AWIPS II Status and Plans
for
National Offshore and High Seas Meeting

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AGENDA

- ## AWIPS II Status and Plans
  - AWIPS Brief History
  - AWIPS II Technology Infusion Scope and Milestones
  - AWIPS I to AWIPS II Migration Status
  - AWIPS II Architecture Overview

- ## NAWIPS Migration Plans and Status

- The original prime contract for system development was awarded to PRC, Inc on December 29, 1992
  - To replace Automation of Field Operations and Services (AFOS)
  - PRC, Inc later acquired by Northrop Grumman IT (NGIT)
  - Commissioned - 2000

- Operations phase of original contract expired on September 30, 2005

- Re-compete contract awarded to Raytheon Technical Services (RTS) on August 17, 2005
  - Proposal included a high level plan to re-engineer AWIPS software into a Service Oriented Architecture (SOA), **AWIPS II**

AWIPS II Technology Infusion Scope

AWIPS II Technology Infusion (FY2005 – FY2015)
- A long-term project which delivers a modern, robust software infrastructure that provides the foundation for future system level enhancements for the entire NWS enterprise

- Phase 1: (FY2006-FY2011)
  - Migration of WFO/RFC AWIPS (AWIPS I) to a modern Service Oriented Architecture (SOA) infrastructure executed incrementally through a series of task orders

- Phase II: (FY2009-FY2012) – AWIPS SOA Extension
  - Creation of a seamless weather enterprise spanning NWS operations
    - Migration of NAWIPS into the AWIPS II SOA
    - Delivery of thin client to support the Weather Service Offices, Center Weather Support Units, Incident Meteorologists, (e.g., Fire Weather, backup support for RFCs and National Centers)
    - Integration of Weather Event Simulator
    - CHPS Integration into AWIPS SOA

- Phase III: (FY2009 – FY2015) – Enterprise Level Enhancements
    - Data delivery enhancements: "Smart push-smart pull" data access
    - Integrated visual collaboration
    - Information generation enhancements
    - Visualization enhancements

- Perform **"black-box"** conversion
  - Preserve existing functionality, look and feel on top of new infrastructure
- Thorough field validation and acceptance before deployment
  - Incremental releases via task orders for test and evaluation strategy
- No loss of functionality
  - Deployed system current with deployed AWIPS capability (i.e., OB9)
- Use open source projects - No proprietary code
  - JAVA and open source projects enable AWIPS II to be platform and OS independent
- Objective is to make AWIPS II available for collaborative development

AWIPS Migration Schedule

Task Order	Target
Develop AWIPS SW Product Improvement Plan (TO1)	June 2006
Conduct Initial system analysis (TO2)	October 2006
Develop ADE/SDK (TO3-6)	July 2007
Plan baseline application migration (TO7)	October 2007
Migrate primarily D2D/Warngen capabilities (TO8)	February 2008
Migrate primarily GFE capabilities (TO9)	September 2008
Migrate primarily hydrologic capabilities and infrastructure improvements (TO10)	February 2009
Complete AWIPS SOA Release 1.0 (TO11)	March 2010
System Operational Test and Evaluation (OTE)	March - August 2010
Field (OTE)	Sept- Dec 2010
Target deployment	2011

Task Order 11 Schedule

- **Slice 1 – April 8** **Delivered**
  - D2D Display (Non-Derived Satellite data, Maps & Warngen locations), Data (SBN ingest, Selected Decoders), Hydrological Functions (XDAT, IHFS, SSHP), Cron Management, Guardian, Command Line Interface, Notification Server

- **Slice 2 – May 6** **Delivered**
  - D2D Display (Upper Air Rendering), Decoders (BufrMOS), Text Triggers, GHG, Radar ORPG Ingest, Dam Break Model, Data Purging

- **Slice 3 – June 3** **Delivered**
  - WarnGen, Warngen Service Backup, Hydroview, XNAV, ACARS data, Model/Satellite Soundings

- **Slice 3.1 (DR fixes) – July 1** **Delivered**
  - 76 DRs - 49 Graphical Forecast Editor (GFE), 15 Display Two-Dimensional (D2D)

