

# Qt Migration

Status of our Galactic Exodus

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# Motivations for Replacing Galaxy

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- Galaxy as a GUI Toolkit
- Galaxy Today
  - Visix bankruptcy
  - Ambiencia purchase
  - No updates or maintenance
  - Shrinking user-base
  - No Support for new OS versions



# Selection Process

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- Exhaustive search for candidates
  - Java (AWT/Swing)
  - Qt
  - Tk
  - wxWindows
  - Coral
  - FITk
  - Fox
  - Gtk+
  - XVT DSC++
  - ZINC
- Research top 4 candidates
- Prototype integration with Galaxy

# Qt

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- Platform independent (Windows, Solaris, Linux, Mac)
- Substantial user-base
  - Linux / KDE
  - Commercial customers - AT&T, IBM, Xerox, Nasa, Adobe
- Reasonable cost and licensing
  - Trolltech
  - Commercial and non-commercial Open Source
- Object-oriented
- GUI builder tool
- Integration with Galaxy



# Qt/Trolltech Today

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TROLLTECH

- More resources
  - Books, websites, mailing lists
- More commercial widgets
- More commercial tools
  - Automated GUI testing tools
- More Trolltech products
- Releases (3.3.1 and Qt 4.0)
- “Qt Solutions”
- New integration frameworks
  - MFC and Motif

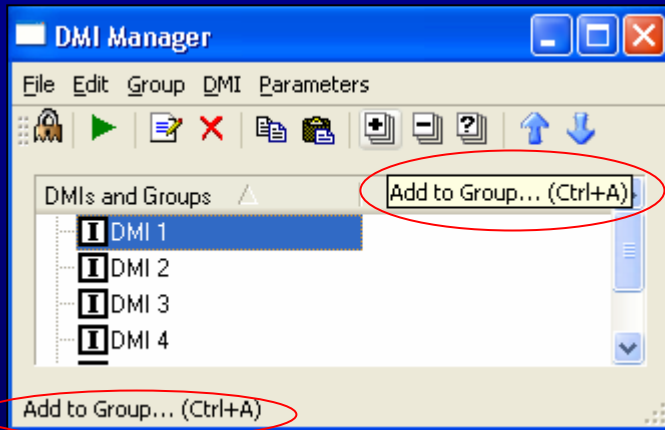
# Qt Migration Philosophy

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- New GUI development
  - Developed in Qt exclusively
- Work done to existing Galaxy GUI
  - Favor redesign over straight ports
  - Qt migration dependent on:
    - Level of effort
    - License fee revenues / Maintenance
    - Sponsor funding

