



AWIPS Migration Status Review

Advanced Weather Interactive Processing System (AWIPS) Program

May 3, 2012

Edward Mandel

OST/SEC/Development Branch



AWIPS Migration Program Highlights



- Severe Weather Outbreak 4/13-4/15

- Omaha/Valley, NE WFO:

- Issued

- 26 Severe Thunderstorm Warnings
 - 8 Tornado Warnings
 - 6 Flash Flood Warnings
 - 101 Severe Weather Statements

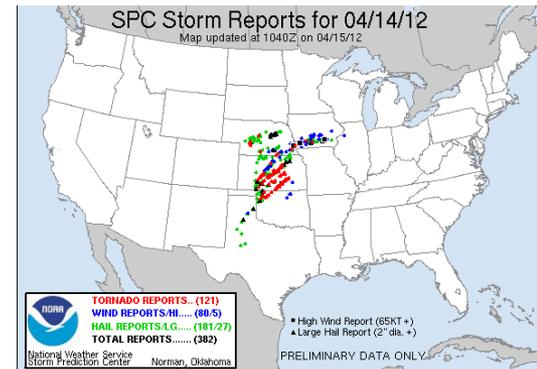
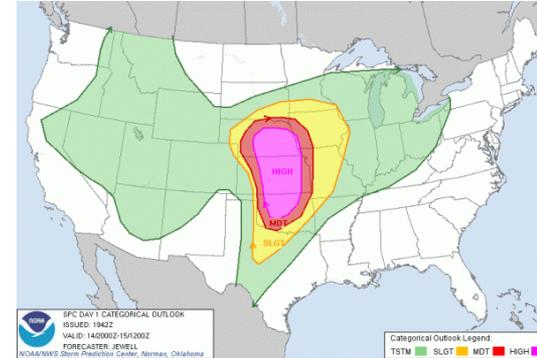
- **“Overall I would have to say severe weather operations ran well and AWIPS 2 performed well.”** – Jim Meyer, MIC

- Norman, OK WFO:

- Issued

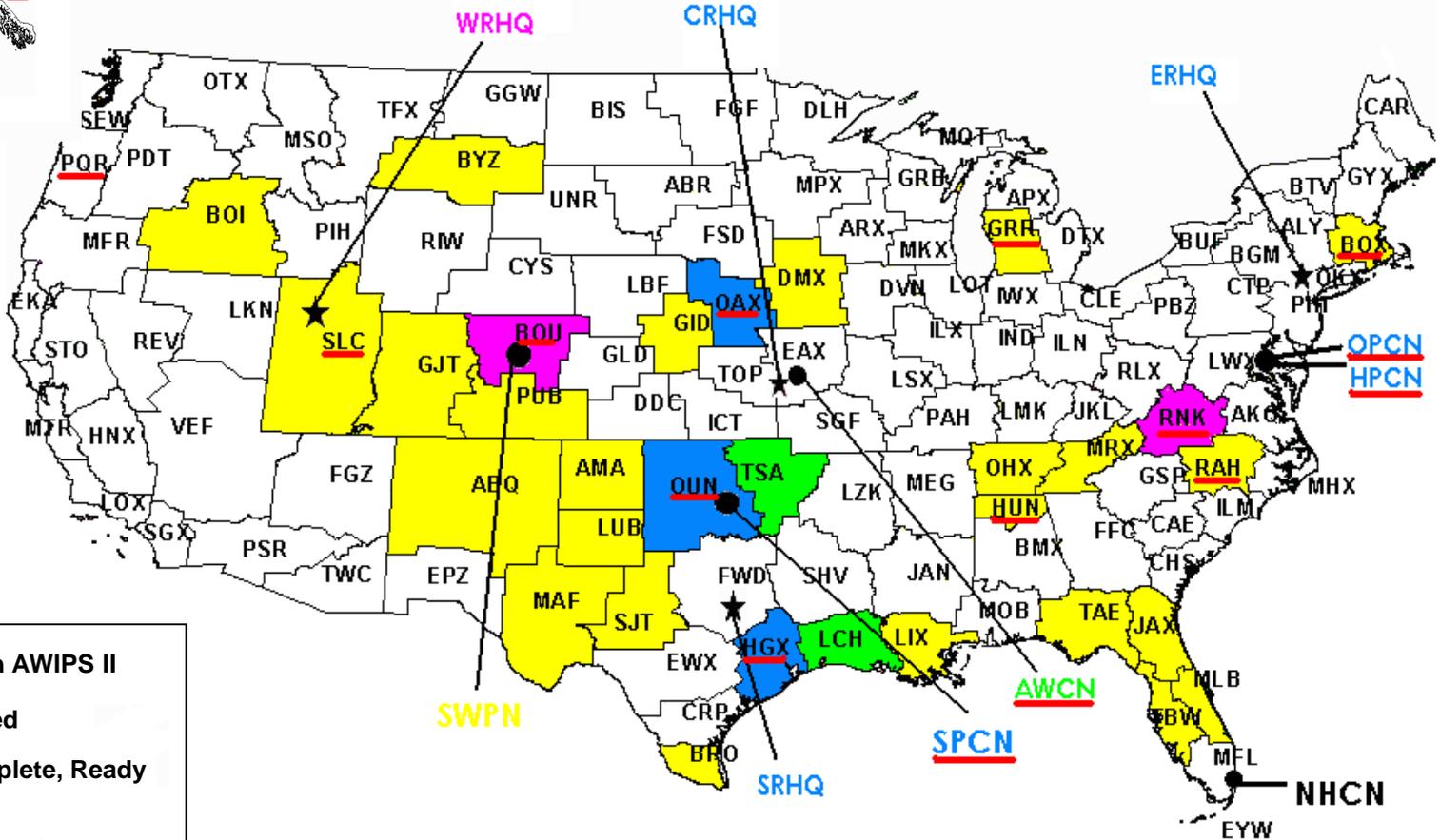
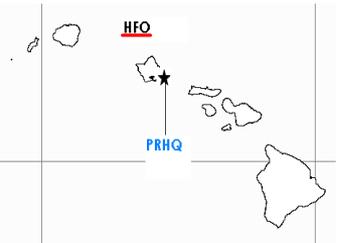
- 78 Severe Thunderstorm Warnings
 - 29 Tornado Warnings
 - 179 Severe Weather Statements

- **“AWIPS II performed without any problems and allowed us to provide all warnings and updates in a timely and accurate manner. Data ingest of four radars operating in the fastest modes was complete and accurate and more trouble free than in past similar events with AWIPS I.”** – Mike Foster, MIC





