Software Development, Maintenance, Releases, Issue Tracking and Tech Transfer
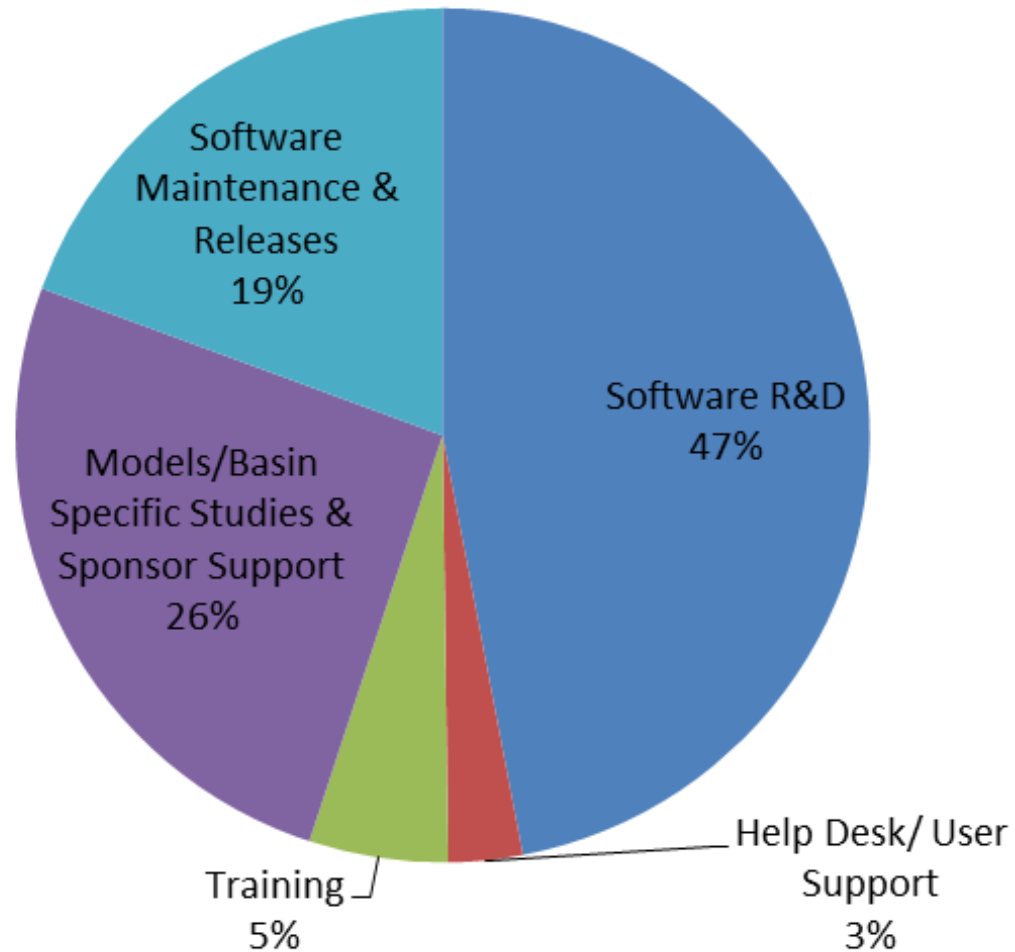
Presenter: Edie Zagona

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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

Average Annual RiverWare Expenses $1.7M

- Software R&D 47%
- Software Maintenance & Releases 19%
- Models/Basin Specific Studies & Sponsor Support 26%
- Training 5%
- Help Desk/ User Support 3%

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 6.9 – usually 2 per year

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

  Patch releases: RiverWare 6.9.4 – 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)**

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

Training

Standard 3-day Training offered whenever possible/needed

- Intro to Simulation
- Rulebased Simulation
- Accounting
- Optimization
- Overview: Broadly cover both Simulation and Rules

Dedicated Training

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/

Questions or suggestions?