



7th *CLARUS* Initiative Meeting

Charlotte, NC



Status of Meteorological Assimilation Data Ingest System (MADIS) Transition to Operations



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Outline



- Background
- Current Capabilities
- IT Architecture
- Program Status and Deliverables
- Next Steps
- R2O Status and Post-FOC PPI



Background

- **History**

MADIS was established in 2001 to prototype new access, integration, quality control, and distribution techniques for real time observation data

- **Goal**

- Easy access to quality-controlled data from a wide variety of observing infrastructures
 - Local, state, federal agencies, and private industries
 - Standardized, more accurate, and higher density observational infrastructure



Background (cont.)

- **Access type:**
 - **How:** Local Data Monitor (LDM) Pull, FTP (push and pull), XML (pull)
 - **Who:** NOAA, Federal Agencies, States, Private Sector, Universities
- **Integration:**
 - MADIS generates products in standardized text-based format to facilitate inter-comparisons and access
- **Quality control:**
 - **What is provided:** Automated QC Checks, e.g., Gross Error Checks, Temporal Consistency and Spatial Consistency (e.g. buddy-checks); Station Monitoring Statistics such as Frequency of Failure, Bias and Standard Deviation Statistics
 - **What are its limitations/scope:** Basis of statistics is analysis field based on elevation corrected station buddy-checks; therefore, analysis is as good as the stations that comprise it (generally good)
 - **MADIS QC CONOPS:** application independent, real-time mission support requiring low latency
- **Where does MADIS run?**
 - **Pre-IOC:** Primary @ GSD ; Physical Backup: NA
 - **Post-IOC:** Primary @ Gateway/NCO, Physical Backup: GSD



Background (cont.)



Supported Capabilities

- Integrated observations with uniform formats and time stamps
- On-the-fly, flexible, data reformatting
- Continuous database updates triggered by arriving observations
- Increased data density
- High temporal resolution
- Web-enabled push/pull distribution capabilities, with server-side metadata, parameter, spatial and temporal parsing capabilities
- Seamless access to real-time and saved datasets
- Secure authentication for proprietary data



Current Capabilities



- **Data Portfolio:**

- >58,000 Surface Stations producing over 11,600,000 observations/day
- 134 Profiler Sites (> 200,000 observations/day)
- Over 450,000 aircraft observations/day
- Plus global radiosonde and satellite observations

- **Service:**

- Availability:
 - Current objective 99.0% with regular business hour support
 - Post-FOC will be 99.5% with 24/7 tech support at NCO & TOC
- Strong support from a wide and diverse users base
 - “MADIS data has proved incredibly helpful in increasing overall situational awareness ... with major wind and winter storm events, along with a severe weather event.” -- Brian Crumpler - GIS Manager, Virginia Department of Emergency Management Preparedness Division