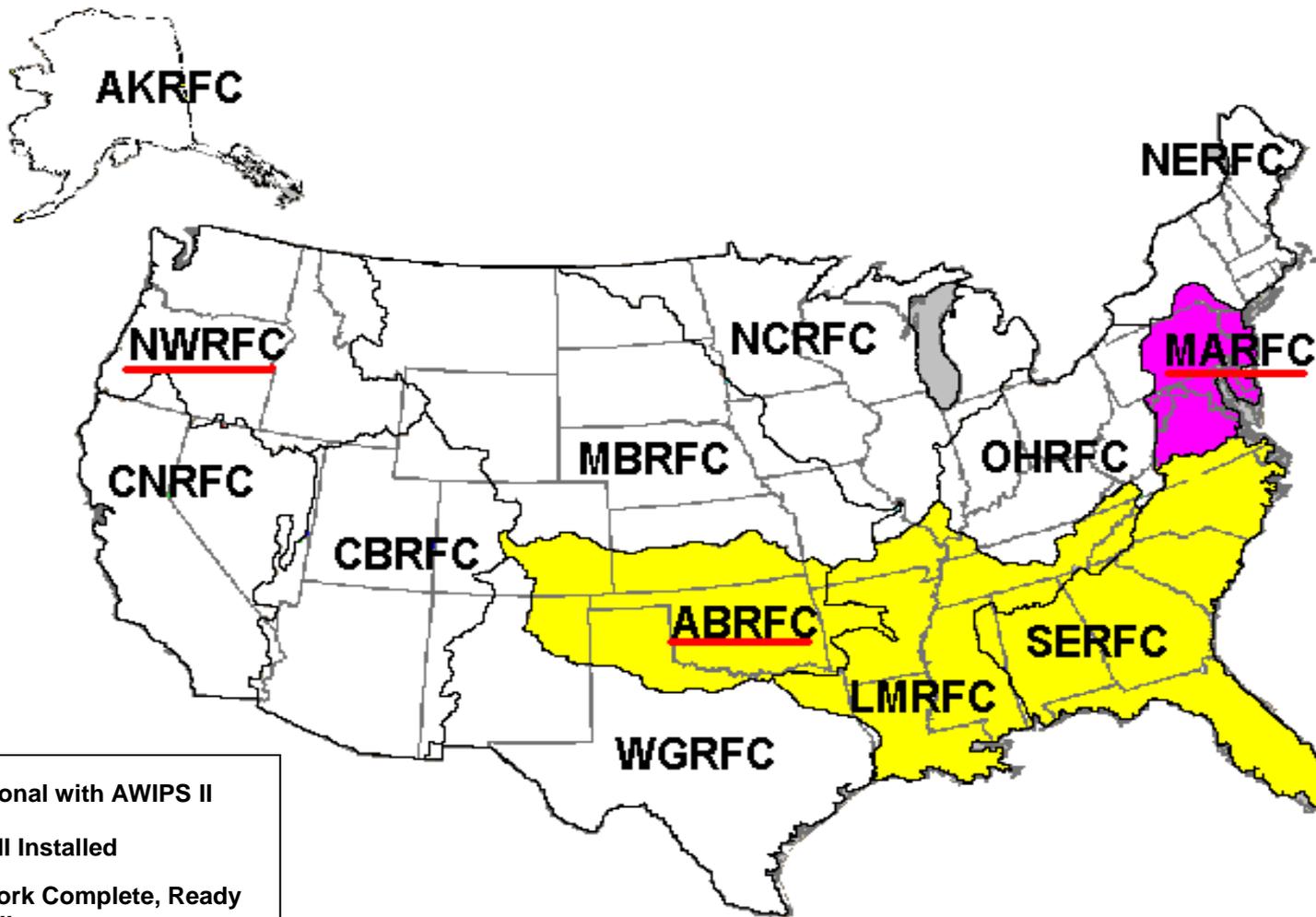
AWIPS Migration WFO Deployment Status



- Operational with AWIPS II
- AWIPS II Installed
- Prep Work Complete, Ready to Install
- Prep Work Underway
- FOTE Site



AWIPS Migration RFC Deployment Status



- Operational with AWIPS II
- AWIPS II Installed
- Prep Work Complete, Ready to Install
- Prep Work Underway
- FOTE Site



AWIPS Migration Site Deployment Schedule (4/23/12)



	Up to 2 sites day begins 10/1	Sites can be moved to other days if preferred	OT&E sites in blue	Days with no installs in Tan	RFC Install days in bold red
Week	Month	Monday	Tuesday	Wednesday	Thursday
1	FEB 21012	13-	-	-	-
2		President's Day	-	-	-
3		-	28 - OPCN, HPCN	-	-
4	MAR 2012	-	-	-	-
5		12 - SPCN	-	14 - OUN	-
6		19 - AWCN	-	-	-
7		-	-	-	-
8	APR 2012	-	-	4 - HGX	-
9		-	-	-	-
10		-	-	-	-
11		-	-	-	-
12	MAY 2012	-	1 -	2 -	3 - BOU, RNK
13		7 -	8 - GRR	9 - RAH	10 -
14		14 -	15 - DMX	16 -	17 - PUB
15		21 -	22 - GID	23 -	24 - DVN
16		Memorial Day	29 -	30 - LIX	31 - RHA
17	JUN 2012	4 -	5 - BOX	6 - SFMG	7 - SLC
18		11 -	12 - HUN	13 -	14 -
19		18 -	19 - ARX	20 - TSA	21 - GJT
20		25 - MAF	26 - FWD	27 -	28 - TUA
21	JUL 2012	2 -	3 -	Independence Day	5 -
22		9 -	10 - DTX	11 - GYX	12 -
23		16 - MPX	17 - GLD	18 - LUB	19 - BOI
24		23 - SJT	24 -	25 - PQR	26 -
25		30 - APX	31 - ALY, SWPN	1 - DLH	2 -
26	AUG 2012	6 - BGM	7 - BYZ	8 -	9 - AJK
27		13 - ABQ	14 - DDC	15 - EWX	16 -
28		20 - AMA	21 - ILN	22 -	23 - MSR
29		27 - MQT	28 - MKX	29 -	30 - SHV
30	SEP 2012	Labor Day	4 -	5 - FGF	6 - BTV, ICT
31		10 - JAN	11 - MEG	12 - CTP	13 - PIH, RSA
32		17 - GGW	18 - GRB	19 - CAE	20 - PDT
33		24 - OHX	25 - BIS	26 - TOP	27 - STR
34	OCT 2012	1 - MRX, CLE	2 - BMX, OTX	3 - SEW	4 - LZK, MSO
35	(2 per day)	Columbus Day	9 - MFR	10 - ABR, EAX	11 - TAR, FFC
		15 - AKQ, AFG			
36			16 - CAR	17 - LOT, PBZ	18 - BRO, HNX
37		22 - FSD, REV	23 - SGF, CRP	24 - ILX, EKA	25 - ORN, TFX
38		29 - BUF	30 - LKN, IND	31 - LBF, LSX	1 - LCH, JAX
					8 - TIR, GUM
39	NOV 2012	5 - ILM, STO	Election Day	7 - EPZ, LOX	
40		Veteran's Day	13 - VEF, MOB	14 - CYS, OKX	15 - PAH, MTR
41					Thanksgiving
42		26 - MHX, FGZ	27 - CHS, LWX	28 - IWX, TAE	29 - ALR, MLB
43	DEC 2012	3 - HFO, NHCN	4 - UNR, LMK	5 - TBW, SGX	6 - RLX
44		10 - MFL, AFC	11 - GSP	12 - KEY, PHI	13 - FWR
45		17 -			
46			Christmas		
47	JAN 2013		New Year's Day	2 - PTR	3 -
48		7 - JKL, TWC	8 - SJU	9 - PSR	10 - KRF
49		14 -	15 - RIW	16 -	17 -
50		MLK Day	22 -	23 -	24 - ACR
51		28 - COMT, OSFW	29 -	30 -	31 - NMTW, NHOR

← First ER site

← First SR site

← First WR site



AWIPS Migration

High Impact DRs Risk Mitigation



- **OTE DR Work Down Plan:** Ensure software is ready to support upcoming site deployments
- **Emphasis high impact DRs and site specific DRs**
- **Approach to Implement the Plan** - Modified staff assignments to implement the work down plan.
 - Assigned approximately 12 FTE from the Omaha S/W development team for 3 weeks to jump-start the DR work down.
 - Keep about 3-5 Omaha staff working DRs over the next 6 weeks
- **Schedule impact to AWIPS II Extended Projects due to redirection of developer resources**
 - Estimated schedule impact of 1 month in Data Delivery, Collaboration, & Information Generation, WES 2 and other task not yet started
 - NAWIPS and Thin Client will not be impacted



AWIPS Migration

NAWIPS Migration Project Overview



- **Objective:**
 - Integrate capabilities between field and national offices leading to improved services and consolidation of hardware and software baselines
- **Status:**
 - Initial migration complete, capabilities integrated into AWIPS II baseline: February 2012 release **(Complete)**
 - Forecaster Integration Testing (FIT): **In progress**
 - Looking at performance with 64-Bit architecture: **in progress**
- **Schedule/Milestones:**
 - Phase Two FIT Complete: February, 2012 **(Complete)**
 - Phase Three FIT Begins: Q1FY13
 - IOC Deployment Target: Q2FY13
 - FOC Deployment Target: Q4FY13

Highlight

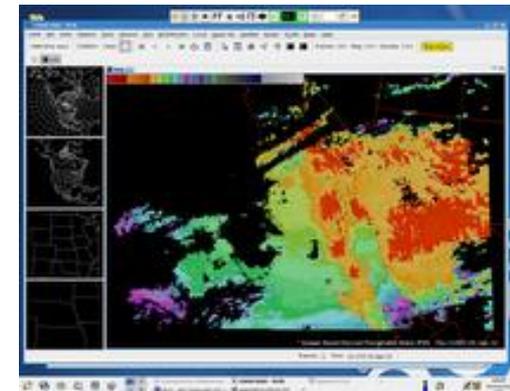
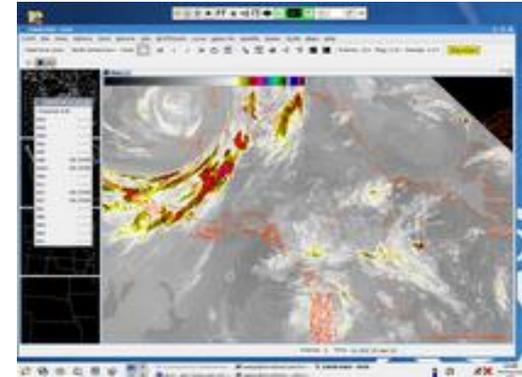
**Capabilities migrated;
Team working on improving performance**

Fiscal Year	FY8				FY9				FY10				FY11				FY12				FY13							
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
NAWIPS Migration	Analysis/Plan				NAWIPS S/W Migration												preOTE											
																			OTE		Deploy							

