Update on NAWIPS/GEMPAK Migration to AWIPS-II

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Topics

- Mission
- Migration & Goals
- Software Strategy
- GEMPAK 6.0
- FY10 Activities
- User Perspective: NAWIPS vs AWIPS-II
- Suggested Hardware for AWIPS-II at NCEP
- Unidata Involvement
- Key Takeaways
- Training resources
NAWIPS Team Mission

• Develop meteorological application software to meet NCEP requirements
  – National Centers given responsibility to meet their mission requirements during AWIPS-II

• Transition NAWIPS functionality to AWIPS-II environment
  – National Centers will be fully integrated with the NWS-wide system
NAWIPS/AWIPS-II Team

• 18.5 members
  – Increased from 11-12 members prior to migration

• Roughly 60-40 split between IT and earth science backgrounds, some overlap
  – All new hires have significant experience in Java (OOAD), SOA, XML, PostgreSQL, Eclipse, Subversion, JUnit, GeoTools

• Almost 250 years total experience in software design and development
Migration Goals

• NWS Hardware and Software consolidation

• Migration to AWIPS-II must include:
  – All current functionality in NMAP, NSHARP, NWX, and NTRANS
    • Product generation
    • Multi-panel display
    • Observation & product display
  – Data Decoders
  – GEMPAK (legacy command line interface)
    • Working on a forward capability
Software Goals

• No changes to the forecaster workflow
  – “Gray box” migration
  – Some visual differences may be unavoidable

• Adopt and/or adapt new technology
  – e.g., GeoTools, integrated pan and zoom

• Challenges
  – Concurrent Raytheon development
  – Development Environment
    – Eclipse, Java
Software Strategy

- Studied AWIPS-II system as delivered by Raytheon
- Break down existing functionality into small pieces
- Trac wiki and ticketing system
- Employ “agile scrum” development environment
- Use Eclipse Rich Client Platform
  - CAVE is an Eclipse application made of various plugins
- Hudson continuous integration
GEMPAK 6.0

- Official GEMPAK 6.0 release scheduled for April/May
- Modify GEMPAK to access the AWIPS-II database
  - Allows users to continue to use their legacy batch scripts with the new database
  - Data management (DM) library extended to make AWIPS2 service requests via http
  - Server-side microEngine scripts
  - Applies to all GEMPAK / NAWIPS applications
- Images, surface data completed, model & upper-air next
- GEMPAK will continue to be supported until a full replacement is ready
  - GUIs deprecated eventually
FY10 Activities

• Software development is on schedule
• Hardware configuration determination in progress
• Anticipate software ready for OT&E to begin by Q1FY11
• Migration activities continue in the following areas:
  – GUI integration & Interactive Product Generation & GEMPAK
  – Decoder migration is complete
• Continue to have one-on-one TIMs w/ Raytheon
• Continue to work closely with the NWS AWIPS Program Office
• Testing & Test Plans - Monthly drops of RTS baseline w/ NCEP integration
Integrates **NMAP2, NTRANS, NWX**

- Multiple tabbed loops
- Flexible timeline
  - Includes single time resource collections
- Flexible extended attribute assignment for displayable resources
  - e.g., multi-color displays
- Procedure, Bundle and Resource selection and management
- Multi-panel displays, spatially and temporally synchronized (or not)
- GUI FOS bulletin select and display
# User View – CAVE Top Buttons

<table>
<thead>
<tr>
<th>NAWIPS Button Type</th>
<th>Functionality in CAVE Perspective</th>
<th>NAWIPS Button Type</th>
<th>Functionality in AWIPS-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>Yes - unchanged</td>
<td>Auto Update</td>
<td>Still under investigation</td>
</tr>
<tr>
<td>Map</td>
<td>Yes - replaced with pull-down Area &amp; Overlays</td>
<td>Wipe</td>
<td>None at this time</td>
</tr>
<tr>
<td>PGEN</td>
<td>Yes - unchanged</td>
<td>Reload</td>
<td>None at this time – AWIPS reloads data automatically</td>
</tr>
<tr>
<td>Print</td>
<td>Yes - unchanged</td>
<td>Loop</td>
<td>Replaced w/tabs, hotkeys unchanged</td>
</tr>
<tr>
<td>Seek</td>
<td>Yes - unchanged</td>
<td>Animation Controls</td>
<td>Unchanged – however “hide loop” already in AWIPS-II</td>
</tr>
<tr>
<td>Cloud Height</td>
<td>Yes - unchanged</td>
<td>Stop</td>
<td>None at this time</td>
</tr>
<tr>
<td>AODT</td>
<td>Yes - unchanged</td>
<td>Zoom/Unzoom</td>
<td>Available in CAVE; however, unneeded</td>
</tr>
</tbody>
</table>
Multiple tabbed multiframe sequences replaces pull-downs

