3D Geospatial M&S Strategy session
13 April 2017
Orlando, Florida
Hosted by ARA Virtual Heroes Division

Attending

Holly Black, CACI
Kevin Backe, USACE AGC*
Myron Brown, APL*
Steve Dodd, SOCOM
Ryan Gauthier, Trideum*
David Graham, OGC
Paul Foley, KadSci*
Glen Johnson, Visual Awareness Technologies (VATC)
Earl Laamanen, Terrasim
Mike Lokuta, CAE*
Jeff Lyons, ARA
Dan Maxwell, kadSci and USGIF M&S WG
Earl Miller, SOCOM
Ron Moore, Leidos
Mark Reichardt, OGC
Adam Morgan, ?*
Dave O'Mahoney, Compusult*
Glen Quesenberry, Strategic Alliance Consulting*
Roy Rathburn, NGA*
Susan Raymie, SOCOM*
Carl Reed, Consultant*
William Reese, PEO-STRI
Sara Saeedi, University of Calgary*

*Joined remotely by GoToMeeting

Discussion

Welcome and Introduction

See presentation: https://portal.opengeospatial.org/files/?artifact_id=73703

Reichardt and Lyons welcomed the group, invited attendees to make short introductions, and provided desired goals / outcomes for the day:

- Continue dialog on progressing higher order interoperability for the community
- Establish a persistent platform for stakeholders and SDOs to identify and better coordinate standards and best practice work going forward
- Describe a Common Vision

- Affirm stakeholders
- Commit to development of a White Paper to inventory major efforts, document current interoperability state, articulate interoperability vision
- Prepare a Road map of activities, milestones to bootstrap process
- Gain commitment to continue a broad M&S community process to drive interoperability forward

Reichardt provided a summary of the observations and outcomes of the 2016 3D Geospatial M&S Summit held in Orlando in conjunction the September 2016 OGC Technical Committee meetings:

- There was agreement on the utility and need for a broader application of standards across the M&S community.
- The concept of a "model of the world" was generally accepted by the group, with admission that achieving such a goal will be a major challenge for the community.
- We must respect different tools and solutions that support M&S, and advance a standards architecture that supports CDB, SECCORE and other tools as part of a "higher order" interoperability framework.
- Seek dialog with Operation Blended Warrior program to support new area terrain generation for OBW 2017
- Establish formal partnerships between leading Standards Development Organizations to improve coordination and reduce duplication of effort

Work prior to the 2016 Summit was discussed, including the planning and conduct of a USGIF M&S Working Group to address interoperability needs, and the GEOINT M&S Demonstration conducted in 2013 to demonstrate standards based interoperability within the M&S environment and with geospatial source ingest as well as interoperation with command and control geospatial platforms and industry GIS.

Attendee Discussion Points:

Joint Staff J-7 and SOCOM are using CDB. SOCOM expressed concern that the evolution / advancement of the Standard be accomplished with careful consideration of the potential burden on current users – Maintain backward compatibility to prevent large expense to big data owners / developers.

Attendees indicated that It is important that CDB start to consider / integrate / become compatible with other OGC Standards. This is especially important in the areas where CDB is currently limited to the use of proprietary formats which have been documented as informative references to the standard (Best Practice).

Several attendees agreed to help assist in developing a white paper to capture our understanding and description of the current state of interoperability, our vision for higher order interoperability, and key next steps / roadmap. ***Action to: Johnson, Lyons, Maxwell, Moore, Quesenberry and Reichardt to scope and draft an initial white paper.***

Regarding the interest in contributing to OBW 2017, the group agreed that participation in this effort, specifically demonstrating data generation, management and distribution via open standards is not feasible for 2017, however we should look to 2018 as our next possible point of support.

SE CORE and CDB Update Presentations

For detailed information, see presentation slide sets available at:

SE CORE Presentation (Moore): To be provided. SE CORE presentation delivered at the meeting had not yet been approved for public access, so public posting will occur upon receiving approval for release.

CDB Presentation (Graham): https://portal.opengeospatial.org/files/?artifact_id=73709

SE CORE:

Moore on behalf of PEO-STRI provided a detailed presentation on the SE CORE mission, architecture, end to end production process overview, data ingest and distribution types, and current and future standards applied.

SE CORE supports a range customers with over 57 specific formats to support a range of users and systems. The time to produce a product ranges anywhere from 1 – 12 months depending on the AOR and data requirements. SE CORE ingests over 100 different data sources to support product generation.