AWIPS Migration

Enhanced NETCDF3 Decoder

- **Objective:**
 - Decode netcdf3 files for specific attributes
 - Alaska Region
 - GOES-R Proving Ground products with satellite name and channel attributes
- **Status:**
 - Design review:
 - **Completed in February**
 - Beta Testing in Alaska:
 - **Completed**
 - Testing for GOES-R Proving Ground:
 - **In progress. Looking at navigation issues**
- **Schedule/Milestones:**
 - Deploy with AWIPS Release 12.6.1 (June 2012)
- **Contacts:**
 - Kretz (SEC), Gerth (CIMSS), Molanar





AWIPS Migration Local Applications



- **Moving along site by site (OAX, OUN, HGX – completed)**
- **Available documentation** - <https://collaborate.nws.noaa.gov/trac/ncladt/wiki>
 - Local Applications and Site Configuration 101
 - “How to” wiki and documents
 - Local Applications Guide
 - Local Application Job Sheets
- **Support**
 - Local Application Question and Answer Sessions (Tues morning and Thurs afternoon)
- **Working on Local Application Policy with Local Applications Working Group**
- **Consolidation of Smart Tools being performed by GFE Migration Strategy Group (GMSG)**
 - Primary effort is to develop scientifically sound tools that work effectively over the entire NWS with the intent to replace many of the tools currently in use.
 - Implemented the Diurnal tool, which creates hourly forecast temperature and relative humidity grids based on forecast Min and Max grids, and model, observational, or climatology min, max and hourly grids.
 - Secondary effort is more of a framework within which each office can express actions that can perform a number of different operations related to finalizing the forecast.
 - This framework will replace literally dozens of tools, greatly simplify the gridded forecast finalization process, and allow WFOs to easily share the actions that perform these tasks.



AWIPS Migration

Site Migration



- **Site Configuration**

- Migration AWIPS II Site Migration Guide Version 3 (March 29, 2012)
 - https://onestop.noaa3a.awips.noaa.gov/awips_2_Document2.html
- Using ADAM to stage their site configuration changes
 - 81 + sites on most recent release (12.3.1) as of 4/23/12
- Providing access to Silver Spring test system for preparation and testing
 - RAH, RNK, GRR, OUN, HGX, BOX



AWIPS Migration

Software Collaboration Repository (SCP)



- Replacement for the LAD/STR and will be the storehouse for all locally developed software packages that the sites want to share.
- Purpose is to reduce duplication of effort and promote collaboration between developers on software projects. Additional goals of this portal include efficient database interfacing as well as means of developing better coding practices, sufficient tracking, scientific integrity, and system security.
- The criteria for software to be placed in the SCP is:
 - The software is designed to be used at multiple sites.
 - The developer actively supports the software.
 - The developer agrees to open the software to collaborative development.
 - The software must meet higher standards of coding practices, organization, and documentation.
- Software Packages for local use and Site Configuration Files will be kept in the Site Specific Directories on the Collaboration Server
 - [https://collaborate.nws.noaa.gov/svn/\(site id\)](https://collaborate.nws.noaa.gov/svn/(site id))
- A demo of SCP was provided at a couple of Local Application Question and Answer Sessions in April and a training session is available for video reply.
- The NWS SCP can be found at the following link:
 - <https://collaborate.nws.noaa.gov/trac/nwsscp>



AWIPS Development Status Review



AWIPS Development



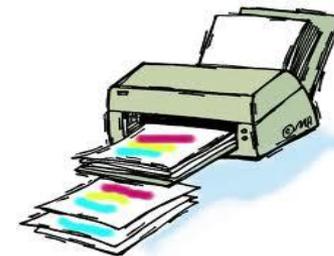
- **Development Planning**

- Hardware
 - Sustaining engineering for FY12/13/14
- Software
 - How? SREC!
 - Release Schedule
 - New Content (2012 and 2013) - Draft
 - Strategic and Operational
 - Infrastructure
 - NAWIPS

- **Development Status**

- AWIPS Extended
 - Thin Client, Data Delivery, Hazard Services, and Collaboration
- NPP
- AWIPS Software Development Team (ASDT)
 - New Data, CRS2AWIPS

- **FY12**
 - Printers - **completed**
 - SBN Expansion - **completed**
 - Text workstations - **completed**
 - Pre-processors (PXs) – **in progress**
- **FY13**
 - WFO and RFC NAS
 - DX 1, 2, 3, 4
- **FY14**
 - LX Workstations
- **Delayed due to budget cuts**
 - LDAD Firewall and servers
 - River Ensemble Processor





AWIPS Governance Development Planning



- **Software Recommendation and Evaluation Committee (SREC)**
 - **Who?**
 - Regional Focal Points, NWS HQ, NCEP
 - **How?**
 - Submit a SON and CONOPS/ORD to OSIP
 - Submit request of Architecture team for new infrastructure capability
 - Submit a small enhancement to NCF
 - Submit a local application for inclusion into the AWIPS baseline by LAWG
 - **Activities**
 - Assign rankings (strategic, infrastructure, and operational) tasking
 - Assign development work and development organization builds a development plan
 - Prepare AWIPS Release Plan in coordination with:
 - Field sites for testing (through regions)
 - Test Bed governance teams
 - Operational Proving Grounds Governance team
 - Raytheon for O&M team
 - NWSTD (NSTEP) for training
 - **Process Artifacts**
 - SREC Charter - https://sec.noaa3a.awips.noaa.gov/srec/files/srec_charter.pdf
 - **Artifacts**
 - AWIPS Release Plan (updated monthly)
 - <https://sec.noaa3a.awips.noaa.gov/srec/files/SREC%20Master%20List.pdf>
 - Development Plans for specific tasks



AWIPS Development Release Schedule



AWIPS Release	Focus	Code Check in	Date Available	Sites deployed	Assigned DRs
12.5	DR	4/24/12	5/23/12	13	66
12.6	DR	5/22/12	6/20/12	22	48
12.7	DR	6/19/12	7/18/12	34	52
12.8	Winter	7/17/12	8/15/12	48	41
12.9	DR	8/14/12	9/17/12	64	32
12.10	DR	9/11/12	10/16/12	96	54
12.11	Severe	10/9/12	11/13/12	115	30
12.12	DR	11/6/12	12/10/12	129	37
13.1	DR	12/4/12	1/15/12	150	36
13.2	Tropical				29
13.3	DR				28
13.4	DR				16
13.5	Fire Wx				15
13.6	DR				41
13.7	DR				TBD
13.8	Winter				TBD
13.9	DR				TBD
13.10	DR				TBD
13.11	Severe				TBD
13.12	DR				TBD

