

FY09 Hydro Plans: CHPS Implementation Strategy

Core Goal 13 (Software Refresh)
&
Core Goal 8 (Uncertainty)

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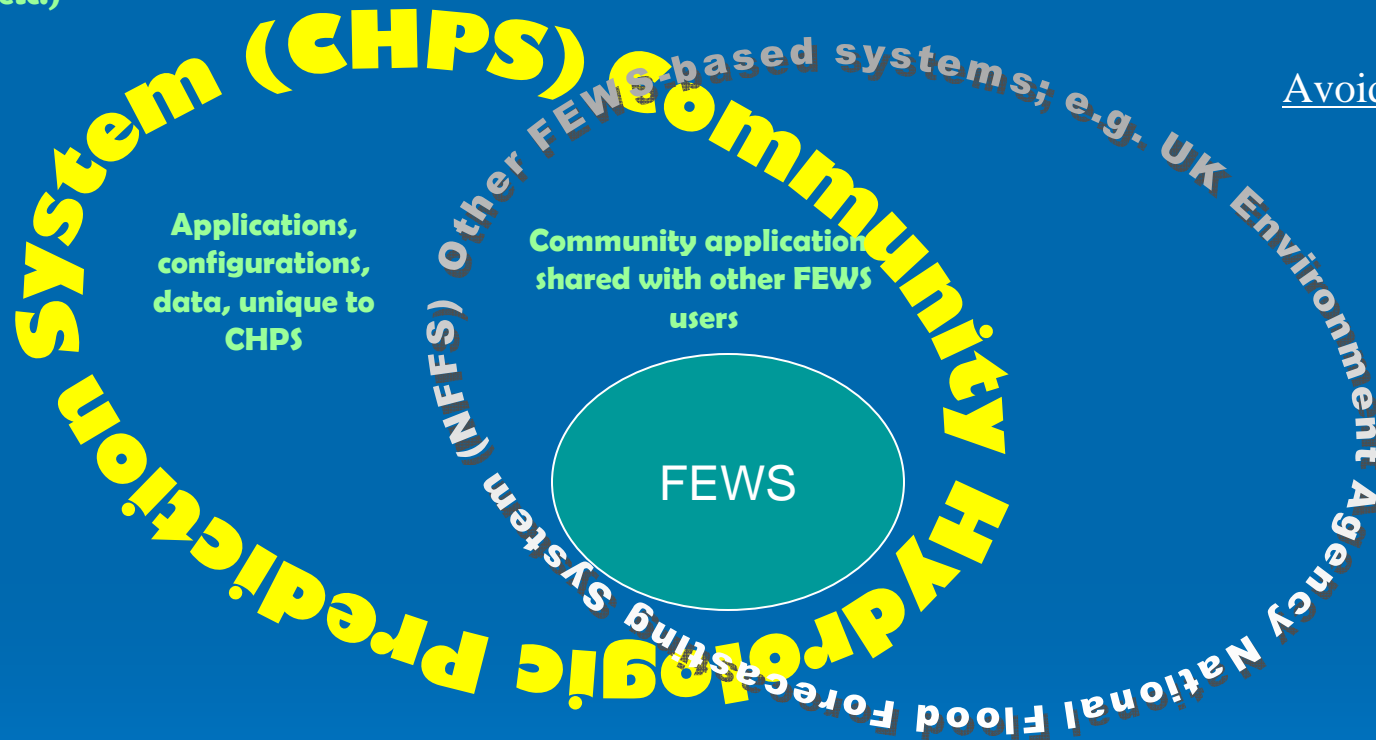


This presentation

- Identifies 3 phases for CHPS Implementation spanning multiple FYs
 - **CHPS Baseline Operational Capability (BOC)**
 - Basic forecasting operations carried out today (continue to “get the job done”)
 - Includes a late add-on (HEC-RAS)
 - Divided into 4 CHPS Acceleration Team (CAT) RFCs, plus 9 follow-on RFCs
 - “BOC document” defines BOC requirements
 - **CHPS post-BOC**
 - Deferred requirements identified by the CAT (not yet defined)
 - E.g. Calibration
 - Pre-identified Research-to-Operations (R2O):
 - XEFS
 - Ensembles Verification
 - **Future Research-to-Operations**
 - More XEFS
 - More Verification
 - Others yet to be identified
- Addresses Core Goals 13 (Software Refresh) and 8 (Uncertainty)

Terminology

FEWS features have potential application to the entire FEWS user community (generic time-series storage, displays, workflows, etc.)



Preferred Usage

- “FEWS for CHPS”
- “CHPS and FEWS”
- “CHPS or FEWS”

Avoid Ambiguous Usage

- “CHPS/FEWS”
- “CHPS-FEWS”

FEWS is a suite of configurable modules which can store, manipulate, and display time series data using your own and community applications.

CHPS is a uniquely configured realization of FEWS, using RFC-specific data and applications.