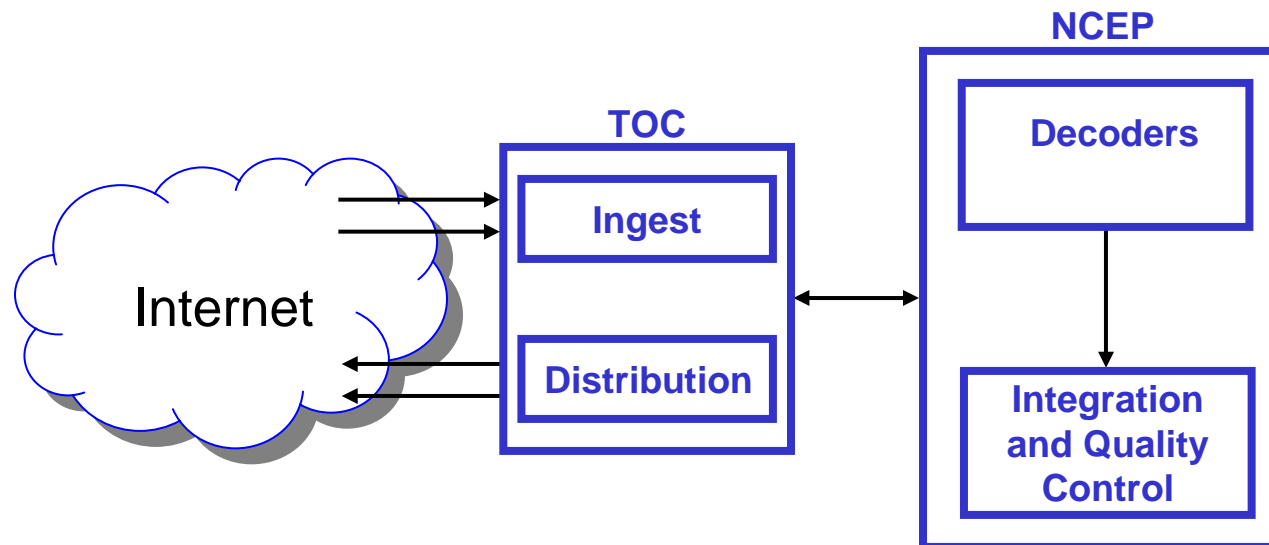


IT Architecture

Strategy:

Port the existing GSD MADIS software to an integrated NWS TOC and NCO distributed environment, with a supporting backup and research-to-operation test environment at GSD






MADIS Computing Environment





FY 2009 Deliverables and Status



	FY2009 Deliverable	Description	Progress	Upcoming Milestones
	Complete OSIP Gate 3	<ul style="list-style-type: none"> Meet all Gate 3 requirements and obtain Gate approval 	<ul style="list-style-type: none"> All required documents provided to OSIP 	<ul style="list-style-type: none"> Approved through Gate, May 12, 2009
	Procure Primary and Backup Ingest & Distribution Servers	<ul style="list-style-type: none"> Servers needed for Gateway I/O and Backup 	<ul style="list-style-type: none"> Hardware ordered and received at GSD 	<ul style="list-style-type: none"> Completed
	Develop, test, and install MADIS code on NCO CCS servers	<ul style="list-style-type: none"> Code required to decode, integrate, and quality control observations and generate station monitoring statistics 	<ul style="list-style-type: none"> Accounts setup Testing commenced 	<ul style="list-style-type: none"> Q4 completion on track
	Install Ingest & Distribution servers at TOC <small>9/16/2009</small>	<ul style="list-style-type: none"> Servers needed for Gateway I/O and Backup 	<ul style="list-style-type: none"> Servers received at GSD OS security patch installed MADIS I/O code port commenced 	<ul style="list-style-type: none"> Q4 completion on track