- **Slice 4/5 – August 26** **Delivered**
  - AvnFPS (except climate), D2D Display (Obs, Radar/Radar Apps/Radar Mosaic, Volume Browser Standard Model Parameters, Time Matching+4 panel), GFE (except DFC, Service Backup), MPE, Text Workstation Scripting, Radar Plug-in, SigWx/highDensityWinds/ncwf,ascat,soundings Plug-in, Satellite Precipitation Estimate (SPE) Data Retrieval

- **Slice 6 – October 21**
  - AvnFPS (climate), D2D Display (Satellite, Upper Air, NCEP Outlook Grids Rendering, SigWx/LSR/VAA Rendering, Volume Families, Skew-T, Hydro Rendering), GFE (DFC, Service Backup), NDFD Grid Transmission, Text Workstation Alarm/Alert, FFMP, Fog Monitor, SCAN, SNOW, SAFESEAS, Advisory Decoder Plug-in, SIGMET Plug-in, Version Purging, Archival/Backup of Data, Failover, Localization Infrastructure, Hydro - Build Precip Reports, Hydro - Flood Archiver, Cron management, TMCP, HazCollect, NWWS, Comms, HWR, LDAD, RFC applications, HPE, HPN, FSI, AWIPS System Monitor

- **Start Performance Testing – December 2009, RTS**

- **Snap-Up – Dec 9**
  - OB9.2 DR fixes, Volume Browser (Radar & Tilt, Derived Fields, Derived Levels)

- **Start Stability Testing – Feb 2010, RTS**

AWIPS II Architecture Overview

- Consists of AWIPS Development Environment (ADE), the Common AWIPS Visualization Environment (CAVE) and Enterprise Data Exchange (EDEX)

- Service Oriented Architecture (SOA)

- Primarily Java based

- Integrates many Open Source Projects

ANT	ADE build scripting
JAVA	ADE Java virtual machine
PostgresSQL	RDBMS for metadata
Jibx	Java Object to XML mapping
JEPP	Java embedded Python libraries
Jhdf5	Java API to HDF5
Hibernate 3	Relational to object mapping
Geotools	GIS libraries and tools
Velocity	Template engine
Openfire	Collaborator server
Eclipse RCP	Visualization framework
Jogl	Open GL Java API for CAVE
Batik	SVG tool library
Activemq	ADE Java Messaging Service
Camel ESB	ADE Enterprise Service Bus

AWIPS II Primary Standards & Formats

- **Ingested Data Formats**
  - GRIB1/GRIB2 – Gridded data
  - NetCDF3 – Support AWIPSI/II interoperability
  - BUFR – Observational Data, e.g., soundings
  - METAR, SHEF – Surface and hydrological data
  - GINI – Satellite Imagery
  - OPRG L3 – Radar Imagery
  - Text Messages – Text products

- **Data Store Formats**
  - PostGres – Metadata and select data type store, e.g., text
  - HDF5 – Binary store for grids, imagery and select observations

- **Product Distribution**
  - NetCDF3 – NDFD Grids
  - ASCII Text – Text products

- Full NAWIPS capabilities ported to AWIPS II architecture

- Software ready for Operational Testing and Evaluation by Q1FY11

- No changes to the forecaster workflow
  - "Gray box" migration
  - Some visual differences may be unavoidable

- Capitalize on new technology

- Migration activities in four primary areas
  - GUI program integration into CAVE
    - NMAP
    - NWX
    - NTRANS
    - NSHARP
  - Product Generation (PGEN)
  - Decoders
  - GEMPAK

- Testing and Test Plans
  - Developed by the Centers based on operational concepts

National Centers Perspective

- Previous development
  - Developed a perspective in CAVE to match the legacy NMAP user interface
  - Most tools and menu items are fully functional
- Current Development
  - Focusing on data management, selection and display
  - Starting to integrate multi-loop and multi-panel displays
- Future development
  - Continue to add data resource types
  - Begin timeline and time matching

