Open Standards for Aviation Information and Services

AIXM/WXXM Conference - 4 May 2010

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Open Standards for Aviation Information and Services

- Themes
  - Applying international standards for the success of NextGen and SESAR
  - Standards and best practices developed from government requirements and industry capabilities
  - OGC activities in aviation standards

- Outline
  - Enterprise Objectives
  - Service Oriented Architecture
  - Information Communities

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Enterprise Objectives:
Network-enabled Aviation-Information

- "Move away from the proliferation of unique, point-to-point application interfaces."
  - Internet Protocol everywhere – Services
  - From discrete physical databases to Information Communities

- NextGen Transformational Programs,
  - System Wide Information Management (SWIM)
    - Flexibility to provide information to new systems and locations without adding custom interfaces
  - Network Enabled Weather (NNEW)
    - Develop standards necessary to support universal access to needed weather information

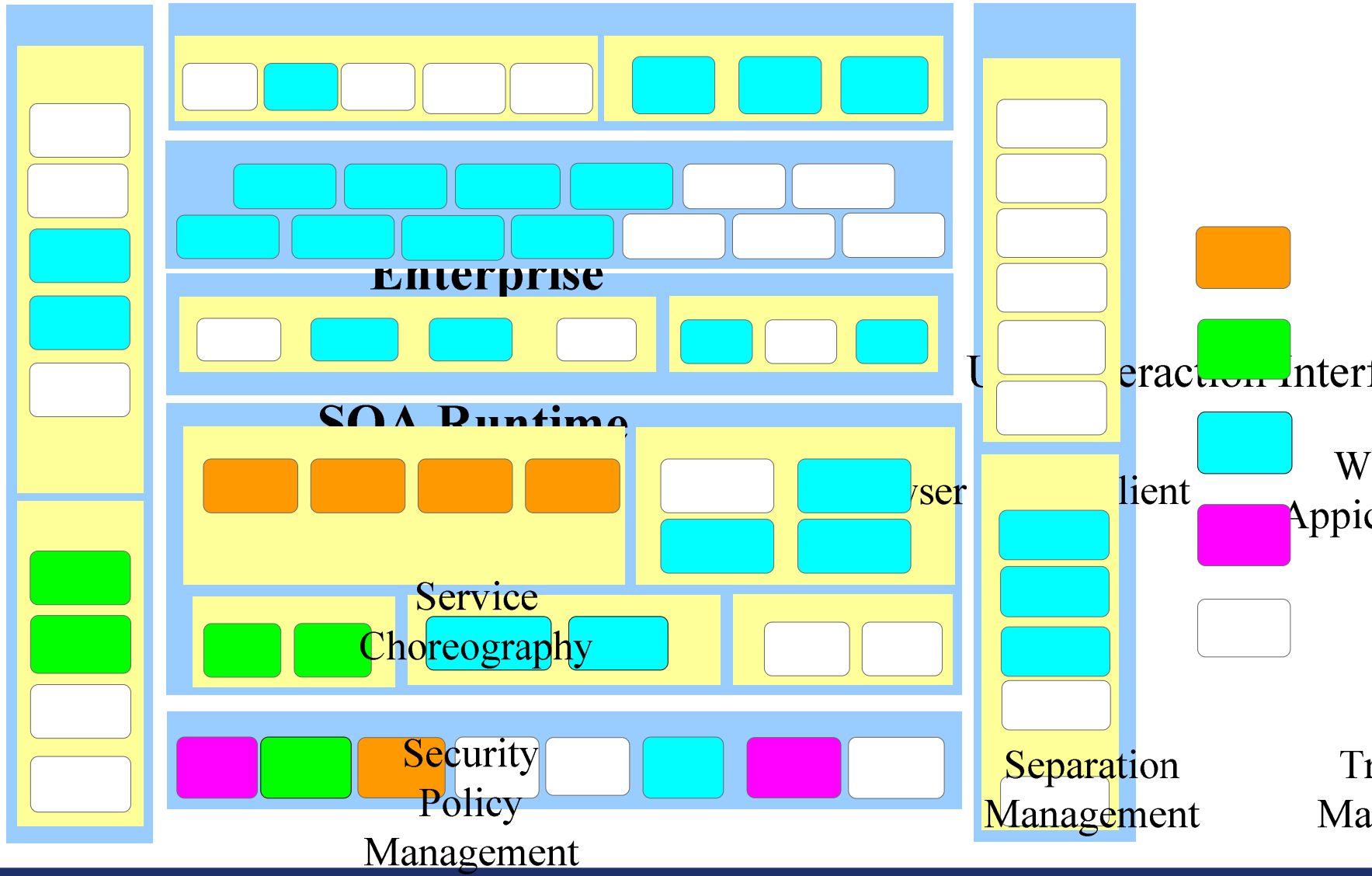
Why Open Standards?

