AWIPS II Application Development, a SPoRT Perspective

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30th Environmental Information Processing Technologies Conference
94th AMS Annual Meeting (2014) in Atlanta, GA
Session: “AWIPS II System Update”
SPoRT AWIPS II Development

- Plug-in development
- Data ingest
- EPDT
SPoRT

• Short-term Prediction Research and Transition Center
• NASA / MSFC  Huntsville, AL
• Paradigm:  Problems → Solutions
  ▪ NASA/NOAA Data and Technology
  ▪ Operational NWS Short-term Forecasts
  ▪ Use Native Decision Support System
  ▪ Feedback Loop with Forecasters for Improvement

• 2003
  ▪ 9 WFOs primarily in Southern Region

• 2014
  ▪ 28 WFOs in 5 NWS Regions; 5 National Centers
SPoRT Features

- Lightning Mapping Array
- Lightning Tracking Tool
- Convective Initiation (UAHCI)
Total lightning data from Lightning Mapping Arrays (LMAs) is 3-Dimensional, unable to be brought into AWIPS I - except as model data. We expect to make use of future AWIPS II 3D capabilities.

LMA data is generated as ASCII, but we write as unique NetCDF – requiring a new EDEX plug-in.

- Plugin is currently in testing at several NWS Offices
- Base-lined in near future
Total lightning *jumps* are at times related to severe weather. Forecasters need to quickly track several storms separately, tracking their intensity:

- Track multiple cells
- Variable radii
- Adjustable storm tracking
- Color-coded chart for each data layer
- Extrapolation for new data (frames)

- Adjustments after Hazardous Weather Testbed (HWT) feedback
- ORPG testing April, 2014
- Base-lined in near future
Convective Initiation

GOES-based data set generated at UAHuntsville for short-term forecasts of convection.

Ingested using the grib2 plugin.
Experimental Products Development Team
GOES-R EPDT

- SPoRT (in-house) EPDT formed to focus on creating advanced display capabilities for NASA research data in AWIPS II environment
  - non-standard software (plug-ins) for data ingest and display
  - tool development for data fusion to obtain maximum information content
  - AWIPS II architecture flexible and can support external plug-in and tool development
  - need to develop expertise to facilitate this

- Some specialized AWIPS II plug-ins have been developed, tested, implemented with SPoRT collaborative partners

- Identified need within GOES-R PG team to better integrate GOES-R proxy products into AWIPS II environment

- Developed GOES-R PG EPDT AWIPS II concept document
  - refined and then endorsed by NWS/OST Systems Engineering Center (SEC) Development Branch
  - Implemented Fall 2012
Experimental Products Development Team
GOES-R EPDT

Goal:
• Bring together staff from NASA, NOAA’s CIs, and NWS to develop a critical mass of technical expertise (outside of Raytheon’s AWIPS II development team) which would focus on the development, demonstration, and transition of new plug-ins and tools to address the near-term needs of the GOES-R PG community

Objectives:
• create a community environment to develop and share knowledge and expertise in the AWIPS Development Environment (ADE)
• generate non-standard AWIPS II plug-ins for the ingest, analysis, and display of GOES-R proxy data in AWIPS II and associated tools which better display GOES-R data and allow for the fusion of the new data with legacy AWIPS data streams
• based on this experience, provide feedback to NWS and Raytheon on the external development process, including governance of locally developed AWIPS II software
Experimental Products Development Team
GOES-R EPDT

- Hands-on team to learn by doing
- Limited in size to facilitate small group learning and development activities – develop into a “train the trainer” team
- One representative (each) from:
  - NWS Regions
  - NOAA Cooperative Institutes (and SPoRT)
  - MDL and GSD
  - Raytheon
  - NWS SEC
  - GOES-R PG AWIPS II developer
- Organizational leads asked to nominate team member with appropriate qualifications
- **Team Lead:** Jason Burks *(NASA scientist and decision support system expert)*, formerly HUN WFO ITO
- **Advisor:** Ed Mandel *(NWS/OST SEC Development Branch Chief)*
- Bimonthly conference calls/ WebEx sessions
- Biannual workshops at SPoRT AWIPS2 Development Facility
- NWS and NASA have agreed to share costs associated with this team (travel and resources)
EPDT Spring 2013 meeting

• Conference calls leading up to meeting.
• March 12th-14th, 2013
• “Hands-on” Learning
• Topics covering Plug-in development from EDEX to CAVE.
• Exercises
• 14 attendees
• Feedback indicated a very successful meeting.
• Training was recorded and provided back to NWS
EPDT Fall 2013 Meeting

• Sept 24 - 26, 2013
• Code Sprint format
• EPDT subgroups worked on projects
  – Moving Meteogram
  – RGB Recipe
  – mPing ingest and display
  – Mini-EDEX
• Significant progress and furthered learning
Group B

• Group has been selected
  – 15 attendees
  – Groups involved include:
    • NWS SEC, NWS OH, NWS MDL, SSEC, CIRA, CIMMS/NSSL, NOAA GSD

• Meeting planned for March, 2014
• Conference calls have begun
• Spring Meeting planned with learning similar to Spring 2013 meeting for Group A
Future EPDT

• Second learning workshop as follow-on to training for Group A
• Merge Group A and Group B conference calls after Spring Meeting
• Code Sprint in Fall 2014 for:
  – Group A
  – Group B
Questions