of-the-united-nations-committee-of-experts-on-global-geospatial-information-management-7-9-august-2019/6070431691001/?term=Ninth%20Session%20of%20the%20United%20Nations%20Committee%20of%20Experts%20on%20Global%20Geospatial%20Information%20Management%20(7-9%20August%202019)&cat=Meetings%252FEvents&sort=date#t=1h9m)
- Engagement with the Marine community on DGGS applications through the GEBCO 2030 Project



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Environmental Data Retrieval Ad Hoc Working Group Report

113th OGC Technical Committee

Toulouse, France

Convener: Chris Little

21 November 2019

The most important thing for the EDR API ad hoc WG is...



Grow into a SWG

EDR API Ad Hoc Agenda



- Charter for e-vote now, ends Monday 25 Nov 2019
 - OGC 19-055
https://portal.opengeospatial.org/files/?artifact_id=89625&version=1
 - Later version with more Charter Members, less spelling errors
<https://github.com/opengeospatial/weather-on-the-web/blob/master/Specification/EnvironmentalDataRetrievalAPI-SWG-Charter.adoc>
- Current e-vote status
- Charter members
- Proposed Plan
- Proposed working methods
- Proposals for Chairs
- Any Other Business

EDR API Ad Hoc WG Activity Summary



- Discussion topics

- Approach to payloads needs clarifying
- Approach to metadata needs clarifying
- Need to register data patterns names:
 - point, timeseries, verticalprofile
 - polygon, tile
 - trajectory, corridor

- Upcoming deliverables

- E-vote in progress finishes Monday 25 Nov 2019
- Currently 29 Yes, 5 Abstain, 0 No
- GitHub repo, mailing list, etc

- Coordination (ongoing and planned)

- OGC API Common
- Upcoming sprints and hackathons

- Future meetings

- Telco after Vote finishes

EDR API SWG e-Vote



- Current status 2019-11-20T08:00Z:
 - 29 vote Yes
 - 5 vote Abstain
 - 0 vote No
 - 60 not yet voted
 - 94 Total
- Required Quorum 33.33%
- Quorum reached 36.17%
- Comments (2): Ensure consistency with other OGC APIs, (including Sensor Things API)
- E-Vote closes Monday 25 Nov 2019

EDR API SWG Charter Members



Name

Organization

Chris Little

UK Met Office

Steve Olson

US National Weather Service

Frédéric Guillaud

Météo-France

Dave Blodgett

US Geological Survey

Tom Kralidis

Meteorological Service of Canada

Roope Tervo

Finnish Meteorological Institute

Bruce Bannerman

Individual

Chris Lynnes

NASA

Ethan Davis

UCAR

Cristiano Lopes

ESA

Iain Burnell

DSTL

Keith Ryden

ESRI

EDR API SWG Proposed Plan



Initial APIs

- retrieve data at specified **point** location altitude time (x,y,z,t)
- retrieve a **time series** at a specified location height (x,y,z)

Additional APIs

- retrieve **vertical profile** at a specified location time (x,y,t)
- retrieve array of values across a rectangular area (**tile**)
- retrieve set of values across a **polygonal** area
- retrieve values along a specified **trajectory**, (2, 3, or 4 D)
- retrieve values within a '**corridor**', a trajectory with a surrounding buffer region along its length

EDR API SWG Proposed working



Agreed, provisional on completion of e-vote:

- Open Github & Email
- Face to Face at each OGC TC
- GoToMeeting telcos
 - Fortnightly
- Some potential editors for sections of standard
- Chairs: How many?
 - 2: one each side of Atlantic / 3: one in each major time zone
- Who?
 - Chris Little, UK Met Office - volunteered
 - Dave Blodgett, USGS – volunteered
 - ??

Next Quarter WG Communications Plan



- Press Release needed after Monday 25 Nov 2019, assuming vote successful.



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Interoperable Simulation & Gaming Closing Plenary Report

113th OGC Technical Committee

Toulouse, France

David Graham

21 November 2019

The most important thing for this WG is...