- Rapidly mobilize new capabilities – plug and play
- Lower systems costs
- Encourage market competition
  - Choose based on functionality desired
  - Avoid “lock in” to a proprietary architecture
- Decisions to share information become policy decisions
  - Technology as enabler, not a roadblock

SWIM Concept

- Migrate the National Airspace System (NAS) to a service oriented architecture
  - Facilitate ease of establishing interfaces between computing and information systems
- Get the “right information to the right place at the right time”: Net Centricity
  - Facilitate Shared Situational Awareness
  - Facilitate Collaborative Decision Making
- Establish governance over information management

SWIM Segment 1 – System Functionality

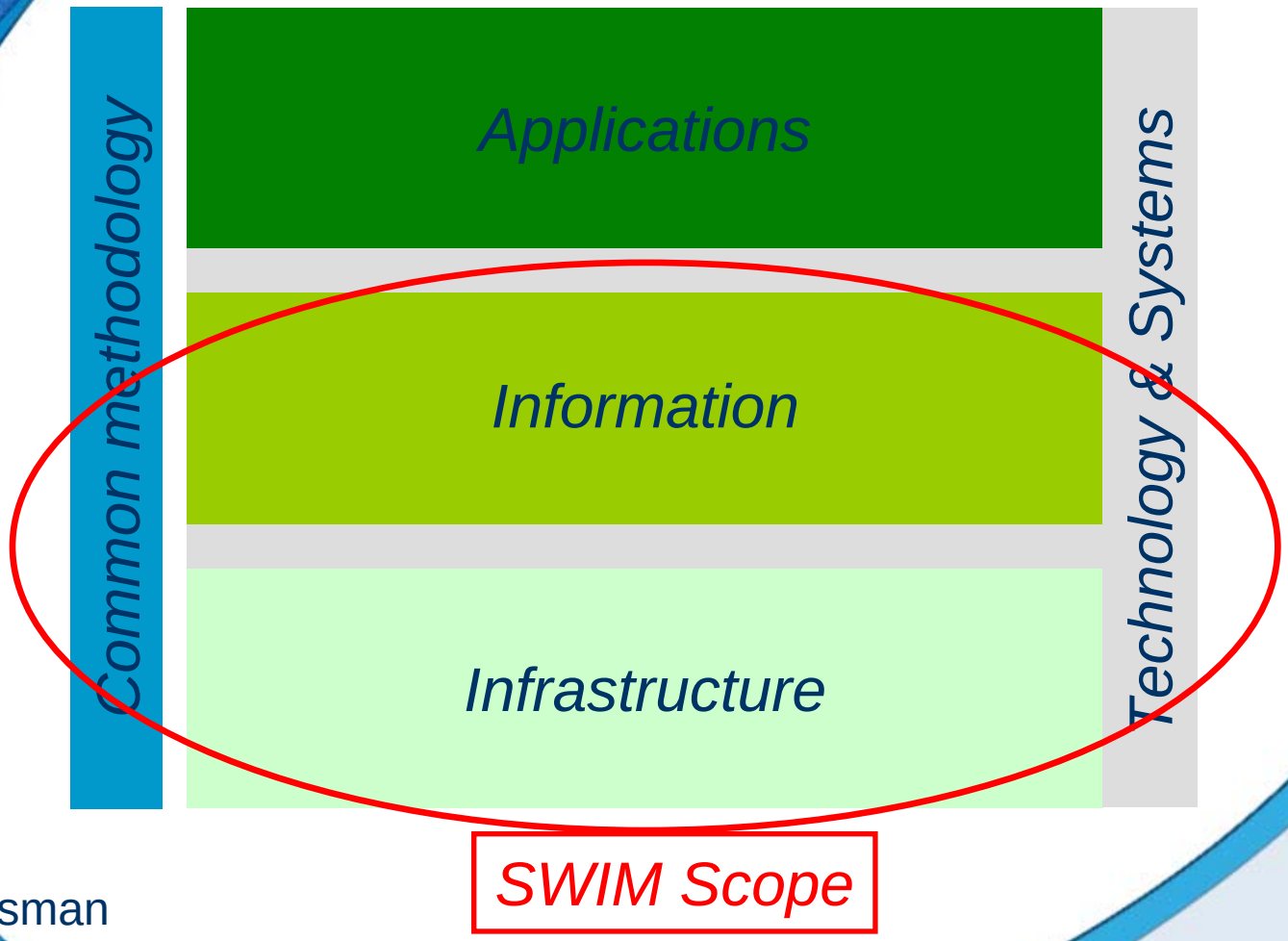


Service Oriented Architecture: Identifying Service types

- Synthesis of Service architecture is an iterative process
  - Functional decomposition
  - Resource oriented services

- Selection of Services Types
  - Avoid “dedicated comms” approach
  - Function specific services are brittle with evolution
  - Ecosystem based on reusable service interfaces

SWIM Scope – State of play



Paul Bosman
AIM Unit Manager
June 2009

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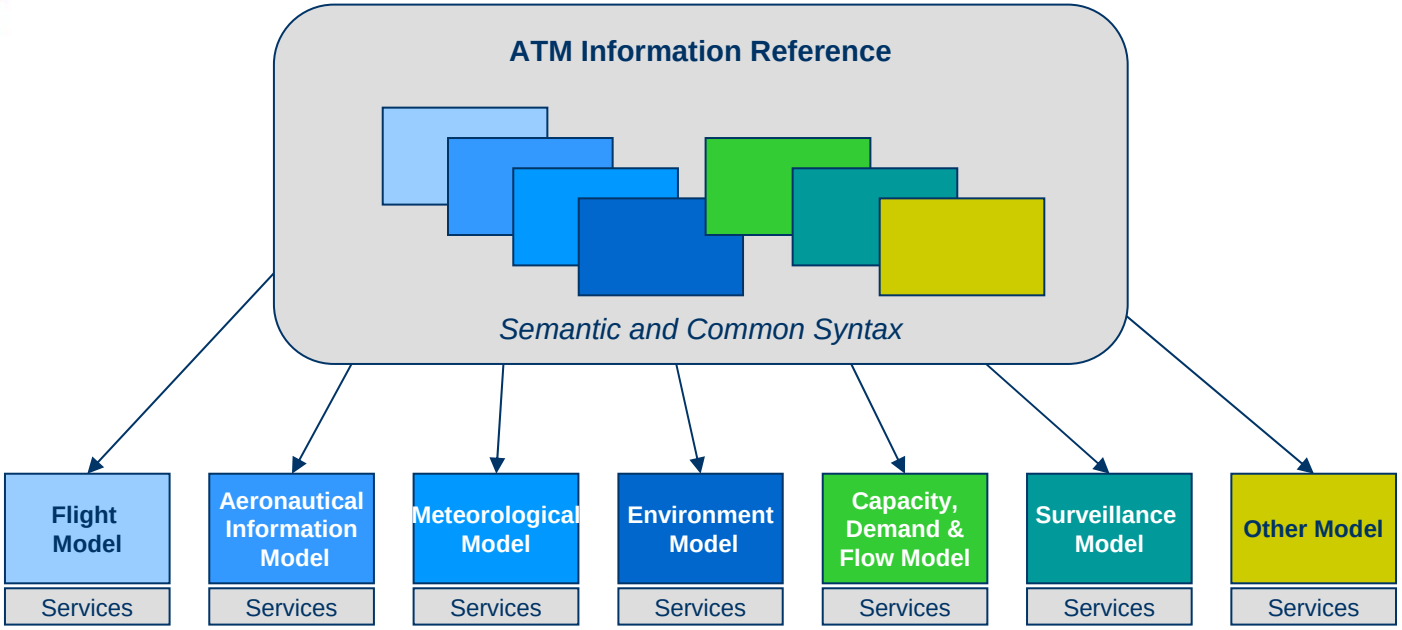
ATM Information Reference model



