The 4-D Cube and You

Friends and Partners of Aviation Weather
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Overview

• Accomplishments
• Who is doing the work?
• What is the 4-D Weather Data Cube?
• Roadmap to IOC
• What’s in the cube at IOC
• What’s next after IOC
• Opportunities for Industry
Accomplishments

- NextGen Weather Plan
- WXXM v1.1
- IOC Contents defined
- SAS definition
- Draft high level architecture
Who is Doing the Work?

- NextGen Network Enabled Weather (NNEW) IOC Development Team
  - Environmental Information Team – What’s in the Cube
  - IT and Enterprise Services Team – Cube “plumbing”
  - Policy Team – Governance, cost apportionment, data access
  - Demonstration Team – Coordination of weather demos
  - Requirements Development Team – functional and performance requirements
  - Integrated Science Roadmap Team
What is the 4-D Weather Data Cube?

• The 4-D Weather Data Cube is a virtual repository of weather data including observations, analyses, and forecasts
  – Focus for IOC is on aviation parameters including convection, icing, turbulence, ceiling & visibility, and winds
  – A portion of this cube will be designated as the SAS
  – Some “products” will no doubt be part of the cube in the foreseeable future
What is the 4-D Weather Data Cube?

**Activities**

- **Service-Oriented Architecture (SOA) for the 4-D Weather Cube**
- **Standard Weather Data Formats**
  - Gridded data
  - Non-gridded data
- **Data Dissemination Services**
  - Open Geospatial Consortium
  - JET/JMBL
- **Demonstrations**

**Design Methodology**

*Top-Down + Bottom-Up*

- 4-D Cube Use Cases
- Candidate Architecture
- Existing Architectures
- Candidate Technologies
- Service-Oriented Architecture (SOA) Technologies
- Architecture Analysis, Design
- Demonstrations
- Assessment, Selection
- Feedback Loop
- Assess, Select

Feedback Loop
## IOC Roadmap

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<tr>
<th>Program Management</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
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<tr>
<td></td>
<td>NextGen Weather Plan</td>
<td>Science Roadmap</td>
<td>Acquisition Planning</td>
<td>OT&amp;E Plan</td>
<td>OT&amp;E Plan</td>
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<tr>
<td>IT Services</td>
<td>Wx Data Format Standards and Architecture</td>
<td>IT Performance Testing</td>
<td>Develop/Implement Service Adapters</td>
<td>Procurement and Deployment</td>
<td>OT&amp;E</td>
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<td>Cube Content</td>
<td>Develop Contents</td>
<td>Develop Forecast Process</td>
<td>Develop Contents Tools</td>
<td>Evaluate Forecast process and tools</td>
<td>Transition to Operations</td>
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Observations/Diagnostics:

- Radar
- Other Ground-based Observations
- Airborne Observations
- Space-based Observations
- Diagnostics
## What’s in the Cube at IOC?

### Forecasts

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<th>Convection</th>
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After IOC

- Significant R&D on MOC requirements
  - Modeling improvements
  - Icing, turbulence and convective forecast improvements
- IT enhancements
  - Increase in capacity and performance of IT infrastructure
Opportunities for Industry

• Opportunities for support contractors to FAA and NWS
• Opportunities for systems integrators to build the IT portion of the cube

• Need more participation from weather data providers on potential participation in the cube
  – Why not?
Summary

• Significant work accomplished in last year
  – Robust, detailed plan to deliver 4-D Cube in 2013
• IOC contents defined along with working definition of the SAS
• IT data services and standards defined in FY10