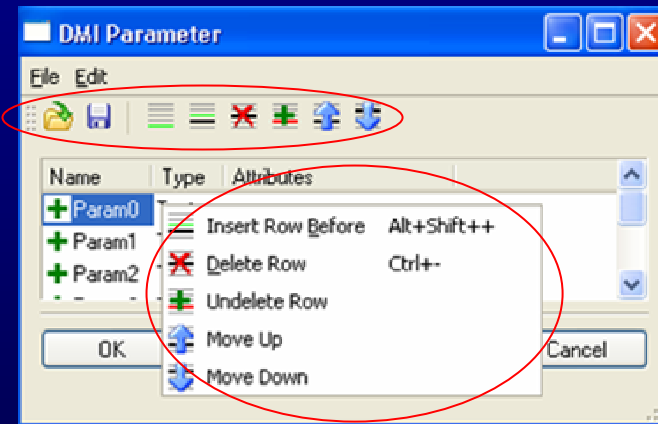
# Benefits of Each Qt Dialog

## ■ Usability



*Tooltips and Status Bar Help*

*Toolbars and Context Menus*



- Less development effort
- Maintainability

# Benefits of Full Migration

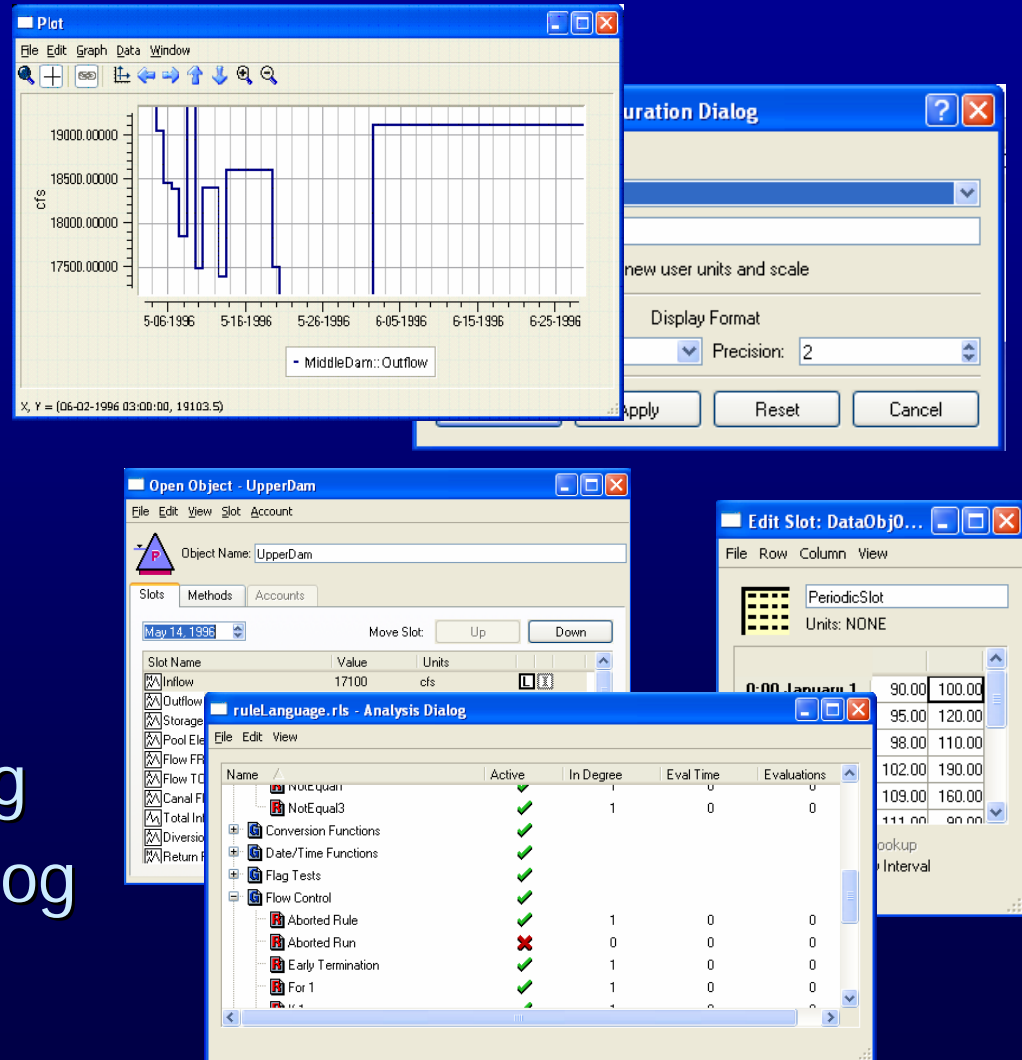
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- Linux
  - 64-bit OS
  - Unix on Intel hardware
- 64-bit Windows
- No Future Galaxy OS Conflicts
- Remove Integration Mechanism



