ARMY GEOSPATIAL CENTER

ENABLING GEOSPATIAL INFORMATION DOMINANCE

Overview and Sprint Goals for the DGIWG and NSG profiles

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Agenda

- National System for Geospatial-Intelligence (NSG)
- DGIWG; Defense Geospatial Information Working Group
- DGIWG; Technical Panels and Standards
- Geospatial Standards Flow for UAP (Generalization)
- Proposed Standards for this Sprint
- Common Threads/Concerns between the NSG and DGIWG
- NSG Unique Tiled Vector Data (Vector Tiles)
- Proposed Standards for this Sprint

National System for Geospatial-Intelligence (NSG)

- The NSG is the combination of technology, policies, capabilities, doctrine, activities, people, data, and communities necessary to produce geospatial intelligence in an integrated multi-intelligence, multi-domain environment.

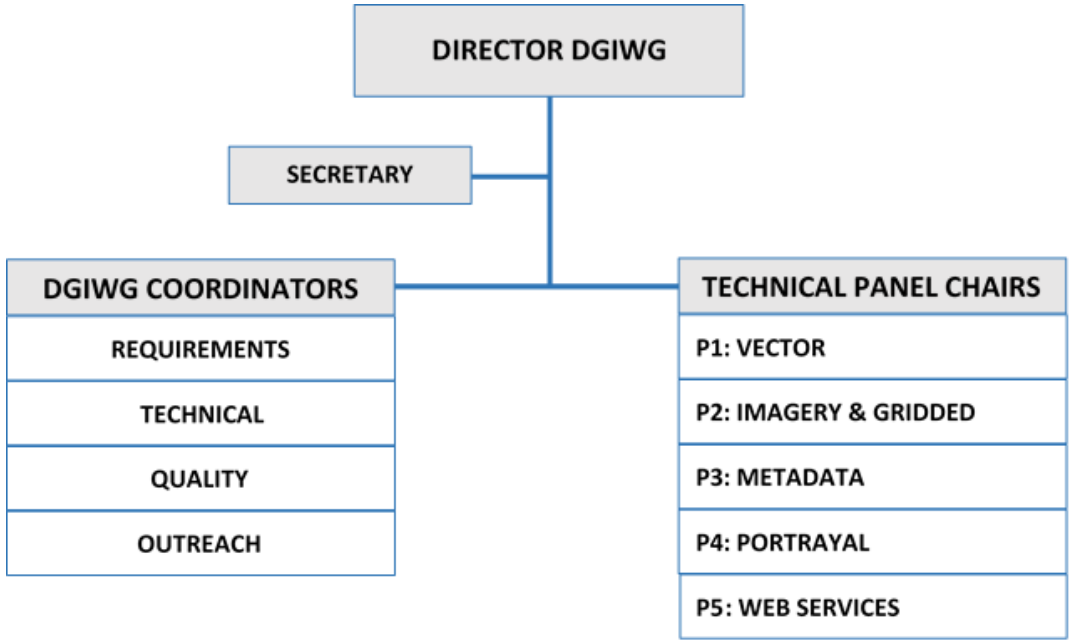
- The Direction of the National Geospatial-Intelligence Agency (NGA) is the lead for the NSG.

    - Title 50, USC § 403–5(b) levies requirements on NGA for prescribing

  technical architecture and **standards** related to imagery intelligence and
  geospatial information and ensuring compliance.

- NGA is both the US lead for the NSG but is also part of the larger Allied System for Geospatial Intelligence (ASG), which includes Canada, the United Kingdom, Australia, and New Zealand.

DGIWG
Defense Geospatial Information Working Group



"DGIWG [Defence Geospatial Information Working Group] is the multi-national body established by a memorandum of understanding between the defence organisations of respective nations. **Its main objective is to provide strategic guidance and recommendations to its membership on the standardisation of geospatial data, products, and services.** It supports the requirements of NATO and the other alliances that members participate in, including UN sanctioned peacekeeping. The requirements have been identified to address a specific set of operational scenarios." – *Source: https://www.dgiwg.org/*

DGIWG
Technical Panels and Standards

P1
Vector

- Profile of ISO 19131 - Geographic Information - Data product specification
- Defence Geospatial Information Framework (DGIF) - Overview
- Defence Geospatial Information Model (DGIM)
- Defence Geospatial Feature Concept Dictionary (DGFCD) Description and Content
- Defence Geospatial Real World Object Index (DGRWI)
- Defence Topographic Exchange (DTOX) Data Product Specification (DPS)
- International Program for Human Geography (IPHG) Data Product Specification (DPS)
- Cross Panel Collaboration
  - DTM 50*

