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| **General Development Accomplishments** |

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[I.A] New/Enhanced Software / Sponsored Task / BOR IDIQ 20B
   Hierarchical View of Objects on Workspace ("Object Clusters")
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"Object Clusters" are a new type of display-only RiverWare workspace object which allow arbitrary sets of simulation objects to appear on the workspace as single icons. This feature has been developed for RiverWare 6.5.

Object Clusters ("clusters") have the following qualities:

1. Clusters are a display-only provision; they have no effect on the model solution.
2. Clusters are supported in the Simulation and Geospatial Views. They are not supported in the Accounting View.
3. Clusters can contain any simulation objects which appear on the workspace, except other clusters.
4. A simulation object can be a member of only one cluster.
5. Adding a simulation object to a cluster does not affect the object's locations within any of the workspace views.

For any cluster instance, the user can switch between:

1. displaying the cluster icon, or
2. displaying the individual member objects' icons.

The two states are independent for the Simulation and Geospatial views. That is, a cluster can be shown with a cluster icon in the Geospatial View and with individual member object icons in the Simulation View. When a cluster icon is shown, links between objects in the cluster and objects outside of the cluster are drawn to the cluster icon.

Clusters are supported with new operations in these user interface components:

* Simulation object icon context menus (in the Simulation and Geospatial Views).
* Cluster object icon context menus (in the Simulation and Geospatial Views).
* Workspace menubar, a new "Workspace >> Object Clusters" submenu.
* Workspace Object List, on cluster and object list (tree) items.
* A new Open Object Cluster dialog.
* A new "In Object Cluster" object filter, available in the general Object, Account and Slot selectors.

The following feature document was prepared this month (January 2014), with minor additions in early February:

* Object Clusters in RiverWare 6.5 / Features
R:\doc\workspace\ObjectGrouping\ClustersFeatureBake1.docx
R:\doc\workspace\ObjectGrouping\ClustersFeatureBake1-2014-02-03.pdf

This document outlines issues addressed in post-development review in late January.

* Object Clusters in RiverWare 6.5 / Review One
R:\doc\workspace\ObjectGrouping\ClustersReview1.docx
R:\doc\workspace\ObjectGrouping\ClustersFeatureBake1-2014-02-03.pdf

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[I.A] New/Enhanced Software / Sponsored Task / TVA 6
   Assist Migration of PMF model
      Limited Data Checking on Tables in Optimization
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Internal and user interface provisions were developed to support limiting optimization checking of TableSlot values. The basic data model and GUI support for new "Optimization Minimum and Maximum" values were added in December 2013. Control/Exec-style DMI support for these provisions, and a feature document, were completed in early January 2014:

Control File/Exec-based DMIs were enhanced to support the new optimization TableSlot checking limits.  This includes support for per-column Scale and Unit records in TableSlot *data* files. (No provisions were added for *control* files). Previously, TableSlot DMI functions assumed the use of current display units for all columns -- for both input and output DMIs.  Various TableSlot DMI functions have been modified to use scale and units provided by per-column vectors of those attributes.

The following document describes these new provisions:

* "Limited Data Checking on Tables in Optimization: Data Model, GUI and DMI Support"
R:\doc\optimization\LimitDataChecking-DataSupport.docx
R:\doc\optimization\LimitDataChecking-DataSupport-2014-01-08.pdf

The idea of this overall enhancement is that many table slots in a RiverWare model include extreme values which are applicable to simulation of extreme (e.g. flood) conditions. But those extreme values don't have the qualities required for optimization solutions which are generally used under relatively normal hydrologic conditions. The data checks performed before an optimization run should be applied to only the "moderate" ranges on those TableSlot values.

The current development does not include modifications to the Optimization TableSlot data checking algorithms, i.e. to limit the scope of such checks to user-specified optimization minima and maxima. Also, only a demonstration sample of TableSlot configurations were modified to make use of the new optimization limits. All of these changes were applied only to RiverWare 6.5 development, but we are planning on applying them to a RiverWare 6.4 patch release in the near future.

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[I.B] New/Enhanced Software / Unfunded Development
   Workspace Object Selection Enhancements
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RiverWare 6.4 supports only these "extended" objection selection features:

1. A rectangular region of objects can be "rubber band selected" by dragging a rectangle with the mouse.  This cannot be used to extend an *existing* object selection because starting the mouse drag always clears the cell selection -- even if the Shift key is held.
2. Control-clicking (holding down the control key while clicking with the mouse) TOGGLES the clicked object in and out of the selected object set.

RiverWare 6.5 now also provides these "extended selection" features:

1. Shifted "rubber band selection" ADDS the objects within the dragged rectangle to the selected object set.
2. Shift-clicking an object ADDS the clicked object to the selected object set.
3. Right-clicking an object (to show its context menu) also ADDS the clicked object to the selected object set.

This enhancement was motivated by a dysfunction reported in Gnats 5439 -- item 5 is a fix to a regression from the Qt3-to-Qt4 port of the workspace canvas.

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[I.B] New/Enhanced Software / Unfunded Development
   SCT: Automatic SCT Timestep Override (based on included series slots)
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Creating a new SCT with series slots having a timestep size different from that of the model (e.g. "monthly" series slots in a "daily" model) previously required the user to explicitly modify the new SCT's configuration to support those slots. Now, when the set of series slots in an SCT all have the same timestep size which is different than the model timestep size, the necessary modification to the SCT configuration is applied automatically. (This change was motivated by an issue related to Gnats 5445).

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[X] RiverWare Commercial Activities / CC and Paypal activities
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Online payment items were configured for:

* Bonneville Power Administration, Project Payment.
* RiverWare Training: Water Accounting, March 5-7, 2014.

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| **Maintenance Accomplishments / January 2014** |

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[II] RiverWare Software Maintenance / Software Updates / Bug Fixes
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* 0626: Diagnostics Output Message Dlg: Wrap tooltip text on very long message lines.
* 5424: "File >> Save Model" problem in new RiverWare session when no model file path is defined
* 5430: Periodic slot lookup failure caused by inconsistent internal configuration state
* 5436: Open Expression Slot Dlg: Evaluation Time submenu item text problem
* 5437: [Followup] Crash operating the Plot Dialog's 'Scale to Specified Time Range'
* 5439: Right clicking on object (to show context menu) no longer selects the object. (See also Workspace selection enh.).
* 5442: SCT crash: right-clicking in empty area of series table with no cell selection.
* 5443: Crash renaming copied slot w/ name ending in space & number
* 5444: SCT: unintentional data changes could occur due to the numeric entry edit field becoming active.
* 5445: SCT: crash can occur if errors are reported in a popup window while loading an SCT file.

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