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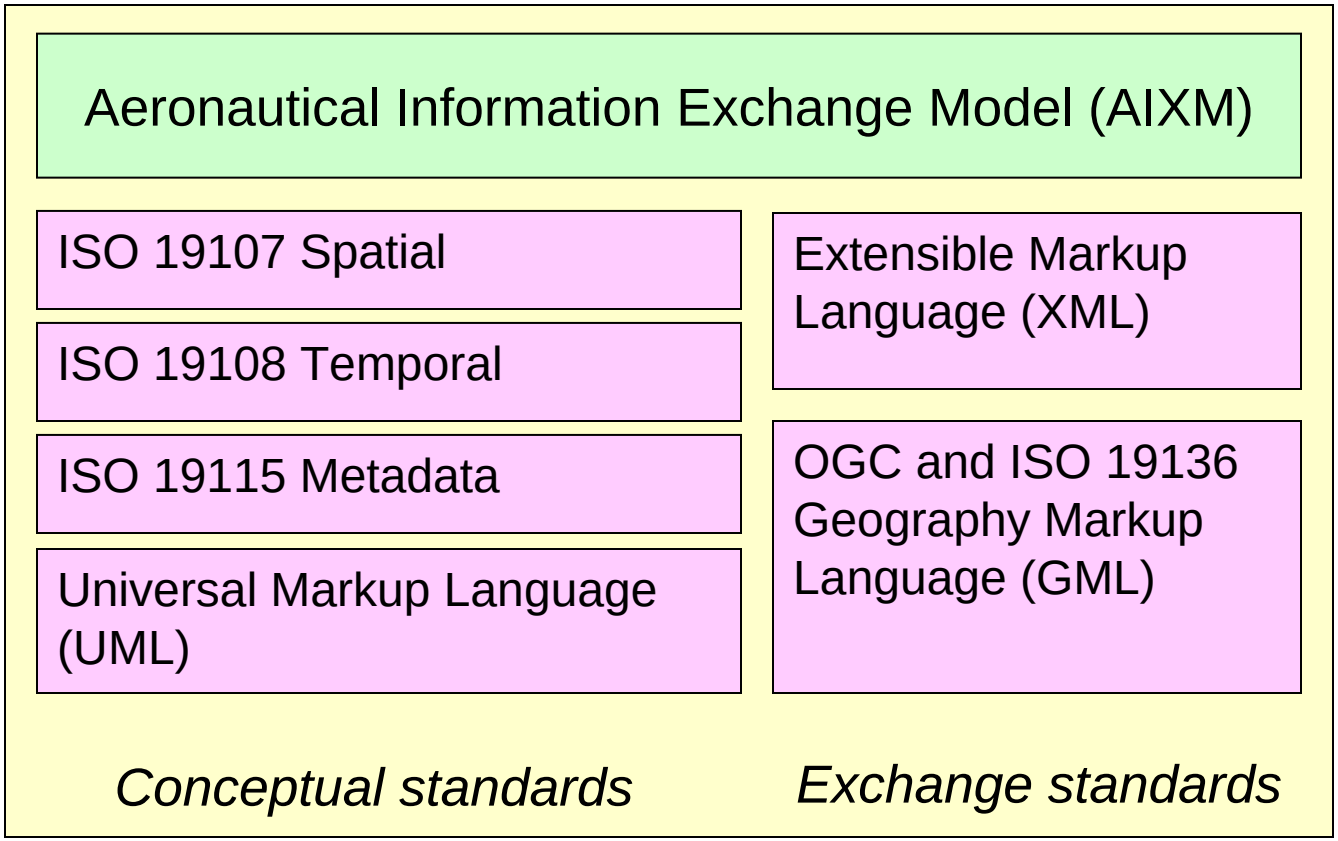
Information Communities