CHPS BOC

- NWSRFS operations identified by analyzing current segment definitions; some become responsibility of FEWS infrastructure, some become responsibility of CHPS
- Introduce HEC-RAS (FldWav not supported in CHPS)
- Single-value forecast Verification
 - Existing NWSRFS/IVP executing against continuing NWSRFS-generated data
- Climatology-based Ensembles: ens_pre, esp, enspost, espadp - adapted for FEWS environment using OHD's generic NWSRFS model adapter; work still ongoing
- Gridded inputs from AWIPS; CHPS to define a standard interface
- Main message: much potential, but **cannot introduce everything at once**

BOC Approach: CAT

- FEWS for CHPS Pilot – a learning experience
- Identify requirements for both FEWS and CHPS for the NWS as a whole
 - Missing MODs capability
 - Currently used NWSRFS operations
 - Data ingest
 - Products, local applications
 - Migration tools
 - Formal training received Dec 2007, Sept 2008 (?)
 - Preparation Workshops June 2008, September 2008, January 2009 provide venues for decision-making
- Assist with design of new FEWS features
 - Assess enhanced FEWS interactive forecaster GUI for MODs
- Gain experience to help other RFCs
 - Training from Deltares in the set-up and use of FEWS
 - Experiment with segment/basin configurations
 - Define implementation approach (“roll out strategy”)
 - Weekly conference calls address bulk of the questions and issues
 - NWSEO representative included Sept 2008
- Migration
 - Feb – Sept 2009: migrate basins to new FEWS environment; continue to run NWSRFS in operations
 - Workshops in March 2009 and June 2009 provide venues to share experiences, frustrations, solutions, etc.
- Nov 2009 – Apr 2010: run parallel operations to compare results
- Apr 2010 or when ready: shut down NWSRFS in operations!
- ***Evolving process becomes the template for follow-on RFCs***

BOC Approach: follow-on RFCs

- Similar activities as CAT RFCs, but one year later
- Familiarization
 - Webinar presentation by Deltares ~March 2009
 - Implementation workshop Spring 2009 (Tulsa)
 - National CHPS user conference Summer 2009 (location TBD)
- Identify missing requirements
- Assist with small (not major) design changes
- Training
 - National training January 2010; kicks off Migration period
 - Divide training into 2 Groups (to be determined during 2009)
- Migration
 - Begins Jan 2010; complete by Oct 2010 (continue to run NWSRFS in operations)
 - Largely automated; field tested by CAT RFCs
 - OCWWS HSD and CAT RFCs help; Deltares provides remote support when needed
 - Workshops March, June 2010 provide venues to share experiences, frustrations, solutions, etc. Includes supplemental training.
- Nov 2010 – Apr 2011: run parallel operations to compare results
- Goal: Apr 2011 or when ready - shut down NWSRFS in operations!
- Operational Support
 - Multi-tier: OCWWS HSD (primary troubleshooting, resolve configuration and usage issues), OHD (for in-house developed science & software), HEC (for RAS modeling issues), Deltares (for problems with FEWS software)

Hardware Approach

- Fact: Planned parallel operations for RFCs would impose additional (temporary) computer resource burden on site's existing processing power
- Fact: All RFCs **will** require additional computing power and storage as post-BOC introduced into operations; current AWIPS hardware will not be adequate
- Fact: Too late to influence latest REP refresh
- Fact: Current AWIPS budget does not allow for extra hardware for RFCs

- Approach for BOC: define computer processing and disk space requirements by:
 1. Proposing prototype hardware specs and purchasing 4 prototype systems *(completed in FY08)*
 2. Deploy prototype systems to CAT RFCs *(completed in FY08)*
 3. Evaluate CHPS performance during Migration (February – September 2009); validate specs
 4. Capture requirements via OSIP project 07-059 "RFC AWIPS Configuration" and feed to OS&T for systems engineering into AWIPS baseline solution
 5. AWIPS to feed requirements into PPBES for FY12 cycle
 6. Meanwhile..... may have to purchase prototype hardware for all RFCs. OHD to draw attention to issue with new OST Director at end of November

- Approach for Post-BOC: begin in FY09 to investigate potential solutions for new Archive Database with Deltares – plan to prototype at CAT RFCs in FY10?

AWIPS II

- CHPS is developed to run in AWIPS (I) environment; will not break when AWIPS II is deployed
- Plans for taking full advantage of new AWIPS II features (e.g., data subscriptions) will be put in place as they are introduced
- CHPS Forecaster GUI will remain independent of CAVE
- Unclear if AWIPS requires FEWS to be checked into the national software baseline
- OHD poised for AWIPS II by allocating resources early

CHPS post-BOC

- Begin to realize potential of CHPS
 - Introduce XEFS Phase 1
 - FEWS is already “ensemble-capable” to certain extent
 - Deltares and OHD have recently begun joint planning & design
 - Focus first on Archive Database design, EPG, Hindcasting & Verification
 - Resources to be increased during FY09 as CHPS BOC work tapers off
 - Goal: introduce XEFS Phase 1 *after* CHPS BOC

Future Research into CHPS

- The least well-defined phase...
- Deltares and the FEWS user community can be additional resources (e.g., research, different models)
- FY09 AHPS proposals should identify some topics
- Must bring research community and scientists up to speed on CHPS and FEWS to streamline prototyping and implementation efforts (just beginning)

Questions?