



Center for Advanced Decision Support for
Water and Environmental Systems (CADSWES)

UNIVERSITY OF COLORADO **BOULDER**

Tech transfer, Licensing, Issue-Tracking, Releases, Software Maintenance

Presenters: Edie Zagona and Team

2019 RiverWare User Group Meeting

August 28-29, 2019

5 Major RiverWare Activities at CADSWES

- Software development (R&D)
- Basin Specific modeling and sponsor support
- Software Maintenance and Releases
- Help Desk/ User Support
- Training/ Tech Transfer

Training

Standard 3-day Training offered – now scheduled in advance

- Intro to Simulation
- Rulebased Simulation
- Accounting
- Optimization – offered for 1st time June 2019
- Overview: Broadly cover both Simulation and Rules

4-day accelerated Simulation and Rulebased Simulation

1 or 2-week RiverWare and River System Management (mainly for foreigners)

Dedicated Training classes: standard + specific models

Online materials – to be increased as possible

Needs? Special topics?

Funded by attendee payments; covers time, materials, updates to training materials

Other Training Tools

- Video Demonstrations
 - Model Reports
 - RiverSMART
 - Notes on Series Slots
 - Database DMI Excel
 - Database DMI DSS
 - Smart Linker
 - Open Object Dialogs
 - Unit Schemes
- Informational Tutorials
 - Simulation
 - Rulebased Simulation
 - Multiple Run Management

<http://www.riverware.org/PDF/RiverWare/documentation/>

User Support

Provided to sponsors through contract support tasks and licensees through purchased support hours

All user support questions should be sent to:

riverware-support@colorado.edu

Multiple support staff receive email and most appropriate or available person can respond

Provides assistance for

- “How to” use the software to accomplish your modeling objectives
- Analyzing problems
- Interpreting results



Software Development (R&D)

Goal: deliver professional quality software applications that meet users' needs

R&D Team:, water resources engineers, operations research analyst, professional software developers

Support Team: software configuration management, hardware and software maintenance, licensing, releases

Process

- Requirements analysis and documentation
- High level design document/ Estimates
- Detailed designs for sponsor review
- Implementation and testing
- Pre-release or snapshots for testing
- Feedback from sponsors, further testing
- Final release, user documentation, regression tests



Funded typically by Sponsors, sometimes by others under contract agreements
(all users have access to all development)

Basin Specific Modeling/Reviews

CADSWES focuses on R&D and Tech Transfer, but assists with applications when necessary (funded by users or sponsors under contracts or user support funds). Examples:

- Models that use new RiverWare software features/functionality
- Applications or special studies that benefit from expertise not yet developed in agencies or with consultants
- Model reviews, performance analysis

We encourage in-house expertise and use of consultants; this benefits all users and CADSWES

Software Maintenance and Releases

This work includes

- **Keeping the software upgraded** for new versions of compilers, operating systems, platforms and third-party software libraries
(Qt (with WebKit), Qwt, CPLEX, Concert, GDAL/OGR, FlexLM, Reprise, Oracle, Tcl, netCDF, Google Protocol Buffers, QuaZIP, Java Runtime Environment)
- **Issue tracking and fixing**
 - Maintain issue tracking application (Gnats, per CGI Scripts)
 - Critical issues fixed immediately for next patch release
 - Non-critical issues deferred to next major release or later
- **Minor enhancements, refactoring, modernizing GUI**
- **Maintaining Development Environments:**
Microsoft Visual Studio, Source control (Git and Git Extensions), Rational Purify and Quantify, DevPartner BoundsChecker, Regression tests, modelcomp

Software Maintenance and Releases

- **Releases**

Major releases: RiverWare 7.2 – usually 2 per year

Fully tested (after pre-release), updated online help and release notes

Patch releases: RiverWare 7.2.1 – as needed

Generated from last full release with fixes and minor enhancements, possible doc updates; Tested and verified (usually without a prerelease)

- **Installation and Licensing**

Installshield updates, license software updates, issue licenses, maintain online payment web pages, maintain user databases, send quotes, invoices, renewal notices

- **Maintain download Web sites, upload ftp site, user support tracking tools**

**Funded by sponsors and license fees
(by MOU agreement with CU, BOR, TVA, USACE)**

NEW: Jira Issue Tracking

- Retired old gnats system used since 90's
- New look and feel
- Modern web application with secure login
- Accepts attachments
- Includes all 6000+ prior issues
- Better queries for CADSWES

Current effort for v7.6 RiverWare Tools Upgrade

Upgrade of compiler and all 3rd party libraries:
every 2-3 years

Important.

- Keep up-to-date with Windows & Oracle
- Continued library support and new features.

A big job.

- Compiler upgrade - Visual Studio 2017
- New Qt Framework - 5.12.2
- New versions: CPLEX, Oracle Client, GDAL, Qwt...etc.

Complex Dependencies.

- Over 20 3rd-party library and tools upgrades
- Open-source rebuilds for compiler compatibility

RiverWare Maintenance – past ~year

- 175 bugs closed
- Licensing and Installshield upgrades
 - License Manager Upgrade & Improvements –Activation Keys
 - Cloud Licensing
 - RiverWare Viewer Licensing
- New Linux Server & Download Security
- Regression Test Enhancements
- DSS Build Environment
- JIRA Issue Tracking System
- New Browser-based online help

New Licensing Options

- Discounts for multi-year licenses
- Cloud licenses for portability, convenience and using cloud computing resources
 - License server is in cloud – access from any machine on internet
 - Can “check out” license to reside on a machine to work off the net