Update on NAWIPS/GEMPAK Migration to AWIPS II

Unidata Policy Committee Meeting
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15 April 2010
Topics

• NAWIPS/AWIPS Team
• Migration Goals
• FY10 Activities
• GEMPAK 6.0
• User Perspective: NAWIPS vs AWIPS II
• Hardware Configuration
• Unidata Involvement & Benefits
• Key Takeaways
• Training resources
NAWIPS/AWIPS II Team

- Develop meteorological app. software to meet NCEP requirements
- Transition NAWIPS functionality to AWIPS II environment
- 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 yrs experience in software design & development
• NWS Hardware and Software consolidation

• Migration to AWIPS II must include:
  – All functionality in current NAWIPS GUI programs
    – Product generation, multi-panel display, obs & product display
  – Data Decoders
    – Raw and GEMPAK formats to AWIPS II format
    – Archived data will be accessible
  – GEMPAK
    – Legacy command line interface
    – Forward capability
Hardware Consolidation

N-AWIPS

AWIPS II System
With N-AWIPS
(will include large monitors)

AWIPS

Unidata Policy Committee Meeting – NAWIPS/AWIPS-II Status
Software Goals

• No changes to the forecaster workflow
  – 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
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 work closely with the NWS/OST AWIPS Program

• Testing & Test Plans - Periodic drops of RTS baseline w/ NCEP integration
GEMPAK 6.0

• Official GEMPAK 6.0 release scheduled for April

• 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 AWIPS II service requests via http
  – Server-side microEngine scripts
  – Applies to all GEMPAK / NAWIPS applications

• Porting of images, sfc data completed
  - Model & upper-air data next

• GEMPAK will be supported until full replacement is ready
  – GUIs deprecated eventually
NAWIPS Perspective within CAVE

- Integrates **NMAP2, NTRANS, NWX, NSHARP**
  - 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
  - SKEW-T / Hodographs
### National Centers Perspective

#### User View – CAVE Top Buttons

<table>
<thead>
<tr>
<th>NAWIPS Button Type</th>
<th>Functionality in CAVE Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Map</td>
<td>Yes - replaced with pull-down Area &amp; Overlays</td>
</tr>
<tr>
<td>PGEN</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Print</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Seek</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Cloud Height</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>AODT</td>
<td>Yes - unchanged</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NAWIPS Button Type</th>
<th>Functionality in AWIPS II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Update</td>
<td>Still under investigation</td>
</tr>
<tr>
<td>Wipe</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Reload</td>
<td>None at this time – AWIPS reloads data automatically</td>
</tr>
<tr>
<td>Loop</td>
<td>Replaced w/tabs, hotkeys unchanged</td>
</tr>
<tr>
<td>Animation Controls</td>
<td>Yes - unchanged</td>
</tr>
<tr>
<td>Stop</td>
<td>No</td>
</tr>
<tr>
<td>Zoom/Unzoom</td>
<td>Available in CAVE; however, unneeded</td>
</tr>
</tbody>
</table>

Unidata Policy Committee Meeting – NAWIPS/AWIPS-II Status
## User View – CAVE Bottom Buttons

<table>
<thead>
<tr>
<th>NAWIPS Button Type</th>
<th>Functionality in CAVE Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Time</td>
<td>Yes - unchanged</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</td>
</tr>
<tr>
<td>Loop Counter</td>
<td>Yes - unchanged</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)
NTRANS Capabilities

Multipanel (any M x N configuration)
Hardware Configuration

- National Center configuration TBD ASAP
  - Separate HW Configuration Project between NCO and OST
  - SIB testing NAWIPS migrated software on a RFC test bed, NHDA
  - Government engineering analysis completed by end April 2010
  - Finalize configuration/proposal with RTS & submit procurement June 2010
  - Test bed at NCO by August 2010

- HW will arrive at NCs for OT&E beginning Fall 2010
  - Phased to arrive at Centers based on seasonal requirements

- Minimum Configuration
  - CAVE (workstation) requires a video card that supports OPEN GL w/ 256M video RAM
  - EDEX (Data server) requires 2G RAM
    - Each Center will most likely require 2 EDEX
Unidata Involvement

• Weekly status telecons - Periodic 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.
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
NAWIPS Roadmap

You are here

Demos

Fiscal Year is from October to September
Key Takeaways

- NAWIPS/AWIPS II software migration on schedule
- NC transition highly dependent on Raytheon development
- GEMPAK supported until a full replacement is ready
- Hardware configuration finalized – June 2010
- Unidata OT&E involvement – early 2011
- First NC operational release – Fall 2011
- Unidata support of GEMPAK extends 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 and FORTRAN
    • 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”
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