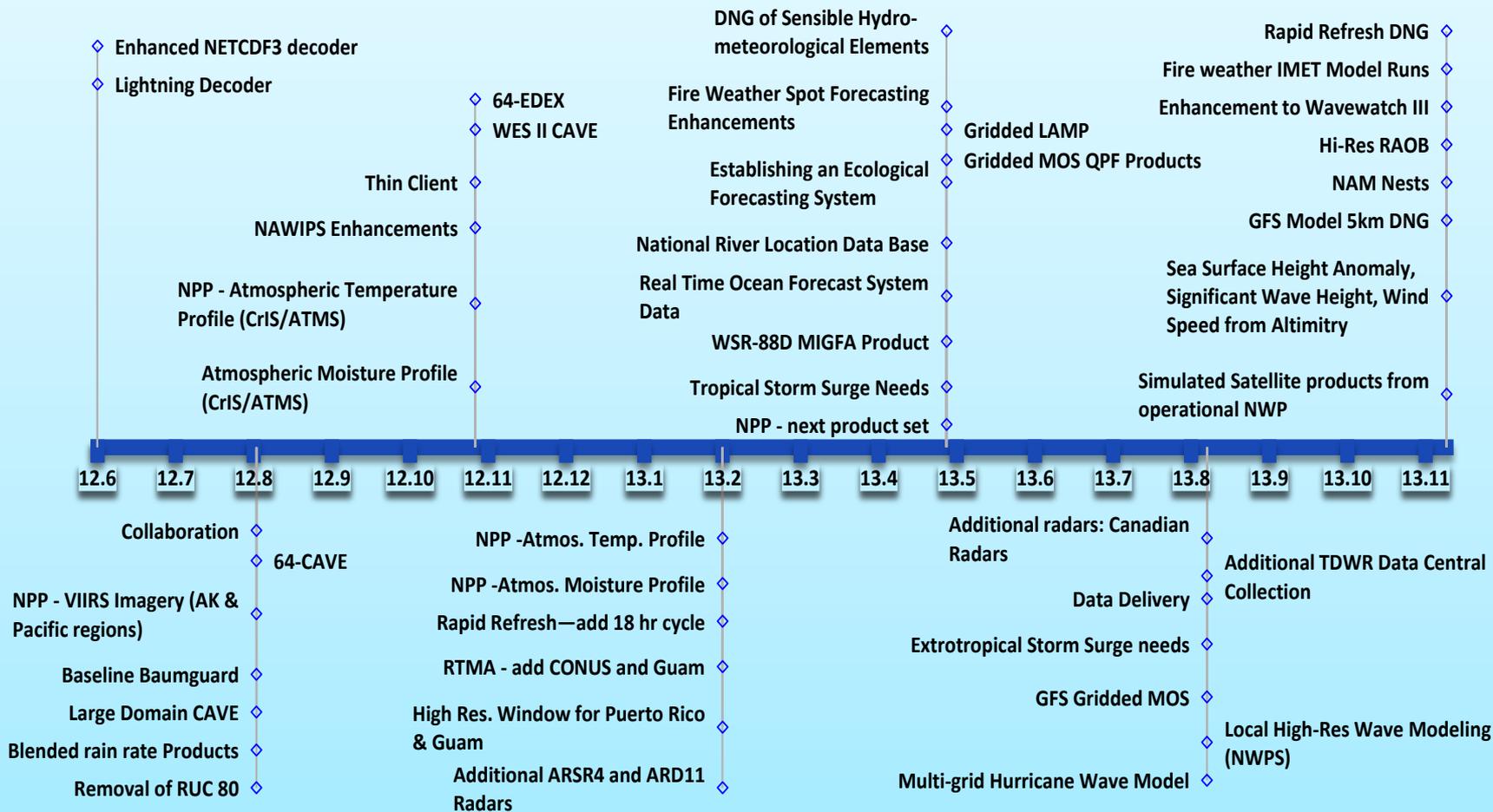


AWIPS Development

Draft Strategic and Operational (2012 and 2013)



AWIPS Release Plan (2012-2013)





AWIPS Development

Infrastructure Product Improvement Candidates (FY13)



- **CAVE New Window**
 - Launch one CAVE process with multiple windows
- **Drag and Drop Capabilities**
 - Add the ability to drag resources in D2D from one editor/pane to another
- **EDEX Hot Deploy**
 - Reloading a plug in without restarting the JVM. This can possibly be done through OSGI.
- **GIS Extensibility**
 - GIS Extensibility – Look for areas to take advantage of the GIS Extensibility (e.g., import/export)
- **GIS Product Generation (export)**
 - Format NWS products into GIS compatible formats.
- **GOES-R:**
 - Expand Derived parameter capability
 - Improve product color table management
 - AWIPS Capability for 24-bit Visualization of Satellite Imagery and Products
- **Headless CAVE**
 - Render CAVE imagery without the window and user interaction. This capability was developed for GFE's IFP Image, and written in such a way that other areas of CAVE could make use of it.



AWIPS Development

Infrastructure Product Improvement Candidates (FY13)



- **Integrate decoders:**
 - Combine GRIB/NCGRIB and combine Sat/McIDAS
- **Integrate AWIPS and NAWIPS perspectives**
 - Allows them to share data
- **Interactive Points and Lines**
 - Allow a user to display a cross section, drag the line on the map in the corner, and have the cross section display update on the fly. Similarly, a cross section could be easily converted to a time height or var height display.
- **Iris**
 - Create an Iris web services that are accessible to AWIPS
 - Create a centralized web infrastructure within AWIPS
- **Localization Editors Specific to Configuration Files**
 - Developer editors for more configuration files in A2. Add additional editor/GUIs for editing configuration files, such as embedding some of the AvnFPS Config GUIs in the LocalizationPerspective, or developing new GUIs for editing menus.
- **Open Source Projects: Replacement of Qpid**
 - "Qpid has given us trouble with maintainability. Potential contenders are HornetQ and RabbitMQ."
- **Radar Mosaic on Fly**
 - Radar mosaics are currently rendered based on a file of radars to use for the mosaic. There could be a GUI action to allow a user to add another radar to the set of radars currently displayed.
- **Web Browser Implementation in CAVE**
 - Develop web-browser-like navigation in CAVE such as bookmarks and the omnibar.



AWIPS Development

Draft NAWIPS Release Plan



Rel Year (CY)	Rel QTR	TITLE	Notes
2012	2	NAWIPS - General Enhancements	New requirements for Space Weather Prediction Center
		NAWIPS - NCP Enhancements (General Display)	Ability to specify previous cycles in SPFs and RBDs
			Enhanced viewing capability (contrast control) of visible satellite images in low light
		NAWIPS - NSHARP Enhancements	Ensure icing, turbulence, and cloud vertical profile displays
		NAWIPS -NCP Enhancements (General)	Scalable or zoom ability to display portions of observed and model sounding data
2012	3		Additional flexibility in static underlays
			Time matching and zoom/pan synchronization option across all NCP displays
		NAWIPS - NC Integrated PGEN Enhancements	Enhancements to High Seas product;
			Wind Quadrant/Semicircle tool
		NAWIPS - NCP Enhancements (Data)	High temporal frequency surface obs
			Ocean Sat scatterometer data
		NAWIPS - NCP Enhancements (General Display)	Add display of WWA cancellations to current options
2012	4	NAWIPS - NSHARP Enhancements	VAD wind profiler display;
		NAWIPS -NCP Enhancements (General)	Add marine zone CWA information to cursor readout for CWA selection;
			The ability to create satellite enhancements at the operational workstations
			Updated documentation and user's guides;
		NAWIPS - NC Integrated PGEN Enhancements	Ability to coordinate areal coverage of TC wind and/or surge watches and warnings with WFOs;
			Additional import and export options, including grids;
			Enhancements to existing capabilities of text product generation;
			Fire Weather Probabilities product enhancements;
			Investigate database options;
			More easily exchange graphical, gridded, and text files / products;
			Refine Outlook Generation for addition of a fourth categorical outlook risk.;
		NAWIPS - NCP Enhancements (General Display)	Ability to fade model data fills (similar to image fade);
			Added functionality to determine crossing seas and wind against seas;
	Color differentiation in MISC watch plots for PDS vs. regular.;		
NAWIPS - NSHARP Enhancements	Implement SPC Nflow functionality in the NCP		
NAWIPS -NCP Enhancements (General)	Add attribute to WOU county union displays with configurable time and line criteria;		



AWIPS Development NAWIPS Release Plan



Year	QTR	TITLE	Notes
2013	1	NAWIPS - NC Integrated PGEN Enhancements	Enhanced Thunderstorm Outlooks product enhancements;
		NAWIPS - NCP Enhancements (Data)	Cooperative Agency Profiler (CAP) winds (prflrb); Display microwave imagery from non-geostationary satellites;
		NAWIPS - NCP Enhancements (Data)	Fire Weather Watches; NOAA Profiler Network (NPN) winds (prflr); SPC watch status product;
		NAWIPS - NCP Enhancements (General Display)	Ensure AWIPS-2 can handle the large number of mesonets available and increased temporal resolution; Improved display of ocean models, soundings, cross sections; AWIPS II replacement for "spfmaker"; Implement a storm-centered coordinate system;
		NAWIPS - General Enhancements	Continue to refine and improve Prob2Cat; Capability to plot VGF/XML files in more GEMPAK applications;
2013	2	NAWIPS - NC Integrated PGEN Enhancements	Add capability for Public Severe Weather Outlook (PWO) Add probabilities for a three tier tornado and SEL wording based on meta information Enhancements to the SPC suite of Watch products. Revised volcanic ash tools, including replacement of HMS; Various QC features and efficiency improvements;
		NAWIPS - NCP Enhancements (Data)	GPS integrated precipitable water (gpspw); NEXRAD Vertical Azimuth Display (VAD) winds (nxrdw) (6 minute frequency); RASS temperatures (NOAA and Cooperative Agency) (rass);
		NAWIPS - NCP Enhancements (General Display)	Allow relaxation (and/or auto update) of product time matching for watches and warnings to allow plotting of current (wall clock) products on "historic" (image time) imagery.; Hovmoller diagrams; Improved function to display tracks and plumes of attributes from EMC cyclone tracker; Radar algorithm information for time synced overlay on other displays.;
		NAWIPS - General Enhancements	General upgrades to GEMPAK ensemble calculations;
		NAWIPS - NC Integrated PGEN Enhancements	"Hazard grid" based polygon marine warnings; Add VTEC coding for various products; CCFP Changes ; Enhancements to watch and watch status creation process; Integrate grid editing tools into contour elements; Refine product formats date and time for 10-1701 compliance ;
2013	3	NAWIPS - NCP Enhancements (Data)	Additional NCTEXT product metadata display; Time matching (future forecast time matches model/time data forecast time matching); Improve aircraft ascent and descent sounding display;
		NAWIPS - NSHARP Enhancements	Enhance NC case study / WES capability;
		NAWIPS -NCP Enhancements (General)	Upgrade of CREWSS capability to be more flexible and complete for surface and subsurface;
		NAWIPS - General Enhancements	Complete Center backups between NCs (NHC-TAFB/OPC/HPC/AWC) with full functionality and data at all Enable Intersite Coordination (ISC) between national marine centers (TAFB/OPC/HFO); Capability to run latest version of CIMSS ADT locally.
		NAWIPS - NC Integrated PGEN Enhancements	Implement ATCF including post-storm analysis and database access; Perspective independence (across perspectives);
2013	4	NAWIPS - NCP Enhancements (General Display)	Ability to disable the time-matching of data and imagery; Parallax correction for locating systems far from the satellite sub point;
		NAWIPS -NCP Enhancements (General)	NCEP data available in other perspectives;