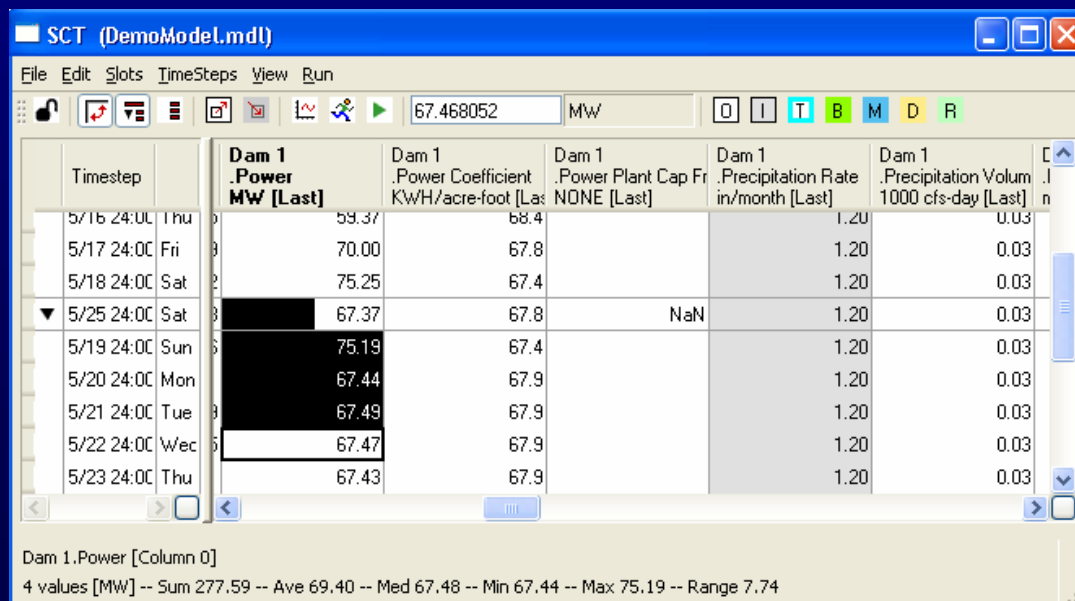
# Completed Qt Development

- SCT 2.0
- DMI Dialogs
- Plot Dialog
- New Slot Dialogs
  - Periodic Slot
  - List Slot
  - Scalar Slot
- Open Object Dialog
- Rules Analysis Dialog



# SCT 2.0 Redevelopment

- Development Effort
  - Less than half of Galaxy estimate
  - Use of QTable widget

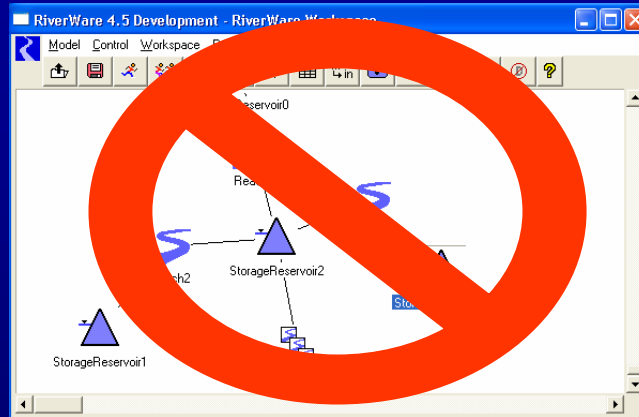


The screenshot shows the SCT (DemoModel.mdl) software interface. The main window displays a table of data for Dam 1. The table has columns for Timestep, Dam 1 Power MW [Last], Dam 1 Power Coefficient KWH/acre-foot [Last], Dam 1 Power Plant Cap Fr NONE [Last], Dam 1 Precipitation Rate in/month [Last], and Dam 1 Precipitation Volum 1000 cfs-day [Last]. The data is shown for timesteps from 5/16 24:00 to 5/23 24:00. The Power MW values are 59.37, 70.00, 75.25, 67.37, 75.19, 67.44, 67.49, 67.47, and 67.43. The Power Coefficient values are 68.4, 67.8, 67.4, 67.8, 67.4, 67.9, 67.9, 67.9, and 67.9. The Power Plant Cap Fr is NONE. The Precipitation Rate is 1.20. The Precipitation Volum is 0.03. The status bar at the bottom shows: Dam 1.Power [Column 0] 4 values [MW] -- Sum 277.59 -- Ave 69.40 -- Med 67.48 -- Min 67.44 -- Max 75.19 -- Range 7.74.