Product Generation

- Fully integrated set of drawing and editing tools with derived product creation capabilities
  - Text, Graphics, Grids, etc.
- Generic objects complete
- Meteorological objects
  - Severe weather watch, SIGMETs, TCAs, Outlooks, etc.
- Product-centric infrastructure
- Conversion utilities
  - Legacy VG format to new XML-based format
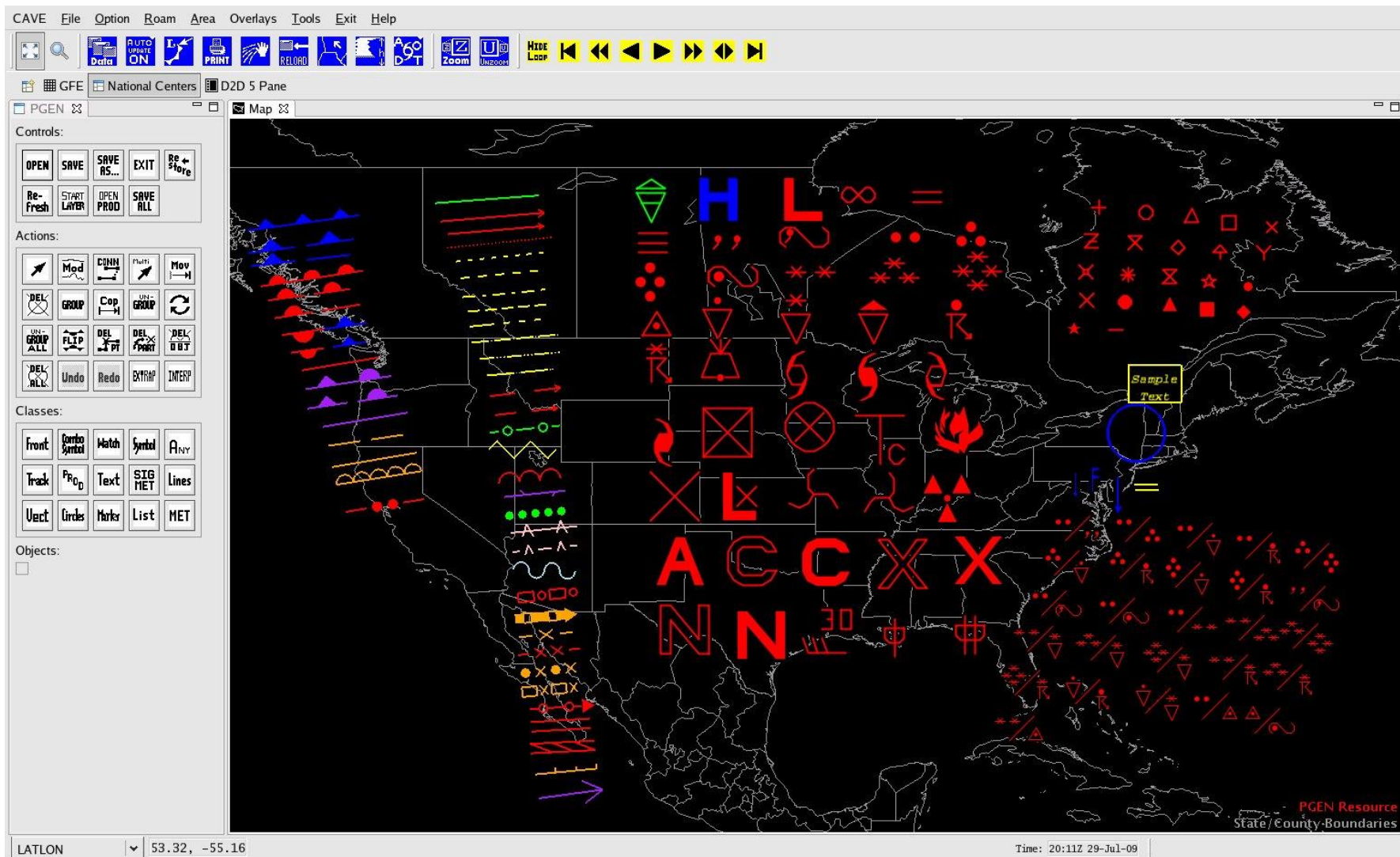
Decoders