AWIPS Development

New SBN Products



- **Satellite-Based Trop. Cyc. Posns/Inten.** (Added June 2011)
- **NCEP HIRES Window** (Added Nov 8, 2011)
- **Add Dual Pole Radar** (in progress)
- **NCEP RUC-to-RAP Transition (No New SBN Data)** (5/1/12)
 - **Additional NAM BUFR Soundings**
- **NCEP RAP13 - Ex Forecasts from 12 to 18 hours** (7/10/12)
- **NCEP NAM DNG (CONUS (2.5km) and AK(3km))** (7/10/12)
- **Gridded Localized Aviation MOS Prog. Grids (CONUS)** (7/10/12)
- **GFS-Based Gridded MOS** (7/10/12)
- **NPP VIIRS Imagery for Alaska and Pacific Region** (8/28/12)



AWIPS Development

Extended: Thin Client Project Overview



- **Objective:**

- Allows AWIPS remote access to AWIPS visualization
- Improves ability to provide impact-based decision support services from any location
- Improves support for CWSUs over current AWIPS I approach
- Provides additional options for COOP scenarios at NCs and RFCs

- **Status:**

- Prototyping and system analysis of AWIPS II SOA: **Completed**
- Production development: **In progress, testing being conducted**
- Deployment to be staged with AWIPS II deployment

- **Schedule/Milestones:**

- Thin Client Testing at Boulder CWSU: February, 2012 **(Complete)**
- IOC Deployment Target: 3QFY12 **(Achieved)**
- FOC Deployment Target: Q1FY13

Highlight

**Houston CWSU using
Thin Client for
Operations**

Fiscal Year	FY8				FY9				FY10				FY11				FY12				FY13			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
AWIPS II Extended: Thin Client (CITRB 10/2010)				ConOPS Dev	Tech Reqmts				Design & Development								Sys Test	Deploy	Installs					
					Exploratory Dev																			
AWIPS II Extended: Thin Client (CITRB 03/2012)				ConOPS Dev	Tech Reqmts				Design & Development								Sys Test	Deploy	Installs					
					Exploratory Dev																			



AWIPS Development

Extended: Data Delivery Project Overview



- **Objective:**
 - Develop operational robust infrastructure to support “intelligent” access to non-local data provider datasets
- **Status:**
 - CONOPS/Technical Requirements: Complete for IOC
 - High-level architecture/design, technical requirements, bandwidth analyses: **Complete**
 - IOC Production design and incremental development: **In progress**
- **Schedule/Milestones:**
 - Initial Development Release: April, 2012 (**Achieved**)
 - IOC Deployment Target: **Q4FY13**
 - FOC Deployment Target: Q3FY15

Highlight

Received first development release in April

Fiscal Year	FY8				FY9				FY10				FY11				FY12				FY13				FY14				FY15			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
AWIPS II Extended: Data Delivery (CITRB 10/2010)	Exploratory Development																															
	ConOPS & Reqmts IOC																															
					Hi-Lvl Arch				IOC Hi_Lvl Design				IOC Design/Devel				Sys Test		Deploy		Installs											
																FOC Tech Reqmts				FOC Design				Development		Sys Test		Deploy		Installs		
AWIPS II Extended: Data Delivery (CITRB 03/2012)	ConOPS & Reqmts IOC																															
					Hi-Lvl Arch				IOC Hi_Lvl Design				IOC Design/Devel				Sys Test		Deploy		Installs											
																	FOC Tech Reqmts				FOC Design				Development		Sys Test		Deploy		Installs	



AWIPS Development

Extended: Collaboration Project Overview



- **Objective:**
 - Improve our ability to communicate NWS forecasts to customers and partners so that the appropriate response is generated
- **Status:**
 - Requirements and prototyping for internal collaboration (Phase I): **Complete**
 - Production design and development (Phase 1): **In progress**
 - Phase II (External Collaboration) requirements def: **In progress**
- **Schedule/Milestones**
 - Initial Resource Plan and Schedule: January, 2012 **(Complete)**
 - IOC Deployment Target: Q4FY12
 - FOC Deployment Target: Q3FY15

Highlight

First prototype delivery April

Fiscal Year	FY8				FY9				FY10				FY11				FY12				FY13				FY14				FY15															
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4												
AWIPS II Extended: Collaboration (CITRB 10/2010)	ConOPS Development				Exploratory Development				Reqmts, Phase 1				Develop, Phase 1				Sys Test				Deploy				Installs																			
																	Reqmts, Phase 2				Develop, Phase 2				Sys Test				Deploy				Installs											
																					Reqmts, Phase 3				Develop Phase 3				Sys Test				Deploy				Installs							
AWIPS II Extended: Collaboration (CITRB 03/2012)	ConOPS Development				Exploratory Development				Reqmts, Phase 1				Develop, Phase 1				Sys Test				Deploy				Installs																			
																					Reqmts, Phase 2				Develop, Phase 2				Sys Test				Deploy				Installs							
																									Reqmts, Phase 3				Develop Phase 3				Sys Test				Deploy				Installs			



AWIPS Development

Extended: Hazard Services Project Overview



- **Objective:**
 - Improve hazard-based information generation, distribution, and accessibility in support of Impact-based Decision Support Services (IDSS)

- **Status:**
 - Incremental design prototype and development (Phase I): **In progress**
 - Phase I – Enhance and integrate three hazard-based AWIPS applications under Hazard Services
 - Establish first AWIPS II Integrated Product Team (IPT) : **Completed**
 - Includes Raytheon, OAR/ESRL/GSD, and OST

- **Schedule/Milestones:**
 - IOC Deployment Target: Q4FY13
 - FOC Deployment Target: Q2FY15

Highlight

First joint GSD-Raytheon developed prototype release expected in June

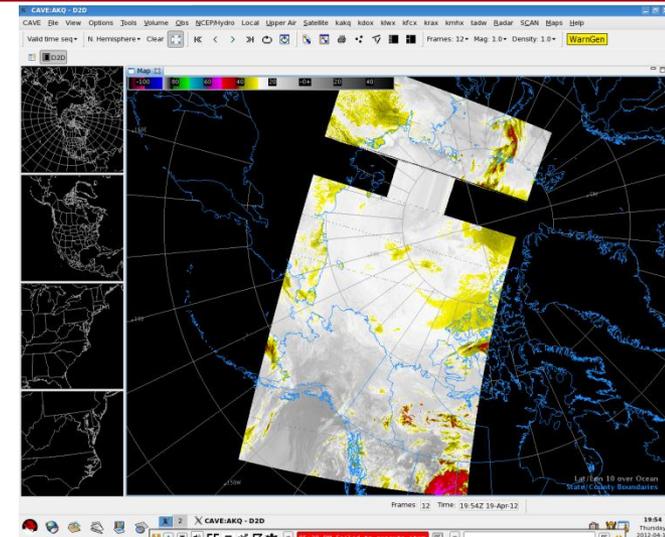
Fiscal Year	FY10				FY11				FY12				FY13				FY14				FY15					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
AWIPS II Extended: Information Generation (CITRB 10/2010)					Info Gen. Exp Dev/Reqs				Dev Phase 1				Sys Test	Deploy	Installs											
													Dev Phase 2				Sys Test	Deploy	Installs							
AWIPS II Extended: Information Generation (CITRB 03/2012)					Info Gen. Exp Dev/Reqs				Dev Phase 1				Sys Test	Deploy	Installs											
													Dev Phase 2				Sys Test	Deploy	Installs							



AWIPS Development NPP Project Overview



- **Objective:**
 - Prepare NCF/MGS/SBN for NPP
 - Provide the ingest and display capability for NPP Product Sets 1 and 2
- **Status:**
 - Prototyping and system analysis of AWIPS II SOA: **Completed**
 - Production development (Raytheon): **In progress, testing being conducted**
 - Deployment to be staged with AWIPS II deployment
- **Schedule/Milestones:**
 - **October 2012 (12.8.1)**
 - VIIRS Imagery Channel 1: Alaska & Pacific regions only
 - VIIRS Imagery Channel 4 : Alaska & Pacific regions only
 - VIIRS Imagery Channel 5 : Alaska & Pacific regions only
 - **January 2012 (12.11.1)**
 - Atmospheric Temperature Profile (CrIS/ATMS)
 - Atmospheric Moisture Profile (CrIS/ATMS)
 - **April 2013 (13.2.1)**
 - Atmospheric Temperature Profile
 - Atmospheric Moisture Profile