- Shared abstract concepts defined precisely
- Shared understanding through modeling
- Based on geospatial and broader information topics

- Encodings
  - Don’t be afraid of XML
  - Performance and security depend on well made engineering design choices

- AIXM and WXXM as examples

AIXM is based on International Standards



Interoperability is about Organizations

"Interoperability seems to be about the integration of information.

What it's really about is the coordination of organizational behavior."

David Schell
CEO and Chairman
OGC

Collaboration of Government and Industry

- The best standards are implemented by industry in response to user needs
- Consortiums like OGC provide pre-procurement environment for collaboration
  - Begin with use cases and patterns, e.g., NCOIC
  - Get the best software developers to do collaborative development and experimentation
  - Mature the specs and implementation to achieve widely adopted standards
- OGC Interoperability Program

OGC's Approach for Advancing Interoperability

- ***Interoperability Program* (IP)** - a global, innovative, hands-on prototyping and testing program designed to accelerate interface development and validation, and bring interoperability to the market

Rapid Interface Development

Standards Setting

- *Specification Development Program* – Consensus processes similar to other Industry consortia (World Wide Web Consortium, OMA, OMG, etc.).

- *Outreach and Community Adoption Program* – education and training, encourage take up of OGC specifications, business development, communications programs

Market Adoption

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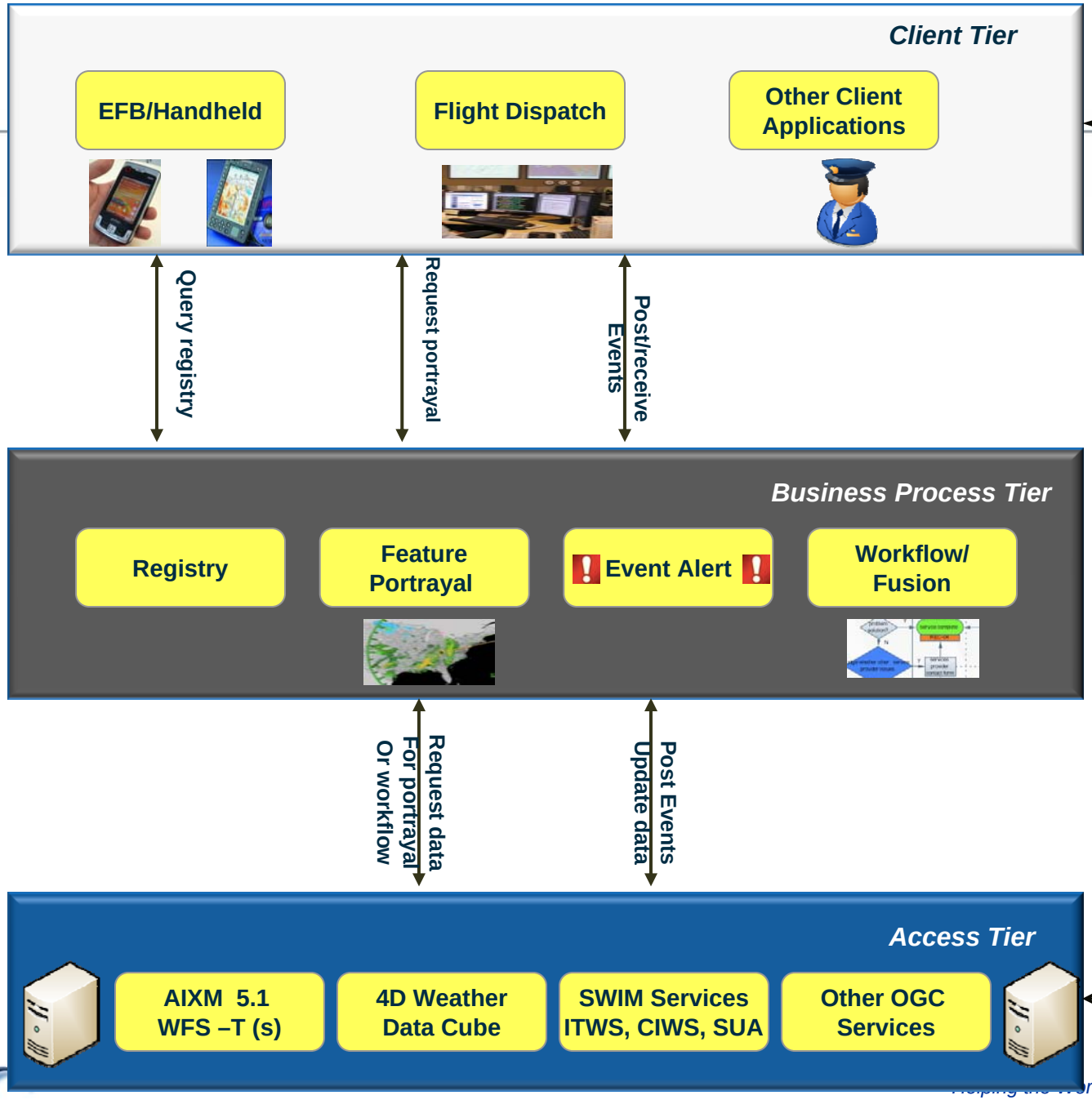
OGC Aviation Domain Working Group

