UCS Architecture

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UCS Architecture

UAS Control Segment (UCS) Architecture

- OUSD(AT&L) ADM for DoD UAS Groups 2-5, February 2009.
- OUSD(AT&L) funded development through April 2015.
- Public Release of R3.4

Emerging as DoD information architecture for controlling Robotic and Autonomous Systems (RAS) in all domains

- Currently managed by SAE AS-4 (Unmanned Systems). Portfolio now includes both JAUS and UCS Architecture.
- Extended by Navy for surface and subsurface RAS (UCS-M).
- NAMC extension for small UAS, ground vehicles, and unattended sensors (soldier/marine common controller).

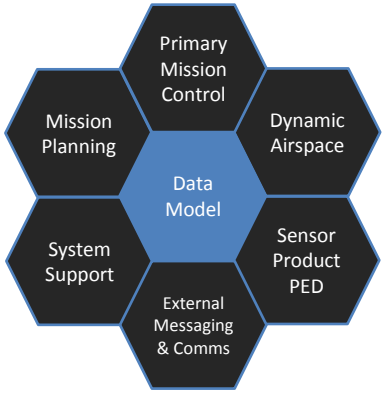
Why is UCS different?

Conceptual Interoperability - *how things relate*

UCS provides a comprehensive **Conceptual Data Model (CDM)** of the resources in the RAS domain and their objectives, missions/tasks, data products, and environment. ***All information architectures must interact with the same real-world objects. This is how SoS integration becomes possible.***

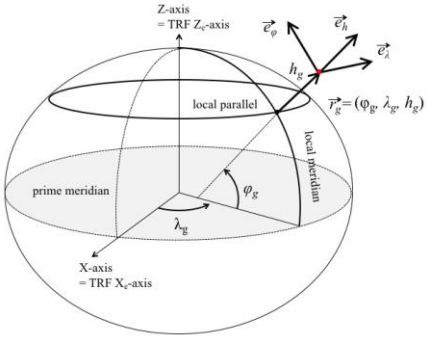
Pragmatic Interoperability – *accessing capabilities*

UCS defines a **Service Oriented Architecture (SOA),** which exposes RAS the capabilities via message exchanges. ***Exchanged messages project to the CDM and therefore are conceptually related. The SOA ties these messages to real-world effects/actions***



Semantic Interoperability - *messages/data*

UCS provides an extensive **Logical Data Model (LDM),** which defines how the state values in message exchanges (e.g. vehicle position) are to be interpreted within a particular system. ***The LDM provides a machine-readable definition of state information and any required conversions between systems.***



UCS roadmap under SAE

Plan for AS6512 Rev A, end FY17

Information Architecture
Platform Independent Model

Strategy: extend UAS into multi-domain RAS.

Strategy: Add autonomy services

Common, Air | Maritime | Ground

Data Model

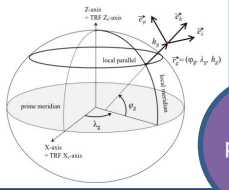
SOA

- Primary Mission Control
- Mission Planning
- Sensor Product PED
- Situation Awareness
- System Support
- External Messaging & Comms

Service Interfaces, Messages

Strategy: Joint SAE and Open Group (FACE) standard

Data Model Framework
& Data Dictionary



NAVAIR policy to adopt

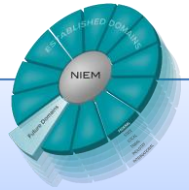
Army policy to adopt

Strategy: Leverage NAMC CCA.

Software PLA Support

Software Registries, Repositories

Ext. C2/COP Support



UCS Domain in NIEM MilOps

Strategy: Partner with Joint Staff J6