MAP dialog replaced by pull-downs

National Centers Perspective
Multiple tabbed multiframe sequences

National Centers Perspective

Multi-color resource display
## National Centers Perspective

### User View – CAVE Bottom Buttons

<table>
<thead>
<tr>
<th>NAWIPS Button Type</th>
<th>Functionality in CAVE Perspective</th>
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</thead>
<tbody>
<tr>
<td>Valid Time</td>
<td>Located in the resource legend – lower right corner</td>
</tr>
<tr>
<td>Locator / Lat/Lon Readout</td>
<td>Moved from lower right corner to lower left</td>
</tr>
<tr>
<td>PGEN hints</td>
<td>Still under investigation</td>
</tr>
<tr>
<td>Fade</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Error</td>
<td>Functionality in AWIPS-II</td>
</tr>
<tr>
<td>Loop Counter</td>
<td>No longer needed</td>
</tr>
</tbody>
</table>
New ERROR display provided by RTS

Locator moved from lower right to lower left (RTS reserved lower right)

Valid times now shown continuously on resource legend (legend immune to pan/zoom)
Multipanel (any M x N configuration)
NWX Capabilities
Hardware Configuration

• National Center configuration TBD ASAP
  – Need Raytheon resources - unavailable until after TO11 completion
  – Until then, testing on HQ test bed

• New configuration needs to be procured and deployed to the NCs prior to OT&E (Q1FY11)

• Minimum Configuration
  – EDEX (Data server) requires 2G RAM
  – CAVE (workstation) requires a video card that supports OPEN GL w/ 256M video RAM
  – 4G RAM to run both
NAWIPS Roadmap

<table>
<thead>
<tr>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
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<tbody>
<tr>
<td>Otr 1</td>
<td>Otr 2</td>
<td>Otr 3</td>
<td>Otr 4</td>
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**Migration Planning**
- Centers Review and Approve Plan

**Software/Functionality Migration**

**Center Application & Script Migration**

**Create Developer Training**

**Developer Training**

**User Training**

**Evaluate Incremental Migration Releases**

**Operational Testing & Evaluation Planning**

**Operational Testing & Evaluation**
- Deployment Decision Point
- Deployment
- New Release Schedule

**NAWIPS Legacy Maintenance**

**Version 5.11 Deliveries**
- Bug Fixes
- Emergencies Only

Fiscal Year is from October to September
Benefits for Unidata Users

- Facilitate Research => Operations
- Classroom tool / training
  - Weather Event Simulator ~ 2012
- NWS operational system
  - Simulates a fully operational forecasting system
- Less data processing required
- Run your own EDEX to create database
- Modern development environment/platform
  - Flexible & expandable architecture
  - Object oriented languages such as Java and Python
Unidata Involvement

- Monthly migration telecons
- IV&V, OT&E (baseline + NAWIPS extensions)
  - Test plans, cases and execution
- User training (limited) – web based
- Design and development collaboration
- Liaison with University community
- Developers conference scheduled late FY10

- NCEP continues to view Unidata as a very important partner for NCEP’s total mission.
Key Takeaways

- NAWIPS/AWIPS-II migration on schedule
- NC transition highly dependent on Raytheon development
- GEMPAK supported until a full replacement is ready
- Hardware configuration finalized - May 2010
- First NC operational release - Fall 2011
- Unidata support 18 months after 1st delivery – Spring 2013
- GEMPAK is free to anyone who wants to use it
- Once NWS implemented, AWIPS-II will have open software policies
Training Resources

- **Training Portals:**
  http://www.nwstc.noaa.gov/AWIPS/ADE/ADE_resources.html

- **NCEP Central Operations – AWIPS-II Wiki Site:**
  http://wiki.ncep.noaa.gov/nco/sib

- **AWIPS Migration training and resources:**
  http://www.nwstc.noaa.gov/nwstrn/awips.htm
  - Includes new AWIPS-II SOA module

- **Suggested training:**
  - Java, Advanced Java (best practices)
  - Please note that Java allows “wrapping” of C
    - Best implemented when performance is an issue
Questions?

“From the Sun to the Sea…  
Where America’s Climate, Weather, Ocean and Space Weather Services Begin”