CDB:

Graham provided an update on the CDB standard, including status of its October 2016 approval as an OGC standard, and goals for future revisions. This initial version of CDB is fully compatible with the version now in use across the community, includes a conceptual model, and is segmented in to normative (standard) and best practice (informative) documents to improve maintainability.

While there were initial doubts among OGC members regarding the appropriateness of advancing CDB as an OGC standard, as understanding grew, members began to see the relevance and value. Membership has also grown to expand the number of organizations representing the M&S sector.

A number of follow on efforts are underway within the OGC CDB SWG, including a CDB 1.0 compliance test suite, a RESTful API to CDB 1.0, and work to profile CDB and to establish a revision of CDB to include greater compatibility with other OGC and complementary standards such as OGC GeoPackage, OGC CityGML, ISO Metadata, Feature Data Dictionary and NGA Application Schema / DGIWG profiles. (for more detail see CDB slide set).

Graham also summarized the CDB work underway in OGC's current Testbed 13 to include work on data models, delivery of CDB as OGC web services, with focus on making M&S data available to an analyst for evaluation and decision making. Also included is work to profile CDB to support an urban military operation related to a humanitarian response scenario. Profiles of an area captured in CDB and CityGML will be compared. Issues being worked to make unclassified CDB 3D model data available to the international team of participants supporting the testbed. Engineering Reports emerging from the Testbed process will be delivered to the consensus standards process for action.

Graham provided a short demonstration on CDB runtime capabilities. See the video at http://youtu.be/zxzPAcP6Ygo. He also provided a demonstration of CDB as a cloud service with versioning capability to allow users and their web services to make changes to the simulation to support a range of capabilities. This latter demonstration was based on a J7 Terrain Generation Service (TGS) capability showing multiple levels of resolution and level of detail, and multiple data types on the cloud with performance in 2D and 3D.

OGC Program and Standards Update (Reichardt)

See presentation at: https://portal.opengeospatial.org/files/?artifact_id=73706

Reichardt provided an update of adopted OGC standards, along with current program activities of potential relevance to M&S interoperability. Covered were the OGC web services standards suite, OGC Sensor Web Enablement and IoT SensorThings standard, and standards in support of urban modeling – CityGML, IndoorGML, InfraGML, GeoPackage and 3D streaming candidate standards. Reichardt also summarized the focus of OGC's current Innovation Program Testbed 13 initiative, which includes emphasis on CDB as described above, as well as focus on interoperability for Big Data processing, Semantic mediation, 3D streaming, cloud processing, denied or limited access operations and other areas.

Reichardt mentioned that many of OGC's Domain Working Groups are open to both OGC members and non-members, and it would be good to engage organizational representatives from the M&S community in relevant WGs. The CDB Standards Working Group, as with all other OGC Standards Working Groups are limited to OGC members.

Joint SDO Coordination on M&S Topics

Graham provided a brief overview of the history and present status of the SISO organization. He also provided update on the status of an OGC / SISO MOU that would provide both organizations the opportunity to coordinate more closely on activities of mutual interest. The MOU should be signed soon, and will provide limited access for OGC and SISO representatives to directly participate as members of each other's organization.

Graham noted that SISO and OGC operate very differently and have different membership base. SISO is largely driven by individual members with underwriting from DMSCO and some corporate sponsorship. OGC is largely resourced and represented by its organizational membership of industry, government, research and academic institutions. Once the MOU is approved, OGC and SISO will need to orchestrate supporting meetings of each organization.

Reichardt noted that other standards organizations such as Web3D and the Khronos Group ought to be brought in to the discussion. Attendees had no objection. ***Reichardt took an action to approach Web3D and Khronos.***

Open Discussion

The following topics were raised by attendees for further action:

Versioning of CDB – backwards compatibility, how to assure coordination with representatives outside the OGC. Reichardt noted that OGC has a public change request process, as has open Domain Working Groups where non-members can submit requirements and participate.

Focus on alignment of CDB and other M&S tools to benefit from OGC and complementary standards to support ingest, processing, and distribution. Which of the adopted open geospatial standards have the greater near term impact / benefit for the M&S community? GeoPackage, Web Processing Service, CityGML, 3D streaming, tiling etc. Develop a prioritized list to help with development of our roadmap for potential standards integration / adoption.

Need to look beyond the M&S environment – look at how the M&S environment will complement and interface with other operational elements, and the standards implications to make this happen

Formal connection with other SDO's to coordinate our vision and high level architecture, and streamline our work. SISO, Khronos/Collada, Web3D are near term goals as mentioned earlier. Consider the NIEM (National Information Exchange Model) Program Office as another potential standards activity to connect with. OGC has experience with this standard which has been implemented in the US and other nations to support messaging between public safety, law enforcement and defense organizations.