P2
Imagery and Gridded

- DGIWG Profile of JPEG 2000 for Georeferenced and Referenceable Imagery
- DGIWG Profile of JPEG 2000 for Georeferenced Imagery
- Elevation Surface Model (ESM) Standardized Profile
- Elevation Surface Model (ESM): GML Application Schema
- Elevation Surface Model (ESM) - Encoding Rules - Part 1: Core
- Elevation Surface Model (ESM) - Encoding Rules - Part 2: GeoTIFF
- Elevation Surface Model (ESM) - Encoding Rules - Part 3: GMLJP2
- Elevation Surface Model (ESM) - Encoding Rules - Part 4: NATO Secondary Image Format (NSIF)
- Defence Gridded Elevation Data (DGED) Product Implementation Profile
- Defence Raster Product (DRP) Implementation Profile
- Defence Orthoimagery Product (DOP) Implementation Profile
- DGIWG 2D Spatial Schema Profile
- GeoTIFF Profile for Georeferenced Imagery

P3
Metadata

- Digital Geographic Information Exchange Standard (DIGEST) Metadata Profile of ISO 19115 and ISO 19139
- DGIWG Metadata Foundation
- DGIWG 262 MUVD Metadata Specification Ed1

P4
Portrayal

- Portrayal Registry Service Interface Specification
- Portrayal Standard for Multinational Geospatial Co-production (MGCP) Data
- Web Symbology
- Colour Specification*
- Symbology Encoding Guide*
- Cross Panel Collaboration
  - DTM 50*

P5
Web Services

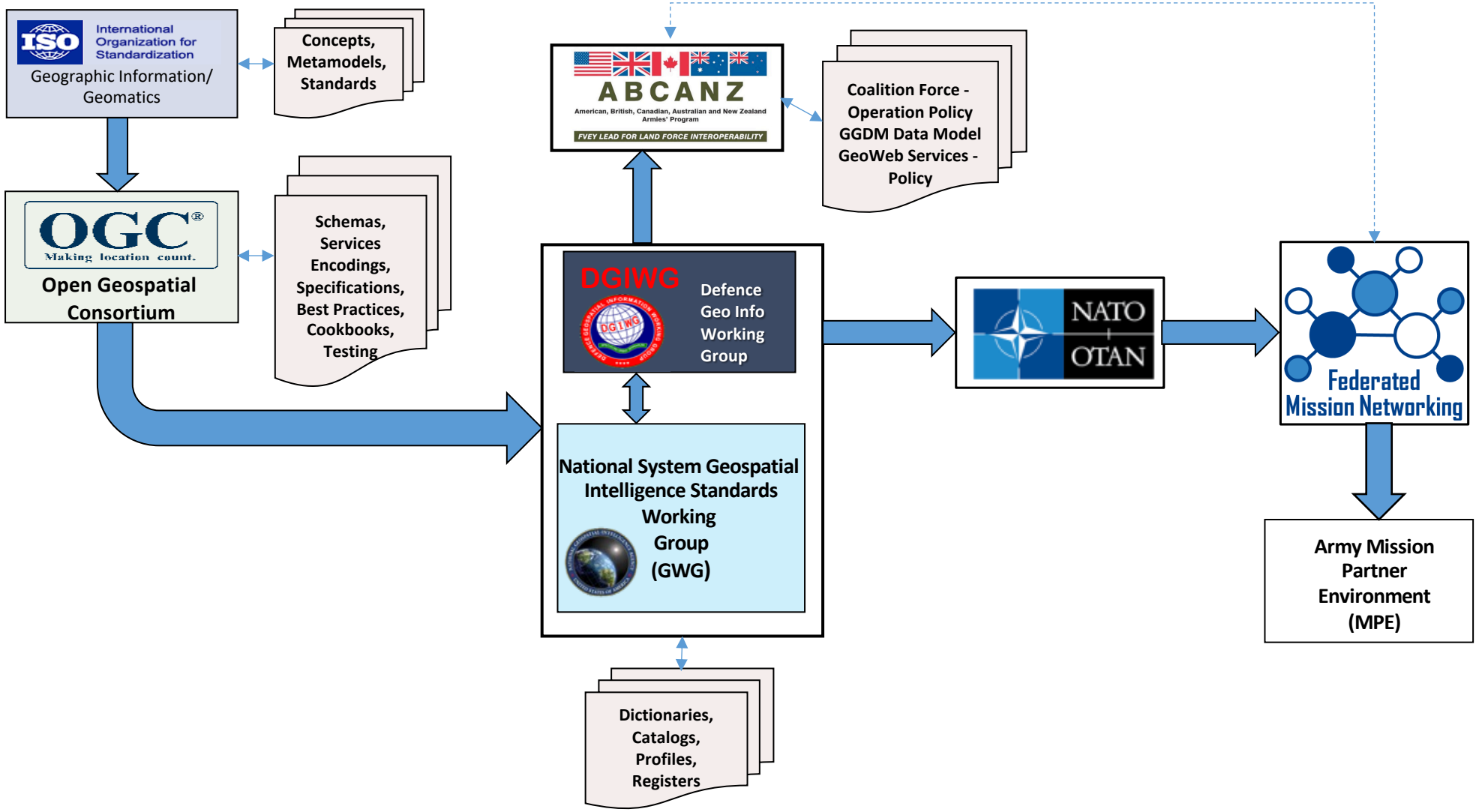
- DGIWG 2D Spatial Schema Profile
- Defence Profile of OGC Web Map Service 1.3 Revision
- DGIWG Profiles of ISO 19107 and GML Realization
- Defence Profile of OGC Web Coverage Service 2.0
- Defence Profile of OGC Web Feature Service 2.0
- Defence Profile of OGC Web Map Tile Service 1.0
- Defence Profile of OGC Catalogue Service for the Web 2.0
- Defence Geospatial Information Framework Encoding Specification - Part 1: GML

