

WRIMS-Based CalLite Model Development & Update

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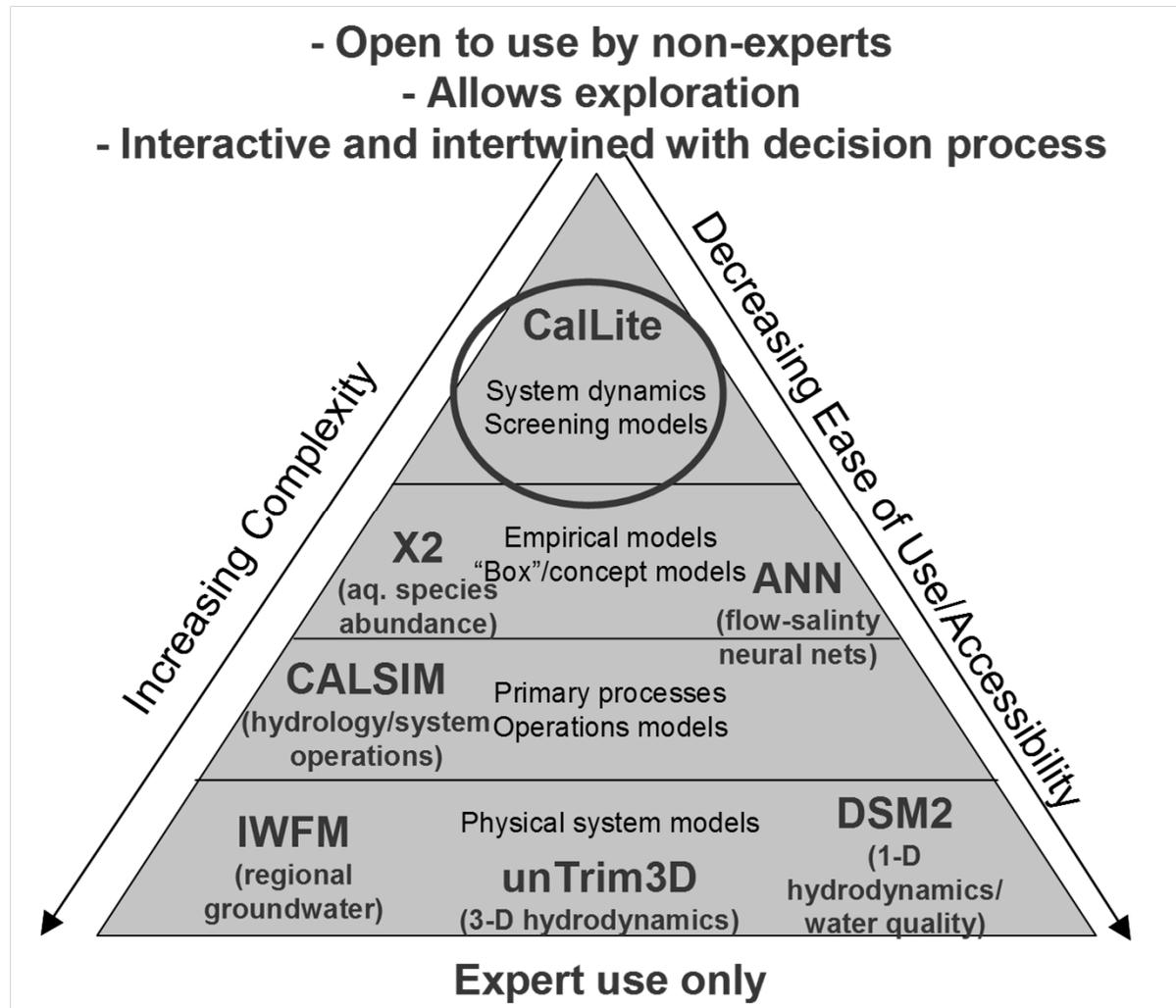
Outline

- Background
- WRIMS Implementation
- CalLite Enhancement
- CalLite Design
- CalLite Limitations
- Current Phase
- Future Phases



Background – What is CalLite?

- Open to use by non-experts
- Allows exploration
- Interactive and intertwined with decision process





Background – What Is CalLite?

- Screening tool for use by experienced modelers
- Educational tool for use by stakeholders



Background – CalLite Overview

- Central Valley Water Mgmt. Screening Model
- Maintains hydrologic, operational and institutional integrity represented in CALSIM
- Simulation Period is 82 years (1921-2003)
- Same ANN module used by CalSim represents Delta flow-salinity relationship
- New flexible GUI package enables selection of model options and enhanced output review



Background – Original GoldSim Implementation

- Corroboration studies (CalSim and CalLite) had differences due to solution algorithms
 - GoldSim couldn't use an external solver for optimization (i.e., XA solver for LP problem)
- Proprietary software with limitations on version control, scenario mgmt, and GUI features
- Steep learning curve; model still complex



WRIMS Implementation

- WRIMS (Water Resources Integrated Modeling System) is developed and maintained by DWR and Reclamation (no proprietary issues)
- Corroboration studies more directly comparable with CalSim with the same solution algorithm
- WRESL code expertise in place
- CalLite development used as training opportunity
- Platform to expand for daily time step modeling, channel routing, etc.