- Open forum for aviation-related interoperability and access
- Route to publication through OGC's standards ladder
  - Discussion paper / Best Practice / Standard, and, if appropriate, to ISO
- Encourages collaborative development
  - Input to OGC Interoperability Program
- Liaisons to other working groups
  - Inside and outside OGC
  - NCOIC and OGC Partnership
- Industry voice on AIXM and WXXM development

OWS-7 Aviation Work Areas

1. Evaluation and advancement of AIXM
   - New features, handling tools, portrayal, metadata
2. Evaluation and advancement of WXXM
   - 4D Weather Cube, weather events, time model
3. Advancement of Event Notification Architecture
   - Weather events, push and pull
4. Integration of AIXM/WXXM in SWIM environment
   - Security investigation (access control, authorization, data integrity, message reliability, etc)


Client Tier
EFB/Handheld
Flight Dispatch
Other Client Applications
Query registry
Request portrayal
Post/receive Events
Business Process Tier
Registry
Feature Portrayal
Event Alert
Workflow/ Fusion
Request data For portrayal Or workflow
Post Events Update data
Request data or updates to data
Access Tier
AIXM 5.1 WFS –T (s)
4D Weather Data Cube
SWIM Services ITWS, CIWS, SUA
Other OGC Services

OWS-7 Aviation Session
Thursday 6 May 9:45-11:45 am

- **Overview of OWS-7 Aviation** – Nadine Alameh, *OGC*
- **WFS-T for AIXM and WXXM** –*Snowflake*
- **WFS-T for Estonian AIP data** –*Comsoft*
- **WXXM in OWS-7** –*Alticode, Meteo France Team*
- **Event Architecture & AIXM Changes** – *Galdos Systems*
- **OWS-7 Aviation Dispatch Client** –*Frequentis*
- **OWS-7 EFB Client** –*Luciad*

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Open Standards for Aviation Information and Services

- International standards for success of NextGen & SESAR
  - Implementing functions with reusable, standardized services
  - Information Communities developments for shared semantics and encodings
- Standards and best practices developed from government requirements and industry capabilities
  - OGC Interoperability Program; OWS-7 on Thursday

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Questions & Comments

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