Socializing our planned ISG Summit in June 2020 at the
Montreal TC meetings

Agenda



- Introductions; Agenda; DWG Co-Chair election
- Standards, Simulation, and Game Engines,
Sebastien Loze, Epic Games
- FG3D Update Placeholder / Teaser
- Recommendation for OWT Data Model
Greg Peele
- Pre-brief on CDB Data Export
Kathy Timo, Leidos
- ASAM / Standards for Autonomous Vehicle Simulation
Michael DeKort, DACTLE
Ben Engel, ASAM
- OGC ISG Plugfest
Susan Raymie, US SOCOM
- 'outside the DWG' activities; CDB SWG, I/ITSEC

Activity Summary



- Discussion topics

- Unanimous Consent approving Lance Marrou as a new Co-Chair
- Thanks to Ron Moore for serving as a Co-Chair
- History of M&S and Geoint 'attribution' contained in Greg Peele's presentation

- Upcoming deliverables

- Development and promotion of an Agenda for an ISG Summit in June 2020 during the Montreal TC meetings

- Coordination (ongoing and planned)

- OGC ISG Plugfest

- Future meetings

- Co-chairs will poll support for a face-to-face DWG meeting in Hong Kong

Next Quarter WG Communications Plan



- Promotion of ISG DWG Summit in Montreal, June 2020
- I/ITSEC 2019, the first week of December will have relevant presentations and publications:
 - US DOD DMSCO sponsored Geospatial Panel
 - US SOCOM hosted CDB User's Group



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Met Ocean Domain Working Group Report

113th OGC Technical Committee
Toulouse, France

Chris Little, Steve Olson, Frédéric Guillaud

21 November 2019

The most important thing for Met Ocean DWG is...



An effective & successful EDR API SWG

Met Ocean DWG Agenda



Welcome, Introductions, Technology struggles [5min]

ESIP hackathon: OGC API for coverages/processing/analytics

Update on EDR API SWG progress, Chris Little, Met Office [10min]

Update on OGC API–Features–WotW Pilot, Roope Tervo, FMI [10min]

Thoughts about Environmental Data APIs, Jürgen Seib, DWD [15min]

Discussion [5 min]

UK Met Office experience with WotW, Pete Trevelyan, UKMO, [10min]

Discussion [5 min]

Weather on the Web Engineering Report, Steve Olson, Chris Little [10min]

Discussion on way forward [5 min]

EDR API Best Practice, Chris Little, Steve Olson, Frédéric Guillaud [10min]

Discussion on way forward [5 min]

Any Other Business [0 min]

Met Ocean DWG Activity Summary



- Discussion topics

- Thoughts about Environmental Data APIs, Jürgen Seib, DWD: Dataset metadata vs Data pattern query metadata
- Definition of a (homogeneous) Collection

- Upcoming deliverables

- WotW API ER, review by Met Ocean DWG, then TC (2020-03)
- EDR API SWG Charter (2019-11-25)

- Coordination (ongoing and planned)

- WFS SWG: API – Features
- OWS Common: API – Core/Common
- W3C SDW IG
- WMO

- Future meetings

- Fortnightly GoToMeeting telcos
- OGC TC 114 Hong Kong

Key activities



1. Weather on the Web Engineering report
 2. Environmental Data Retrieval API SWG **and standards**
 3. EDR API Best Practice / Guide for Met Ocean domain
- First Draft WotW API ER 2019-12
 - OGC TC Approve release of WotW API ER 2020-03
 - **First draft EDR API (Points, Time series) for 2020-03**
 - First Draft EDR API BP/G 2020-06 – separate Github repo
 - **Approval EDR API (Points, Time series) for 2020-06**
 - **First draft EDR API (other data patterns) for 2020-06**
 - Second draft EDR API BP/Guide for 2020-09

Next Quarter WG Communications Plan



- Just crack on with the work!



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OGC Naming Authority SC

113th OGC Technical Committee
Toulouse, France
Gobe Hobona
21 November 2019

The most important thing for this WG is...



The Open Source Geospatial Foundation (OSGeo) is establishing a Lexicon Committee and initiative. The OGC-NA will monitor the initiative and look for ways to interoperate with the OSGeo lexicon server.

Agenda



- OGC-NA Policy Updates
 - Gobe Hobona (OGC)
- OGC Definitions Server: Beta to Live status
 - Rob Atkinson (Metalinkage/OGC)
- OSGeo engagement
 - Cameron Shorter, Ronald Tse, Reese Plews (Open Source Geospatial Foundation)
- OGC Body of Knowledge - Version 0.1 - Discussion Paper
 - Gobe Hobona (OGC)
- The Construction of Thesauri – The Case of CaLAThe
 - Erik Stubkjær , Volkan Cagdas, Hans-Christoph Gruler (Aalborg University / Yildiz Technical University / Leica Geosystems)
- ISO 19170 and DGGS namespaces
 - Robert Gibb (Landcare Research NZ)

Activity Summary



- Discussion topics

- A roadmap for updating OGC-NA policies in 2020
- Enhancements and status of the OGC Definitions Server
- OSGeo Lexicon Committee and initiative
- Cadastral & Land Admin thesaurus (CaLAThe)
- Spec Element URIs for ISO 19170-1 and DGGS

- Coordination (ongoing and planned)

- LandInfra DWG
- DGGS SWG
- OSGeo

- Upcoming deliverables

- An OGC-NA vote on ISO 19170-1/DGGSv2 URIs (to start after the DGGS SWG approves proposal)

- Future meetings

- Next TC Meeting

Key Activities



- The Cadastral & Land Administration Thesaurus (CaLAThe) is currently being incubated within the OGC-NA Github repository (<http://github.com/opengeospatial/NamingAuthority>).