AWIPS Governance Status Review



AWIPS Governance



- **What are we Governing?**
 - Software developed for an operational AWIPS system
- **Why are we Governing?**
 - Preserve operational system integrity (performance)
 - Ensure software quality (functionality, science)
 - Ensure efficient use of the architecture (maintainability)
 - Avoid duplication of effort (resources)
- **How can Governance be achieved?**
 - By establishing:
 - Chains of **authority, responsibility** and **communication**;
 - **Controls** to enable people to carry out their authority and responsibilities.
 - **Mechanisms** to ensure that established policies and process are followed



AWIPS Governance

- **Who will be accountable?**
 - The Governance Manager will use a committee of **stakeholders** to own and maintain the Governance Plan.
- **What is the Governance Policy?**
 - Defines the authority, responsibilities, controls mechanisms, and communication for the software development decision making process as applied to AWIPS project
- **How will we be measured?**
 - By meeting the **mission** measured with metrics



AWIPS Governance Stakeholders



- **NOAA Development**

- Raytheon - Omaha Development team and O&M Team
- NWS – OST(PPB, SEC, MDL), OHD, OOS
- OCWWS and HSD (Policy, Requirements and Training)
- NCEP - Modeling Center and Systems Integration
- NESDIS
- NSSL
- OAR/ESRL/GSD and PSD
- Cooperative Institutes Research Program (CROSS, CIMSS, CIRA,, CICS, CREST)
- GOES-R Proving ground Product Development Partners
- NASA SPoRT
- NCAR/UCAR
- Laboratories
 - Great Lakes Environmental Research Laboratory
 - Atlantic Oceanographic and Meteorological Laboratory
 - Pacific Marine laboratory
- Regional and Site Developers – Operational and Local Applications

- **Non-NOAA**

- UNIDATA/Universities
- Commercial (e.g., Weather Channel, Accuweather)



AWIPS Governance Mission



- Use **agile development paradigm** in prototyping and development to a **yield faster and more responsive and transition of new capabilities to operations**
- Implement a **streamlined governance process** balancing agile development paradigm with the necessary software development principles to **introduce new functionality into the AWIPS baseline without negative impact to operations**
- Enable a **Collaborative AWIPS II environment** to effectively **incorporate new science and technology (capabilities) into AWIPS II operational baseline from NOAA development organizations, academic and research communities, and private sector**

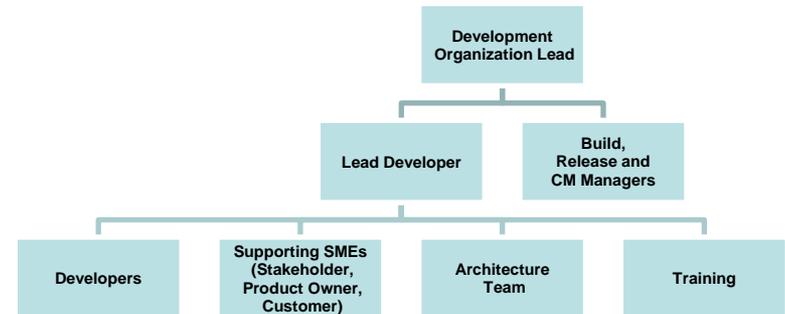


AWIPS Governance Mission



Use Agile development process in prototyping and development

- **Tight team collaboration**
 - Includes everyone early and often
 - Leads to quick turnaround, more prototyping, and quicker feedback
- **Welcome change**
- **“Build a little, test a little, field a little” approach**
 - Short iterations (e.g., 2 weeks), more frequent releases (e.g. six iterations)
 - Continuous Integration and Testing
- **Team learns how to be more effective and adjusts accordingly**
- **Challenge**
 - Distributed Development Teams (no face-to-face communication)
 - Mitigate by providing project management tools





AWIPS Governance Mission



Implement a streamlined governance process balancing agile development paradigm with the necessary software development principles

- **Develop a set of policies and controls, standards, and best practices that identify roles and responsibilities.** They should:
 - Clear
 - Flexible
 - Provide value
 - Be simple
 - Empower teams
 - Maintain the Architecture Vision
 - Ensure code quality
 - Look for Reuse
 - Preserve operational system integrity



AWIPS Governance

Mission

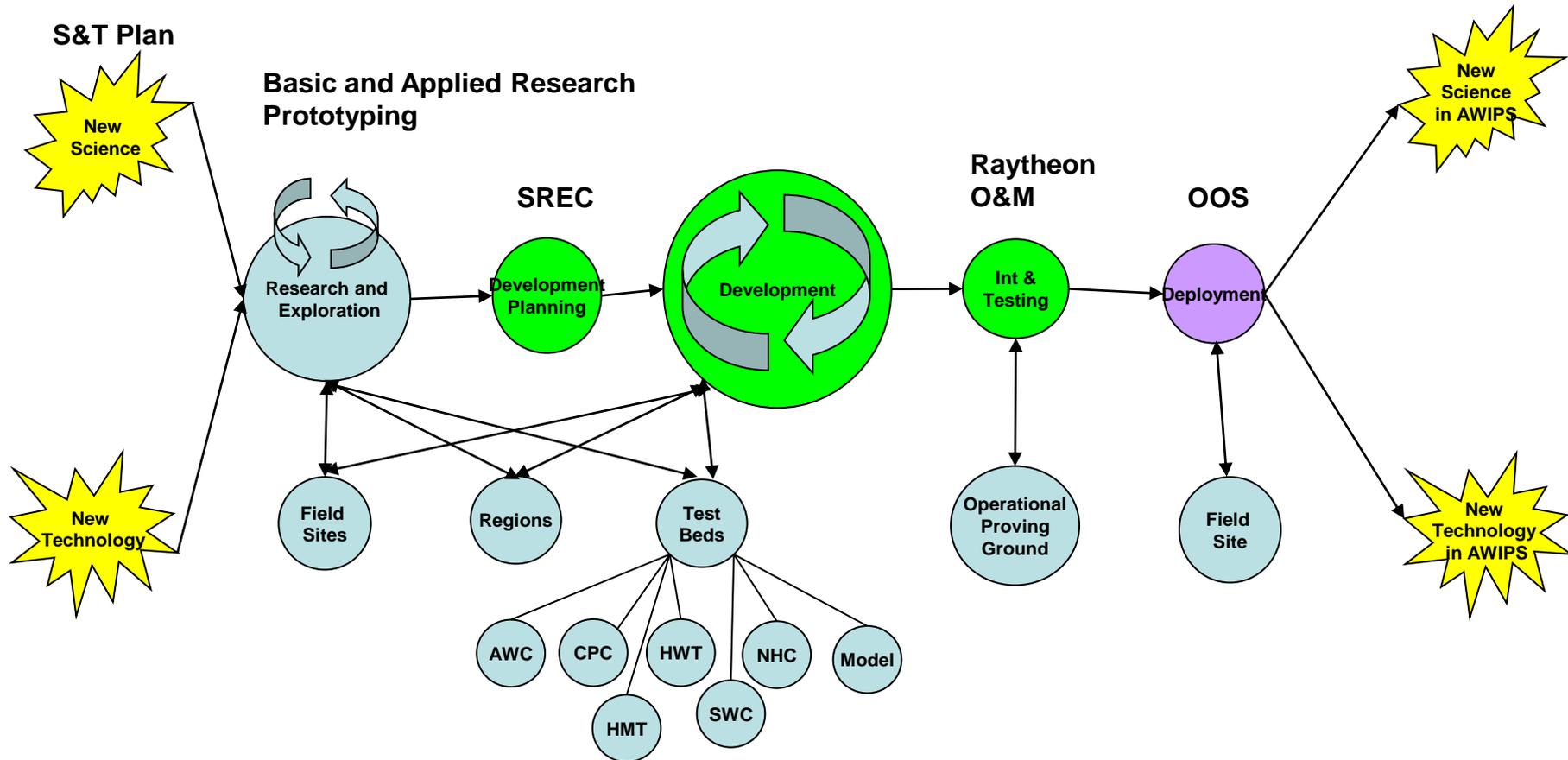


Enable Collaborative AWIPS II environment to effectively incorporate new science and technology (capabilities) into AWIPS II operational baseline from field innovators in NOAA academic and research communities, and private sector

- Establish **policy and procedures to distribute AWIPS II software**
- Provide an **run time testing environment** with live or simulated data and automated testing
- Provide common **development tools**
- Provide **developer support**
- Establish a **Innovation Web Portal** to share information between innovators to support research, development and testing and allow developers to more effectively develop capabilities

