Infrastructure

- All license types make use of the Number of Concurrent instances value specified for the license (used by Experimenter in conjunction with the Maximum number of parallel replications Option)

What's new?

- Experimenter now has a Run Length Analysis Mode which recommends a Warmup Period and Run Length for any scenario to ensure the statistical robustness of a chosen number of replications of a model and its data in experiments
- Experimenter now has a Replication Analysis Mode which recommends the number of replications for any scenario to ensure the statistical robustness of a chosen a Warmup Period and Run Length of a model and its data in experiments
- The Run Length Analysis Mode can update the Warmup Period, Run Length and Random Number Skip value in the Experiment based on the recommendation
- The Replication Analysis Mode can update the Number of Replications and Random Number Skip value in the Experiment based on the recommendation
- The Experimenter API has been extended to allow use of the Run Length Analysis Mode programmatically
- The Experimenter API has been extended to allow use of the Replication Analysis Mode programmatically

Feature Improvements

- An option to improve speed of Experimentation has been added to allow the Experimenter to 'Begin' a model between replications of a scenario rather than re-load it each time. Note that a model with Inactive Data Tables, or Variables that Retain Value On Begin will potentially differ between these two methods of execution.
- Data Table Visualisations can display the Data Label in the Field Colour or as Black text to improve legibility of fields displayed with a pale colour
- The Automatic Temperature calculation has been updated in the Experimenter Simulated Annealing Algorithm to allow multiple random starting positions to be tested rather than selecting a single random start point
- The Experimenter Simulated Annealing Algorithm has been updated to control its temperature reduction based on the number of scenarios that are accepted as a move at a given temperature rather than the number of scenarios that are attempted at that temperature

Fixes

- The time taken to open a model has been reduced – WITNESS launches with Startup.mod in about half the time
- During the Application Exit process from a model that has been changed, pressing Cancel from the Save As dialog leaves WITNESS open
- An invalid Data Table Connection String updates the Log File with an indication that the error may be caused by an expression that can't be evaluated or a literal string that can't be resolved
- An empty string variable used as a Data Table Connection String updates the Log File with an error
- Multiple Data Tables of various sizes can be selected for Edit Data. Selecting Cancel will end the Edit Data activity immediately
- A Data Table can reference a single cell in its Connection String
- Data Table elements can save Notes
- Data Table values can be used as both the base number and the exponent in an 'a to the power of b' calculation
- Data Table string output to CSV files obeys the Write Quotes Around Strings model option
- A Cloud License can be roamed
- A Display Expression within a module that references an element outside the module behaves correctly when the module file is saved and loaded
- A Buffer Input Sort Option within a module that references an attribute outside the module behaves correctly when the module file is saved and loaded
- A Path Source or Destination element change causes a check when the model is next run on to determine whether the path network has changed. If so, the model will be prevented from advancing as it is potentially unstable. Note: this is likely to happen if a function is used as Source or Destination
- The Path dialog grid control buttons for Sources and Destinations stay aligned with each grid when the dialog is resized
- A Continuous Conveyor with Sensors corrects tiny precision errors in sensor event timings
- Chains of Continuous Conveyors containing parts that are longer than a single conveyor in the chain track their state correctly. E.g. a conveyor that is covered by a part whose front is on another conveyor and rear is on a third conveyor is shown as Moving, not Empty
- Help text for the SensorState function has been updated to explain that the Sensor State is affected by a Part On or Off the sensor, not the Sensor being Covered or Uncovered
- A model that has a non-zero Clock Start Time and a zero Warmup Period can be run in the Experimenter
- Experimenter generation of answers out of the Answer Pool correctly calculates the number of steps in the range specified for a real parameter
- Opening Experimenter from a large model shows a wait cursor and updates the status bar message while Experimenter is opening
- When a Sub shift is included in a Main Shift, the total times for the Sub Shift are displayed

- A function referenced as the Output Quantity of a Multi-Cycle Machine appears in the Used Report for the function
- The Pie Chart Detail Sectors grid columns resize correctly when double clicking on the column boundary and expressions can be entered for each sector
- Rules & Actions editors allow Tab (and Shift-Tab) to cycle (and reverse) through all controls on the dialog in a top-bottom, left-right sequence
- Watched string variables display correctly in the Debugger when a local variable is set to a quotation mark character
- EVALREAL, EVALINT, EVALNAME and EVALSTR functions record a message to the log file if the evaluated string cannot be converted to the required type
- The Variable Statistics report output to CSV file format correctly handles multi-dimension variables