What form / organization will this group take? Will we form a formal committee, organization? Reichardt suggested that this process should be able to go forward by leveraging the existing mechanisms – working groups etc. of OGC, SISO and others. He recommended that we leverage these before trying to create anything new. Working collaboratively across SDOs is something OGC and other SDOs have experience with.

Consider leveraging testbeds, pilots and experiments as a mechanism to test, validate and demonstrate the efficacy and benefits of introducing new standards

Operation Blended Warrior –

- Consider serving up data via OGC web services as a significant element of the initiative
- May be too late for OBW this year. However, based on feedback from the OBW 2017 Kick off meeting (mid-April), determine if we can help with geospatial interoperability. ***Attendees of that meeting took action to report back to this group***
- Look to OBW 2018 (AF lead) as a target to align our interests in a more comprehensive way. OBW 2017 seems too far along for us to be of help.

How can the standards community help to address key resource issues in the M&S process like conflation? it was noted that manual conflation is one of the major resource burdens. ***Reichardt took action to provide the group with more information on OGC WPS.***

Investigate GRiD Geospatial Repository and Data (GriD) Management System (see lidar.io)– the hosting of raster point clouds, LIDAR. This capability apparently uses OGC standards and may be of value to our roadmapping process. ***Reichardt to check with Point Cloud Domain Working Group to see if they have knowledge of this activity.***

Connect this group with relevant OGC working groups of relevance to M&S, and for things other than "dirt" like weather.

Dodd had the following questions / comments for discussion:

1. SOCOM's ISP has a relatively new GPKG capability which presents an opportunity for testing interoperability with IndoorGML.
2. Are there any commercially available products capable of translating between ISP GPKG and CDB 1.0?
3. Are there any automated CDB builders? If so, what source data do they operate on?
4. Is there any ongoing work intended to address the GPKG issues identified at the GPKG forum in St. Petersburg, FL this past January?

Action: Reichardt to relay Q4 to GeoPackage SWG chair to provide a response

Action: Graham to bring items 1-3 for discussion with members of the OGC CDB SWG

Roadmap Discussion

See Roadmap at: https://portal.opengeospatial.org/files/?artifact_id=73707

Reichardt and Maxwell facilitated discussion on a draft roadmap to guide the group for the balance of 2017.

A key near term objective will be to draft a white paper to capture our understanding and description of the current state of interoperability, our vision for higher order interoperability, and key next steps / roadmap. This should be drafted by the end of May 2017 to allow discussion at the GEOINT conference in San Antonio. ***Action to: Johnson, Lyons, Maxwell, Moore, Quesenberry and Reichardt to scope and draft an initial white paper.***

The group identified a series of potential working meetings to be convened as follows to maintain momentum of the group:

- GEOINT 2017 (San Antonio) – Maxwell discussed the plan to convene the USGIF M&S working group at GEOINT to discuss draft white paper and roadmap, and to entertain several M&S related presentations, 6 June 2017, 0800-0900. There will be three presentations:
    - Joint SE CORE / ATSD Presentation on Army Research Program
    - Bentley Technologies on their sensing / geospatial data capabilities
    - OGC – Update on this M&S initiative
- OGC Technical Committee meeting (St. Johns, Newfoundland
    - Report back to OGC members on white paper and GEOINT 2017
- Joint virtual meeting - SISO Simulation Innovation Workshop (Orlando) / OGC Technical Committee Meeting (Southampton, UK)
- I/ITSEC 2017 (Orlando)
    - Convene 3D Geospatial M&S Summit II (Earl Miller SOCOM has offered to use his I/ITSEC meeting room space).
    - Finalize white paper, identify interoperability initiatives for 2018

On the topic of Interoperability Initiatives (Testbeds, Pilots, Experiments), Rathburn commented that there is interest in moving forward with requirements for the next OGC testbed focused on a "3D spatial information infrastructure". This would be a jointly resourced set of requirements between NGA and other M&S organizations. The group agreed that an assessment of various interoperability initiatives should be undertaking in conjunction with the prioritization of standards to be assessed.

Operation Blended Warrior (OBW) was discussed as a possible interoperability initiative for 2018, with recommendation from Graham that sponsorship, possibly from both US and international organizations would help encourage organizations to play as the work is resource intensive.

Reichardt noted that a meeting summary will be posted to the wiki along with presentations from today. In addition, he'll be emailing attendees from the meeting today along with attendees from the September 2016 3D Geospatial M&S Summit to ask them if they wish to continue with this group. From responses, we'll establish a working email reflector.