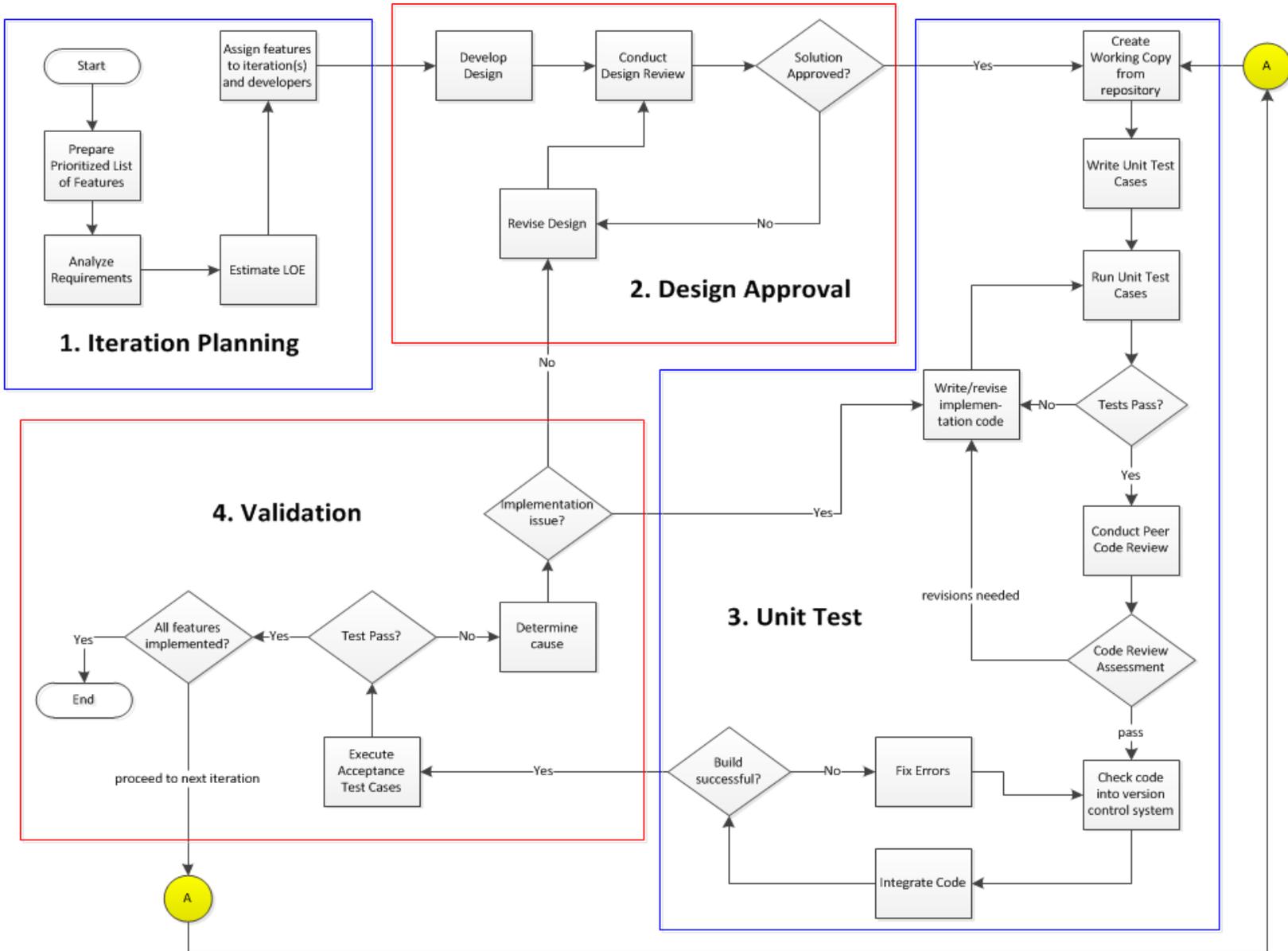
AWIPS Governance

AWIPS Research to Operations Phases



- Establish working relationships for specific projects between development organizations and:
 - Sites and regions (e.g., GSD/BOU or RTS/OMA)
 - Test Beds Governance teams
 - Operational Proving Ground Governance teams

AWIPS Governance Development





AWIPS Governance Development



- **Process Artifacts**

- Development Process
- Standards and Guidelines
 - General, internal and external documentation, naming conventions, best practices, accessibility, and peer reviews guidelines
- Design Goals and Reviews
- Issue (DCS/DRs) Tracking
- Change Management
- Communication Plan
- Templates

- **Deliverables**

- Software, Requirements (CONOPS/ORD), Design, User Guide, System Maintenance Manual, and Test Cases

- **Link**

- <https://collaborate.nws.noaa.gov/trac/asdt/wiki/GovernanceSoftwareDevelopmentProcess>



AWIPS Governance Architecture Team



- **Membership**
 - Led by OST/SEC Analysis Branch with support from Raytheon and other development organizations
- **Become the caretaker of the AWIPS Infrastructure**
 - Create, maintain, update and oversee architecture standards and guidelines
 - Participate in software **designs reviews** (high level and low level design)
 - Develop software to help them gain a solid understanding of the AWIPS II SOA architecture
- **Develop a AWIPS Infrastructure Product Improvement Plan**
 - Enhance infrastructure to support development of new capabilities and keep pace with new science and technology
 - Identify commonalities/increase code reuse for easier maintenance
 - Identify new tools, common utilities, methods of data access, etc.
- **Provide support for development community**
 - Provide training curriculum, documentation, workshops, developer forums, wikis, listservers, chat, and near real time developer
- **Link to Documentation**
 - <https://collaborate.nws.noaa.gov/trac/asdt/attachment/wiki/Architecture%26DesignReviewTeam/ArchitectureReviewBoardCharter.pdf>



AWIPS Governance Design Reviews



- Ensure architectural integrity, common computer look and feel
- Eliminate the proliferation of independent systems and create an integrated environment
- Assist in finding the optimum engineering solution

Project	Review Date	Status	Design Template
Alaska Region Satellite (netcdf3 decoder)	8/12/2011	Completed	AlaskaSatellite_HighLevelDesignReview
Alaska & Regional Satellite (netcdf3 decoder)	2/17/2012	Completed	Design\Code Review
Thin Client	10/18/2011	Completed	Shapefile_DesignReview(ep)
Thin Client		Completed	KML Import-Export Design and Code Review
Thin Client		Completed	Markers Design Review
CAVE Markers Plugin	4/17/2012	Completed	Markers_Design_Review*
CAVE KML Plugin	4/17/2012	Completed	KML_Design_Review*
CAVE Shapefile Plugin Part 1	4/18/2012	Completed	Shapefile_Design_Review*
CAVE Shapefile Plugin Part 2	4/23/2012	Completed	Shapefile_Design_Review*

Design Review Process

<https://collaborate.nws.noaa.gov/trac/asdt/wiki/Architecture&26DesignReviewProcessFlow>

Design Review Procedure and template

<https://collaborate.nws.noaa.gov/trac/asdt/wiki/Architecture%26DesignReviewTeam>

Design Review FAQ

<https://collaborate.nws.noaa.gov/trac/asdt/wiki/Architecture%26DesignReviewFAQ>



AWIPS Governance Development Tools



- **Distributed Configuration Management**
 - Integrated Development Environment (Eclipse)
 - **Distributed CM**
 - Continuous build and Integration (Jenkins)
 - Source Code management/revision control (GIT/Redmine)
 - Code Review Tools
 - Jupiter, PMD, CheckStyle, JUnit, Cobertura
- **Integrate Development and Test Environment**
 - ADAM platform (functional and science testing)
 - Runtime development/testing systems (performance)
 - Regions
 - Silver Spring
 - Training Center
 - Virtualized (on NWS hardware or in the cloud)
 - Automated testing (Raytheon task for Summer/Fall 2012)
 - Performance testing procedures (SEC –in progress)

