SHARE

Simulating Hydrologic Activities during Real-Time Events

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What is it?

- ✓ **SHARE is an integrated set of programs, scripts, and procedures that allows a RFC to archive data/files on the AX and use that data on the WES-DRT for simulating "displaced real-time" RFC forecast operations.**

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Background

- **WES-DRT not designed for RFC model simulations**
- **Technological advances at RFCs allow use of the WES for RFC case studies.**
  - **AX archive system**
  - **PC RFC backup system developed by ABRFC**
- **Developed by Eric Jones/Amanda Roberts, LMRFC**
- **Thoroughly field tested by ABRFC**

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Basic Requirement

- **WES-DRT setup to run met simulations**
- **RFC operational software loaded on WES**
- **AX archived data**
- **Rebuild WES db with informix 7.31**

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Simulations

- **WES-DRT met simulations**
- **Hydrologic simulations**
- **HAS simulations**
- **Post Storm Reviews**
- **Ability to pause, restart, and link simulations**
- **Not setup for simulating D2D met models**

WES-DRT Simulation

- **Set up for WFO met case studies**
- **System not structured for RFC type simulations**
- **SHARE restructures WES to allow production of RFC case studies**

Hydro Simulation

- **All original RFC hydromet data/products available at a specified simulation start time are loaded/decoded.**
- **fs5files matching case study start time used as initial conditions**
- **“Real-time” feed of SHEF products and xmrgs**
- **Run IFP sessions, prepare forecasts, or compare forecasts with those issued during an actual event**
- **Basic RFC files/functions/pgms available for simulation**
  - **xnav, QPF, mpe, xdat, IFP, xsets, etc.**
- **Can couple with HAS sessions**

HAS Simulation

- Similar to hydro simulations
- MPE
  - Reload/decode raw DPAs, or
  - Run with biased xmrgs
- Data QC functions
- QPF function with vgfs

Post Storm Reviews

- **Evaluate operational actions taken during a flood event to determine, if additional, or corrective actions may have improved the forecast process.**

- **Run “what if” scenarios**

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AWIPS

- **Max 31-day archive (was 7 days)**
- **Archival by LX and AX**
- **SHARE files archived on AX through LX NFS mounts and cron scripts**

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- **LX archive directory named in Apps_def token…..arcdata_dir**
- **Linked to /data/flatfiles on AX.**

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File Type

- **SHEF products**
- **DPAs**
- **xmrgs**
- **fs5files**
- **vgfs**

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SHEF Products

- **Script arc_shefdata.lx…..archives SHEF data every 10min**
  - **Stored in AX shefdata directory**
- **All SHEF products logged to shef_error_dir defined in Apps_def token**
  - **Logs the product, summation of SHEF errors, and summary of products posted to hydrobase**

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SHEF Naming Convention

shefdata/ww/hh/WMOHeader.MMdd.hhmmss

- **ww = 2 digit day of month**
- **hh = 2 digit hour**
- **WMO Header = AWIPS or WMO header**
- **MM = 2-digit month**
- **dd = 2-digit day**
- **mm = 2-digit minute**
- **ss = 2-digit second when product decoded**

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DPA Products

- All DPA products archived
- Script arc_dpa.lx runs hourly on cron
- dpadata/yyyyMMdd/RRRR.yyyyMMdd_hhmm
  - yyyy = 4-digit year
  - MM = 2-digit month
  - dd = 2-digit day
  - RRRR = radar ID (ex: KLZK)
  - hh = 2-digit hour
  - mm = 2-digit minute

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xmrg

- All xmrgs archived
- Script arc_xmrg.lx run once a day
- xmrg/yyyyMMdd/xmrgMMddyyyyhhZ
  - yyyy = 4 digit year
  - MM = 2 digit month
  - dd = 2 digit day
  - hh = 2 digit hour

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fs5files

- Script arc_fs5files.lx runs at synoptic times
- fs5files saved x4 daily (or as needed)
- fs5arc/dd.hh.arc
  - dd = 2-digit day
  - hh = 2-digit hour (12 or 00)
- Future - all OFS jobs run will be added to the 31-day archive.

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Baseline Setup

- Define Apps_def token, arcdata_dir
  - Mount to AX as /arcdata
- On LX, mount /data/flatfiles to AX in directory named in arcdata_dir
- Install following scripts in /home/public/bin and setup in cron:
  - arc_shefdata.lx — every 10 min
  - arc_fs5files.lx — 4 times...12/18/00/06Z
  - arc_dpa.lx — hourly (previous hr)
  - arc_xmrg.lx — 00Z-23Z at 12Z
  - arc_vgf.lx — once daily
- Sufficient data for a SHARE simulation