Action



- OGC-NA Chair to request the CRS DWG to review the Name Type Specification - CRS [OGC 11-135r1] Best Practice prior to its updating to an OGC Policy.
- To copy in Keith Ryden (Chair, CRS DWG)



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Point Cloud DWG Report to the TC

113th OGC Technical Committee
Toulouse, France
Stan Tillman, Hexagon
21 November 2019

The most important thing for this WG is...



How we should move forward in standardizing point cloud data exchange.

Agenda



- LIDAR Technology in City Planning and Assessment
 - Adnan Sharaf, Al Ain Municipality Abu Dhabi Emirate
- HistSFC: Optimization for nD Massive Points Querying
 - Haicheng Liu, TU Delft
- Standardizing Point Cloud Data Transfers
 - Stan Tillman, Hexagon

Activity Summary



- Discussion topics

- LIDAR Technology in City Planning and Assessment
- HistSFC: Optimization for nD Massive Points Querying
- Standardizing Point Cloud Data Transfers

- Upcoming deliverables

- Extension of I3S Community Standard will be going forward for a vote soon

- Coordination (ongoing and planned)

- N/A

- Future meetings

- Next face to face meeting in Hong Kong
- May use teleconferences to better iron out what is needed (based on various context) to standardize point cloud transfers.

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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Spatial Data on the Web Interest Group

113th OGC Technical Committee

Toulouse, France

Linda van den Brink

21 November 2019

The most important thing for this WG is...



Re-chartering

Agenda



- See [online agenda](#)
- There are also [online minutes](#) of the entire meeting.

Activity Summary



- Discussion topics

- New charter
- SSN extensions
- Discussion with Linked Building Data Community Group

- Upcoming deliverables

- Draft charter
- Working draft of SSN extensions

- Coordination (ongoing and planned)

- Informal coordination with linked building data community group

- Future meetings

- Undecided, but probably 1 at one of the OGC meetings in 2020, 1 at W3C meeting, October 2020, Vancouver



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Transportation ad-hoc with W3C

113th OGC Technical Committee
Toulouse, France
George Percivall
21 November 2019

The most important thing for this WG is...



Identifying potential roles for OGC in the surface
Transportation domain e.g., High Definition Maps for CAVs

Transportation ad-hoc with W3C



- W3C Transportation Data - Ted Guild, W3C
- Vehicle Information Service Specification (VISS) - Eurecom and BMW
- OGC Route ontology and encoding - Clemens Portele
- Discussion – What geo standards coordination and development are needed?
 - Tech Trend: HD Maps for CAVs – George Percivall
 - US DOT contribution - Ed Strocko

Activity Summary



- Discussion topics

- What geo standards coordination and development are needed?
- NDS, ISO 8604, OpenDrive, FIA Foundation
- Convergence of Auto, Geo and Web
- Information sharing: for safety,

- Upcoming deliverables

- Provide draft Route Ontology to W3C Transptoration
- Roadmap for HD Maps for CAVs

- Coordination (ongoing and planned)

- coordinated with SDWIG








- Future meetings

- Face to face with W3C in 2020,

Roadmap for HD Geo Maps for CAVs

Wed Nov 20 2019

Draft

Market and Policy	 Autonomy Levels Definitions	TBD	Connected Autonomous Vehicle (CAVs) Safety approaches the level of Aviation	a) Why do we need to act
Application	 W3C Transportation Data  ISO TC 204  CDB  3DTiles and I3S	<div>Navigation and Traveler Info</div> <div>Autonomous Control</div> <div>Autonomous Training</div>	TBD	b) What should we do?
Technology	 Modeling and Simulation 	Machine Learning 5G Cellular TBD	Interoperability Testing Open Standards	c) How can we do it?

2. Where are we now?

3. How do we get there?

1. Where do we want to go?

LEGEND:



Technology Enabler



Market/Policy Stimulus



Enabling Standard



Application Achievement



Dependency

Next Quarter WG Communications Plan



- Coordinate with W3C (Ted Guild) including SDWIG about coordination activities in 2020