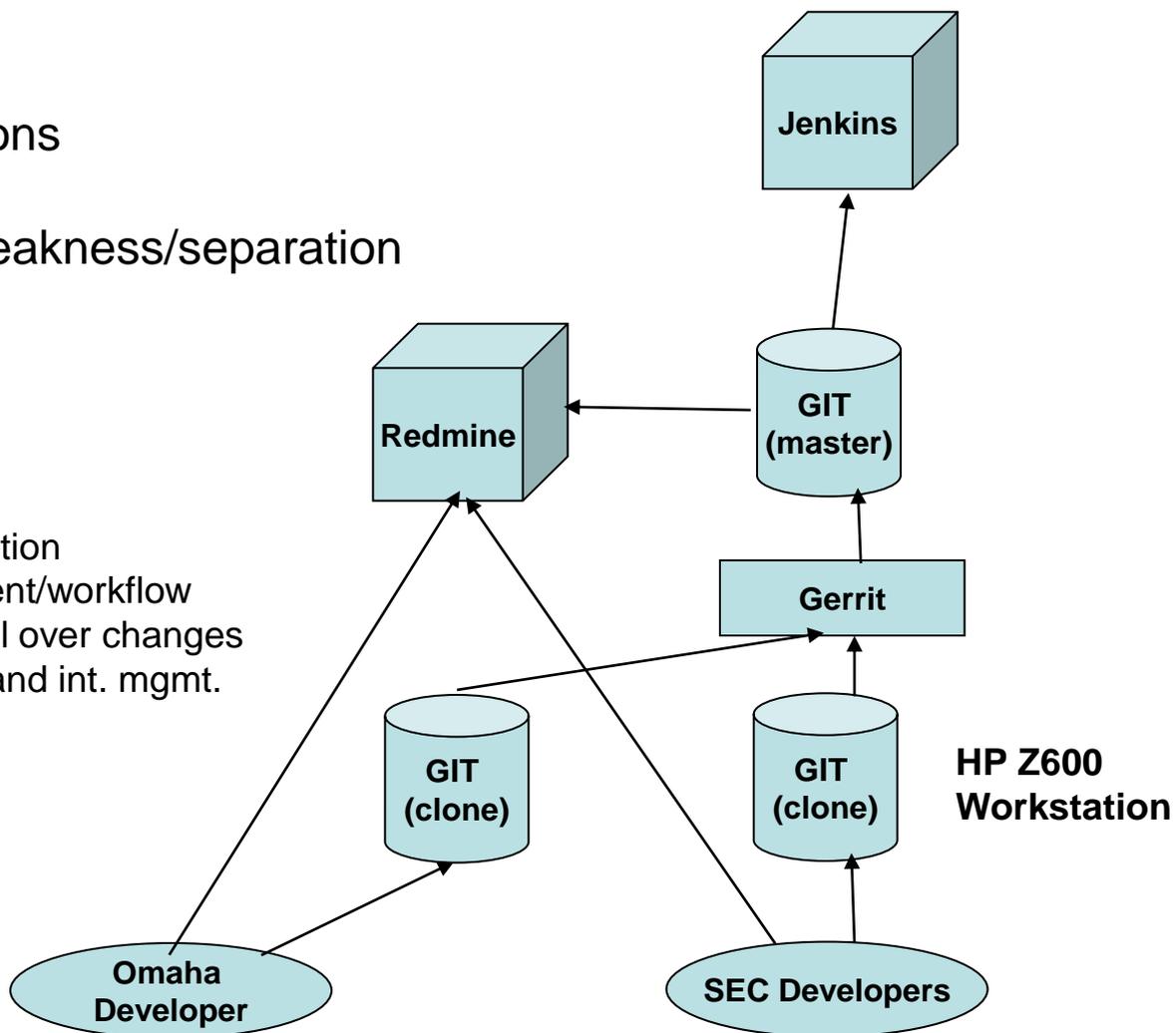


AWIPS Migration Distributed CM



- Open source
- Control access
- Track changes and revisions
- Branch and merge well
- Accommodate network weakness/separation
- Configurable
- Gate keeper
- Good for large projects

- **Jenkins** – Continuous integration
- **Redmine** – change management/workflow
- **Gerrit** – Gate keeper/control over changes
- **GIT master** – repository/version and int. mgmt.
- **GIT Clone** – local GIT





AWIPS Governance

Change Management - ATAN



- **Request permission to test at an operational site**
 - The AWIPS Test Authorization Note (ATAN) authorizes a temporary change to the AWIPS system at the site(s) for prototyping, user testing, or the purpose of troubleshooting.
 - Delegates all responsibility for the site installation and support to the technical lead (development organization)
 - **What's in an ATAN?**
 - Purpose, Location(s), Start and End Dates
 - Systems or Areas Affected
 - What would be affected (or changed): servers; functionality; files or executable
 - Operational and System Impact
 - Document results of testing on a platform similar to the baseline hardware and software
 - Installation information
 - **Who Approves?**
 - Site POCs, Regional Focal Points, SEC, Raytheon
 - **How To submit an ATAN:**
 - Submit ATAN to Oanh.Nguyen@noaa.gov
 - **Links**
 - <https://sec.noaa3a.awips.noaa.gov/ATAN/index.htm>



AWIPS Governance Development Support



- **Fundamental required knowledge**
 - JAVA, RCP Framework, JMS/QPID, Camel Spring, Thrift, JAXB, SWT, XML
- **Documentation (available to all users)**
 - Most available via the ADE (Eclipse IDE bundled with source code)
 - Lots of Open Source references
 - Source code and auto generated doc (JAVADOC) to maximum extent possible
 - If deficient, we will fill the gap
 - APIs are documented in source, patterns are found by looking at existing code, ADE provides class hierarchies
- **Need more documentation?**
 - Provide suggestions to edward.mandel@noaa.gov
- **Links**
 - AWIPS-2 Transition Training - <https://doc.learn.com/>
 1. System Administration
 2. Application Focal Point Transition
 3. User Transition
 - AWIPS II User Manual, System Maintenance Manual, and System Subsystem Design Document (SSDD)
 - https://onestop.noaa3a.awips.noaa.gov/awips_2_Document2.html



AWIPS Governance Development Support



- **Technical Interchanges**
 - Architecture Team available for technical interchange (1-4 hours) meetings
 - **Contact james.calkins@noaa.gov**
- **Developers Forum (Scheduled - Thursdays at 2:30pm EDT/EST)**
 - Look for common areas for collaboration and dependencies.
 - Advertise these sharing and networking opportunities
 - Feedback on documentation (identify gaps)
 - Regular Training topics requested by developers
 - **Want to be included?** Contact edward.mandel@noaa.gov
- **Near real time developer support to development community**
 - **How to be included?**
 - Instructions for subscribing to listserv & chat are available on the National Core Local Applications Development Team wiki: <https://collaborate.nws.noaa.gov/trac/ncladt/wiki>
 - AWIPS II Development Listserver (awips2dev) - an email forum for anything relating to AWIPS II Development. Instructions to subscribe: visit http://infolist.nws.noaa.gov/read/all_forums
 - Awips2AppsChat - Chat room analog to awips2dev email info list
 - AWIPS 2 Wiki page: https://collaborate.crh.noaa.gov/wiki/index.php/AWIPS_II



AWIPS Governance Innovation Web Portal



- **Information center and gateway**
- **Central repository for AWIPS Governance Guidance**
 - Searching, rating, comments, most popular, most recent
- **Idea/project repository**
 - All proposed and ongoing projects in one location
- **Provide collaboration tools**
 - Message boards, communities, documentation, publications, conferences, activity tracker, collaboration feature to host events and a catalog of new and enhanced products under development, experimental and operational, matrix of software developers expertise, prototypes to test and evaluate.
- **Prototyping in progress led by OST/MDL**
 - Initial prototype available in June



AWIPS Governance

Software Distribution Policy & Procedures



- **ANYONE who receives software must:**
 - Sign the AWIPS II Software Distribution Policy
 - Be responsible for the actions of all users who access their copy
- **AWIPS II redistribution**
 - If a person/group intends to redistribute AWIPS II (e.g. Unidata)
 - They must make a one-time FOIA request
 - They have the option to receive all “major” releases
- **AWIPS II contains proprietary code**
 - binLightning decoder
 - Full AWIPS II package is distributed if AWIPS II recipient has an agreement
 - NWS removes binLightning software if recipient has no agreement/contract
- **AWIPS II is typically downloaded from NWS**
 - LDAP (@noaa.gov) users download full release
 - Non-LDAP users download release w/o binLightning



AWIPS Governance

Software Distribution Policy & Procedures



- **Who currently receives AWIPS II releases**
 - NOAA/NWS
 - NWS Forecast Offices, River Forecast Centers
 - Regional Headquarters
 - Training Divisions, etc.
 - Development Organizations, NCEP
 - Other Government agencies
 - NASA (Goddard)
 - Bonneville (OR) Power Administration (BPA)
 - NWS Partnerships and Proving Grounds
 - UCAR/COMET
 - NESDIS
 - CIRA
 - U of Alabama-Huntsville/NASA/SPoRT
 - U of Wisconsin/CIMSS
 - U of Hawaii-Manoa/GOES-R Tropical Pacific Testbed
 - Unidata
 - Private companies
 - Iberdrola Renewables
- **How do I get on the list?**
 - Contact james.calkins@noaa.gov



AWIPS Governance Plans Forward





AWIPS Governance Plans Forward



- Establish Governance Advisory Board
 - Review existing policies (directives) and propose updates
 - Establish tasking for Raytheon Support to the Architecture team
 - Prepare/update policy directives and procedures
 - Gather feedback on development documentation gaps and correct
 - Continue to foster training of developers
 - Establish project management portfolio
-
- **Start Developing!**