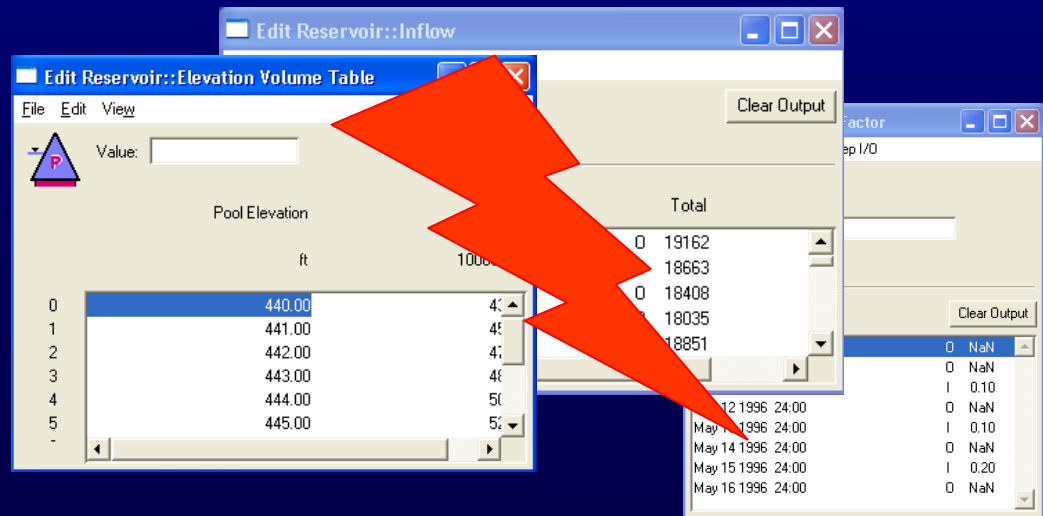
Timestep	Dam 1 Power MW [Last]	Dam 1 Power Coefficient KWH/acre-foot [Last]	Dam 1 Power Plant Cap Fr NONE [Last]	Dam 1 Precipitation Rate in/month [Last]	Dam 1 Precipitation Volum 1000 cfs-day [Last]
5/16 24:00 Thu	59.37	68.4		1.20	0.03
5/17 24:00 Fri	70.00	67.8		1.20	0.03
5/18 24:00 Sat	75.25	67.4		1.20	0.03
5/25 24:00 Sat	67.37	67.8	NaN	1.20	0.03
5/19 24:00 Sun	75.19	67.4		1.20	0.03
5/20 24:00 Mon	67.44	67.9		1.20	0.03
5/21 24:00 Tue	67.49	67.9		1.20	0.03
5/22 24:00 Wed	67.47	67.9		1.20	0.03
5/23 24:00 Thu	67.43	67.9		1.20	0.03

# Upcoming Qt Development

- Main workspace dialog



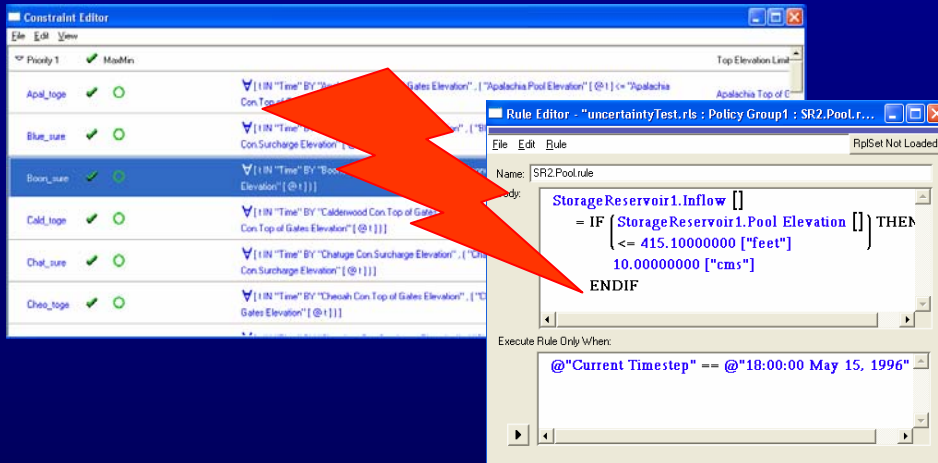
- Remaining slot dialogs



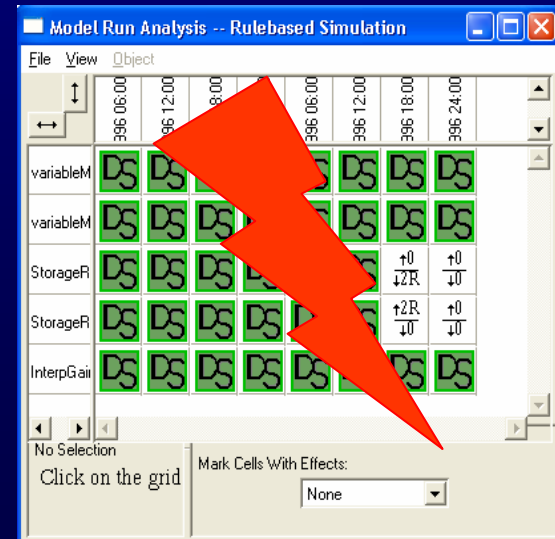
- "Grand-Unified Slot Selector" dialog

# Possible Qt Development

## ■ Rules / Optimization GUI



## ■ Model Run Analysis dialogs



# Galaxy Dregs\*

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- Accounting dialogs
- Diagnostic dialogs
- Output Management dialogs
- Link Management dialogs
- Run Control dialogs
- Multiple-Run Management dialogs
- Snapshot dialogs
- Multi-Object Method Selector dialog
- SubBasin Management dialogs
- Many small utility dialogs

\*ordered by level of effort