- Completed
  - Flash Flood Guidance
  - Watch Corner Points
  - Supplemental Climatological Data
  - SIGMETs (Convective, Non-convective, International)
  - AIRMETs
  - Advisory-Watch-Warning
  - Ice Drift
  - TAMDAR
  - Hurricane Advisory
- Ongoing
  - Large datasets that leverage HDF5
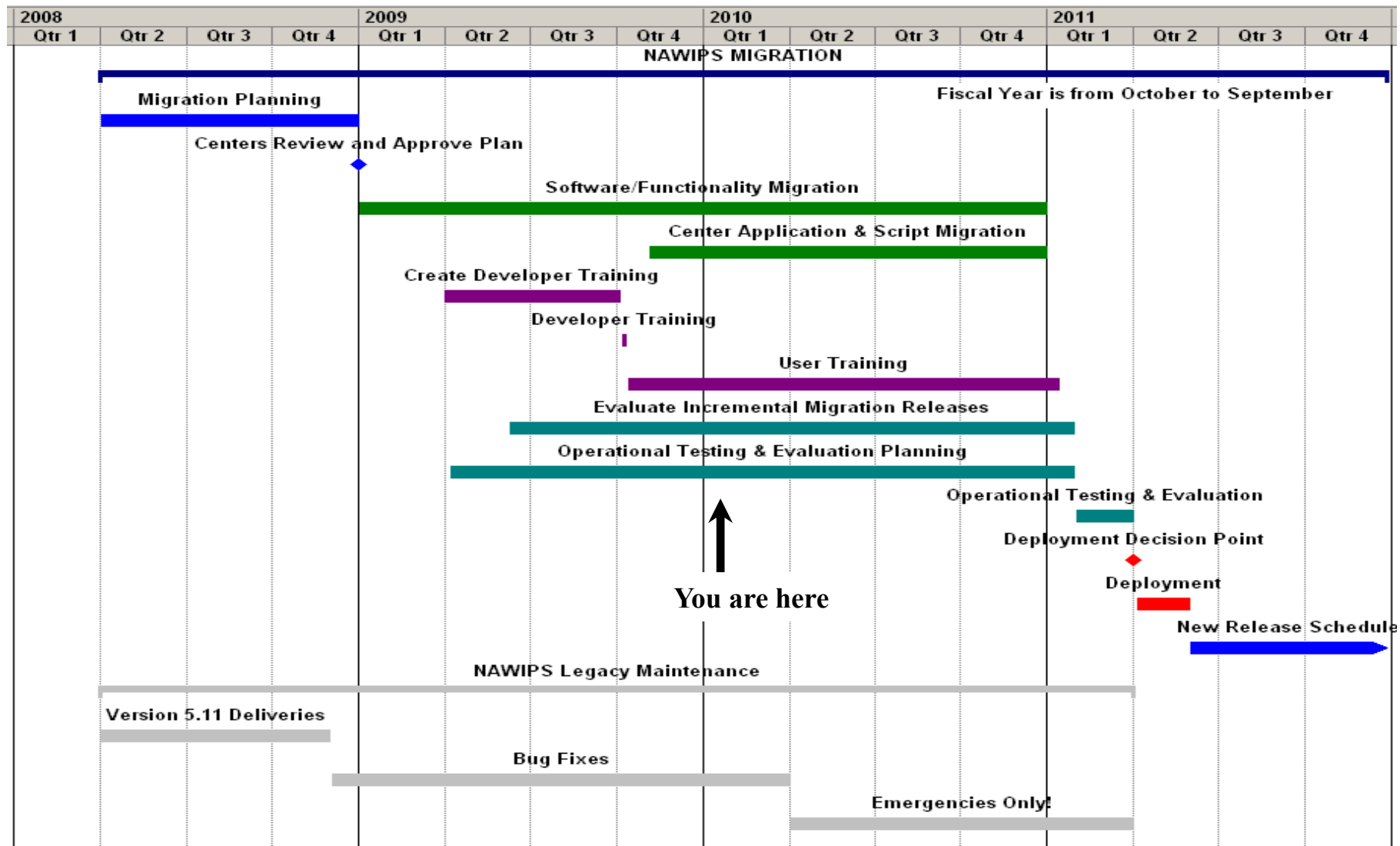   - Imagery, Grids, QuikScat, etc.

GEMPAK

- Forward compatibility
  - Allows legacy applications to access AWIPS II database
  - Risk mitigation for NC local GEMPAK applications
- Completed
  - Surface data
  - Upper Air data
  - Imagery
- Next
  - Grid data
- GEMPAK 6.0 – Q1FY10

NAWIPS Migration Roadmap

2008				2009				2010				2011			
Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4

NAWIPS MIGRATION

Fiscal Year is from October to September

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

You are here

Deployment

New Release Schedule

NAWIPS Legacy Maintenance

Version 5.11 Deliveries

Bug Fixes

Emergencies Only!

QUESTIONS ????