CalLite Enhancements

- Extended SOD representation includes Article 21 and detailed contractor deliveries
- Wheeling (CVC and JPOD) options
- B2 actions represented
- Biological Opinion RPAs
- SWRCB flow criteria comparisons

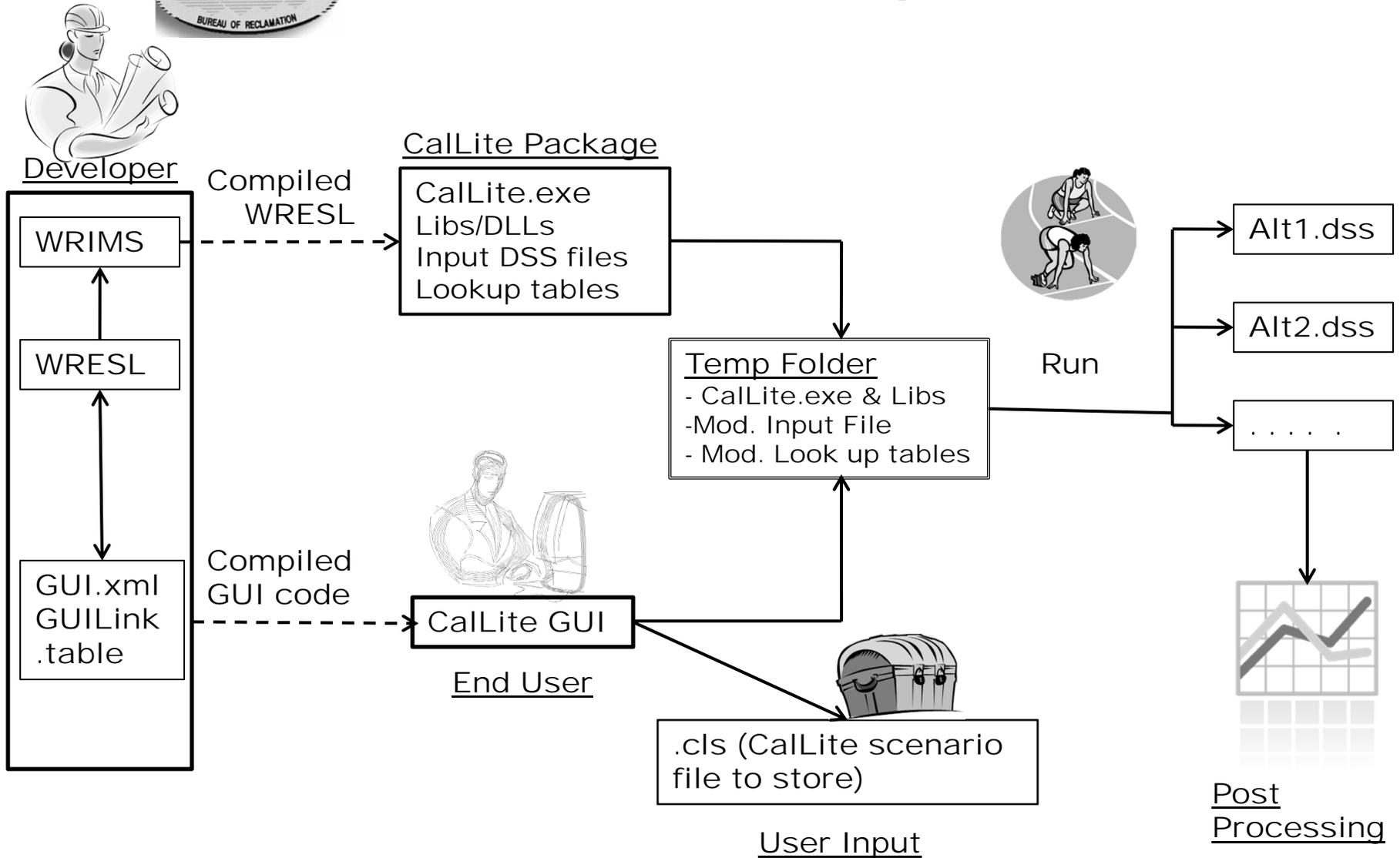


CalLite Enhancements

- Enhanced and flexible graphical user interface
 - No limit to number of scenarios
 - Availability of desired GUI elements
 - Improved results display tool
 - Completely separate from the WRIMS model
- Enhanced pre- and post- processing tools
 - WRESL utility “CalSim to CalLite”
 - Report tool
 - Google map based “Data on the Web”



CalLite Design





CalLite Limitations

- Switches for D1641 and RPA elements
- User-defined input data limited to certain criteria
- Potential for unanticipated results
- Coarse scale does not capture some flow and delivery results
- Dependent on CalSimII basis



Current Phase

- CalLite release includes:
 - Regulations – D1641, B2, BO-RPAs, User Defined
 - Level of Development – Existing and Future
 - Vernalis Adaptive Management Plan– On or Off
 - Demands- Variable, Future/Full, User Defined
 - Other Operations- WSI-DI Allocation, Wheeling



Future Phases

- Water Management Action Implementation
 - Isolated Facility,
 - Banks Pumping Plant
 - Habitat Restoration
 - Storage Investigations
 - NODOS
 - Los Vaqueros Enlargement
 - Shasta Enlargement
 - Upper San Joaquin Storage
- GUI enhancements – scenario mgmt., XML, ...



Future Phases

- Daily time step model, including channel routing
- Dynamic San Joaquin River representation
- Hydrology Inputs
 - Probabilistic/Monte Carlo simulations
 - Climate change scenarios
 - CA Water Plan Update
- Forecast-based allocation method options



Anticipated Applications

- Water plan updates
- Reservoir reoperation
- O&M daily operation/forecasting tool
- Storage investigations
- Cost Allocation (Reclamation)
- Delta alternative investigations
- Stakeholder education



Using CalLite

- FREE – no software or licenses to buy
 - Agencies supporting limited XA solver version
 - No FORTRAN compiler required
- Run time ~ 5 minutes
- CalLite results are within 3% of CalSim
- Enhanced pre- and post- processing tools



CalLite Release

- Current Release
 - Software package – Model, GUI, Utilities
 - Documentation – User’s Manual and Tutorial
 - Training and Distribution