Next Steps – IOC and FOC Milestones



Initial Operating Capability (IOC): FY2010-Q3

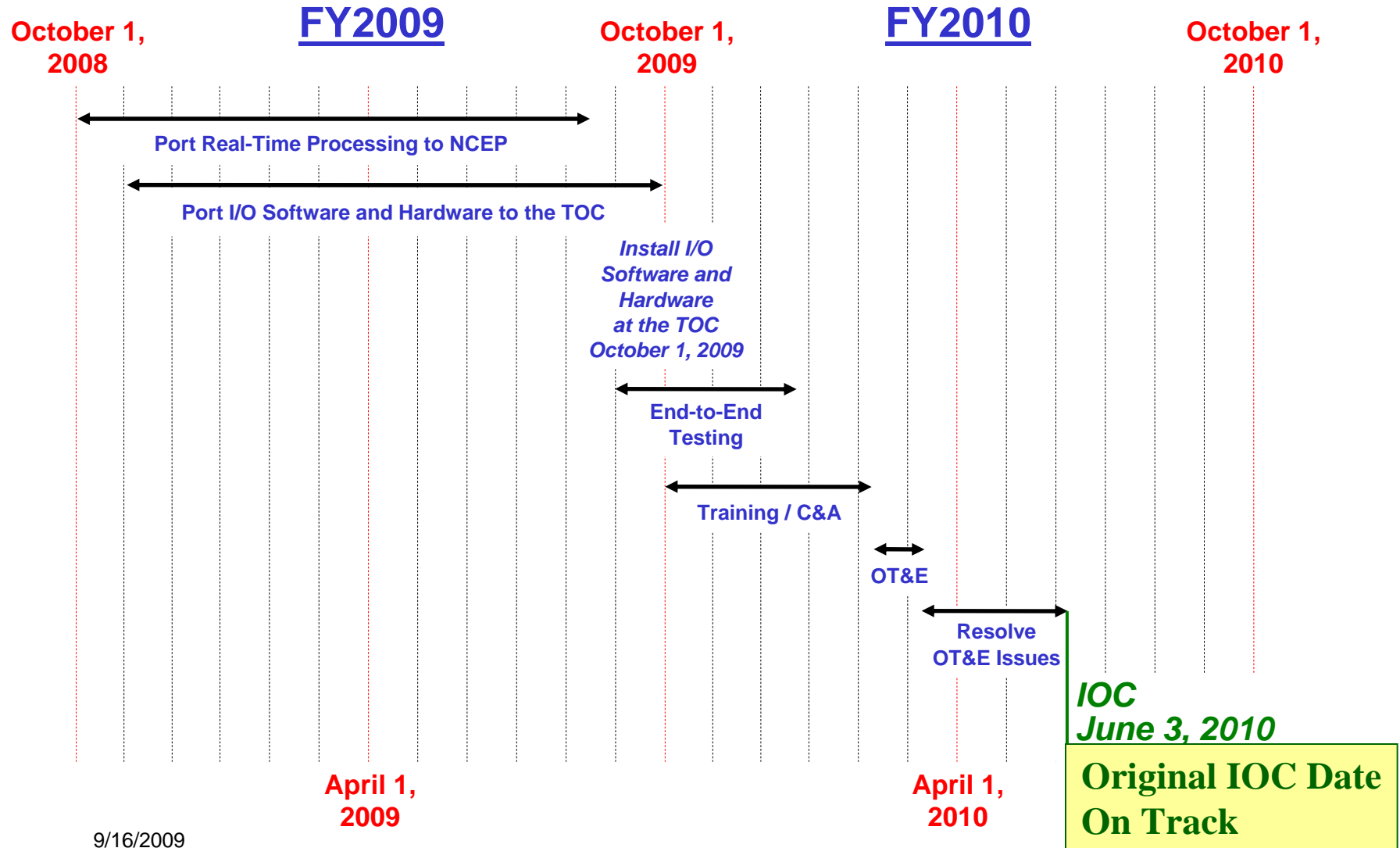
- Raw ingest (ftp/http/ldm) at NWS/TOC
- Distribution servers (ftp/http/ldm) at NWS/TOC
- Operator monitoring for data ingest and distribution servers at NWS/Gateway
- Operator monitoring for processing servers at NWS/NCO
- Help Desk (GSD primary/NWS backup)
- Real-time processing subsystems running at NWS/NCO
- Security Certification and Accreditation completed on NWS/TOC server
- Other current MADIS capabilities sustained at OAR/ERSL/GSD

Full Operating Capability (FOC): FY2011-Q3

- Observation web displays on NWS/Gateway MADIS web server
- Cooperative Agency Profiler Hub (including dialers) at NWS/TOC
- Surface data recovery system at NWS/NCO
- Additional operator and software documentation
- Help Desk (NWS primary/GSD backup)
- Archive (saved real-time data) development with NESDIS/NCDC