Many Standards are Cross Panel Collaborative Efforts

* - Denotes Pre-publication

Brown Text - Denotes Standards slated to be retired

Geospatial Standards Flow for UAP (Generalized)



Common Threads/Concerns Between the NSG and DGIWG

- Coordinate Reference Systems/Projections:
  - World Mercator Projection - “EPSG::3395”
  - UPS projection over WGS84 (north zone) - “EPSG::5041”
  - UPS projection over WGS84 (south zone) - “EPSG::5042”

- How does data flow between connected and unconnected systems?

- How to handle large amounts of data and how to incrementally update tiles?

- How best to adopt OGC API Standards without breaking things?

- General Considerations for Implementations:
  - An API is a layered system, what else is needed? A load balancer?
  - The amount of traffic expected between systems; explore the need/performance of caching mechanisms. Questions that may need to be asked is which component should control the caching, what to cache, who can cache and for how long is the data valid?
  - Security considerations: Authorization and Authentication. OGC has not decided on how to handle this with APIs and they may generate a white paper on it.
  - How should the backend data be structured and stored to ensure maximum efficiencies in the update of the API and the APP?

NSG Unique Tiled Vector Data (Vector Tiles)

- Current Standard: **Vector Tile Interoperability Standard (VTIS) Volume 1: Network Services 24 April 2020**

- Future:
  - National System for Geospatial-Intelligence (NSG) Vector Tile Interoperability Standard (VTIS) Volume 1: Basemap Tile Services (BTS)
  - National System for Geospatial-Intelligence (NSG) Vector Tile Interoperability Standard (VTIS) Volume 2: Basemap Tile Packages (BTP)
  - National System for Geospatial-Intelligence (NSG) Vector Tile Interoperability Standard (VTIS) Volume 3: Basemap Tile Dynamic Styling (BTDS)

Proposed Standards for this Sprint

- OGC API - Tiles defines building blocks for creating Web APIs that support the retrieval of geospatial information as tiles.
- OGC API - Maps describes an API that can serve spatially referenced and dynamically rendered electronic maps.
- Changesets API that is based on Testbed-15 outcomes and provides the foundation for a 'Transactional Tiles API Extension' for OGC API – Tiles.
- Vector Tiles Extension to GeoPackage that describes a prototype extension of the OGC GeoPackage Standard to support the use of vector tiles technology
- Variable Width Tile Matrix is a grid suited for the whole globe, that keeps the data in a geographic coordinate reference system.
- OGC Web Map Tile Service (WMTS) defines a web service that can serve map tiles of spatially referenced data using tile images with predefined content, extent, and resolution. Developers of implementations of the OGC WMTS Standard, DGIWG WMTS profile, and the NSG WMTS profile are encouraged to attend.

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Questions???