WES-DRT Configuration

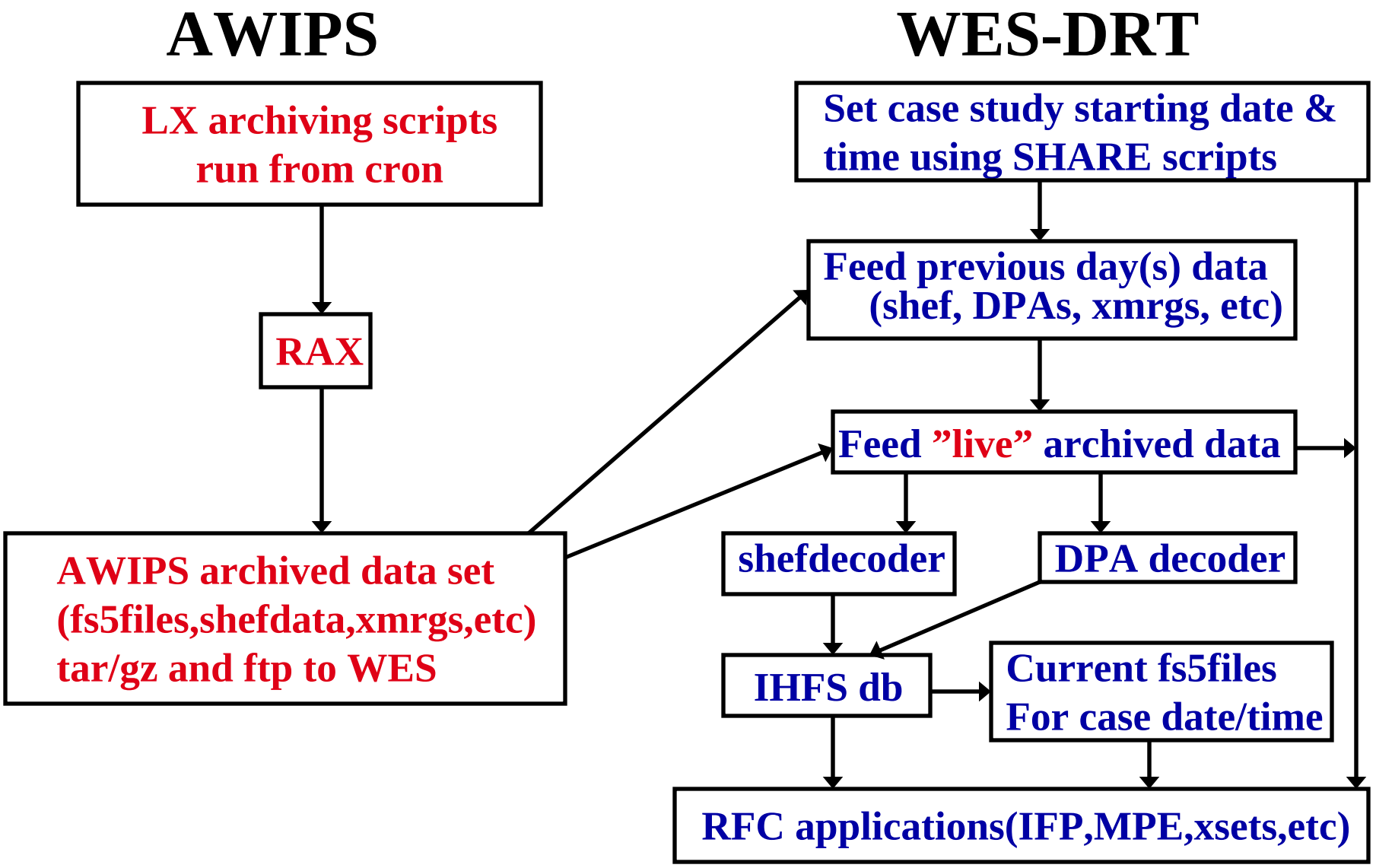
- **Load RFC operational software**
- **Export AWIPS text db**
- **Export AWIPS IHFS db**
- **Rebuild WES informix db with v7.31**
- **Rebuild AWIPS text db – if WES v2.0**
- **Populate WES IHFS db**
- **Setup WES environmental variables**
  - **User profile…set $HYDROWES_DIR to /data/WES**

WES-DRT Configuration

…..Continued

- **Create /data/WES defined in $HYDROWES_DIR**
- **Copy .APPS_defaults_wes to /home/oper**
- **Copy WES scripts to data/WES**
- **Add db_purge_dir token to Apps_def**
- **Check cron for all programs**
  - **WES-DRT uses a simulated cron to execute operational programs….. $HYDROWES_DIR/bin/simucron.conf**

SHARE Schematic



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LIMITATIONS

- **WES not connected to AWIPS lan**
- **Unable to port OFS fixes from a case study directly to live OFS db**
  - **Ex: routing parameter adjustments**
- **Length of decode time to spin up**
  - **1-1.5 hrs for past 12hrs**
  - **2-3 hrs for past 24hrs (for LMRFC ~ 8K files)**
  - **METARS should be concatenated**
- **Length of spin up time required for advancing case study**

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FUTURE

- Will be implemented at the 4 SR RFCs
- Improve advancement to future simulation times
- Utility for selecting desired case studies
- Text product feed for “real-time” textdemo
- Additional archive capability
  - Web images, data, and products
  - Input used in OFS jobs
  - All OFS jobs to allow reconstruction of actions taken during an actual flood event