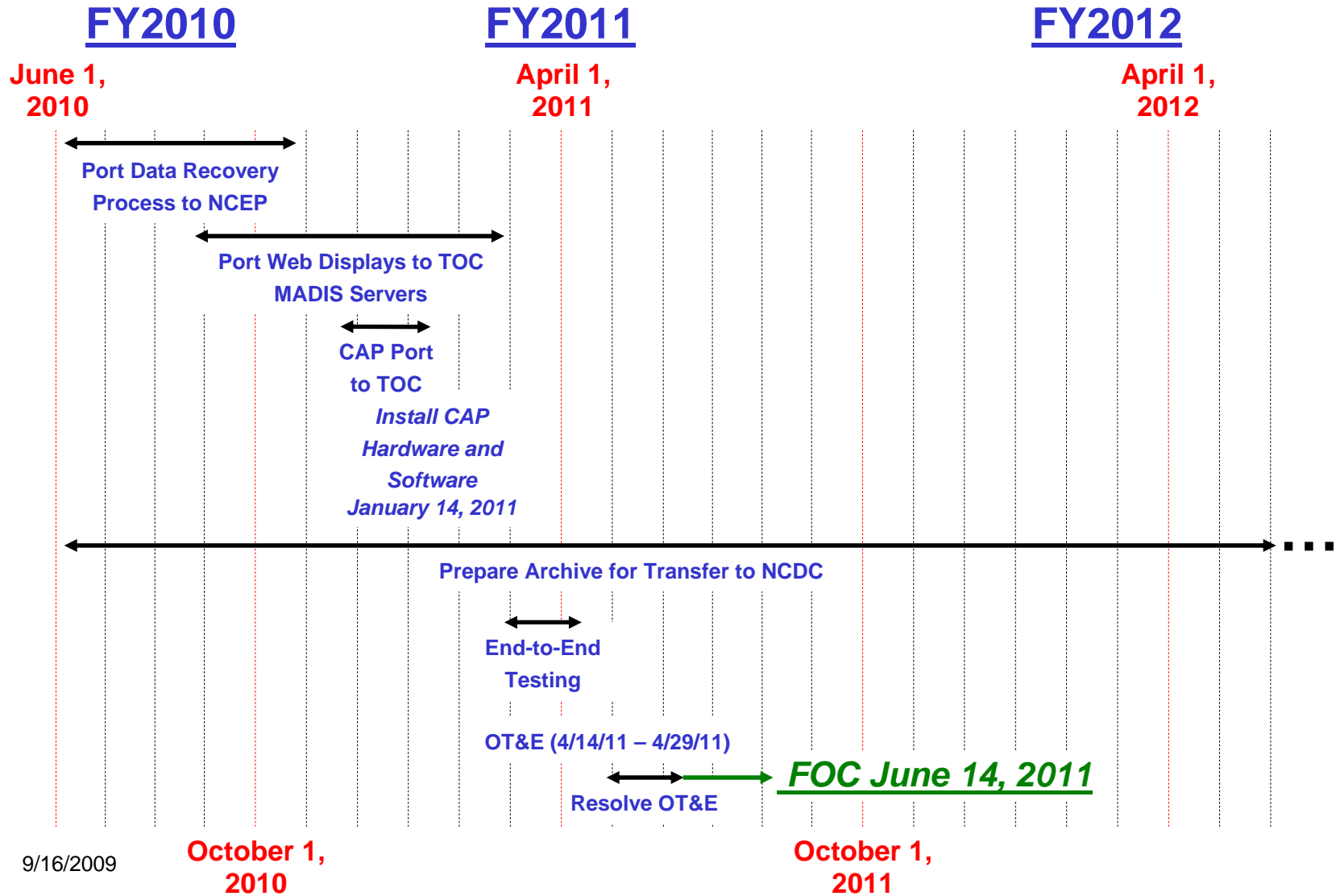


Next Steps - IOC





Next Steps - FOC





Post-FOC Planned Product Improvement



Infrastructure Capacity Building:

- Advanced data mining, SOA, and web services;
- Expanded metadata fields
- Additional datasets; and
- Improved and expanded observation QC will serve:

Service Area Support:

- NextGen – includes high frequency ASOS
- National Surface Weather Observing System (NSWOS)/FHWA support
- Historic Climate Network – Modernized (HCN-M)
- UrbaNet, National Mesonet
- Next Generation NOAA Profiler Network (NGNPN)
- UAS data management
- Testbeds (HMT, DTC, Severe Weather Testbed)
- Fire weather mobile observations
- DHS support e.g. WISDOM Balloons



Questions?

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