Process Simulator Version History

Update 10.6.1.4273– May 13, 2020
Regular Enhancements and Improvements

- Resource downtimes now allow for users to choose the unit of a resource to apply to the downtime.
- Path network Sheet and resource sheets in export issues resolved.
- Validation switching from Pattern Schedule arrivals improvements.
- Foreign language export of Scheduled Arrivals and simulation options do not export correctly resolved.
- Resource Calendar and Resource Downtime simulation error message improvements.

Material Handling:
- Resource Downtime Node selection for Material Handling.
- Station connection points improvements.
- When creating a work unit and connect it to a station as a conveyor you get an Internal Error - Exception occurred resolved.

Update 10.6.0.4260 – April 6, 2020
Enhancements
Licensing

All customers that are current on Maintenance and Support contracts will simply install the software on their machine and create a user account which they will then log in with. The new licensing will allow the following:
- Log in to the software (requires to be online).
- License is good for 30 days.
- Users must connect to the internet and open the application every 30 days to validate their license.
- To move to a new machine the user will need to log out of the prior machine to free their license.
- Enhanced license capability.
  - **No license software or hardware is now required to reside or be maintained on a server.**
  - Give ability to check out a license and go offline.

New Edition (upgrade required)
Material Handling Edition

In this upgrade to the Material Handling, you can now model material flow in your Process Simulator model. Along with the drawing environment being scaled you now will have access to:
- Stations – A new type of activity created to enhance material handling. The station can have capacity or capacity can be turned off; designed to be used with conveyors.
  - You can inset an onboard station into a conveyor.
- Conveyors – control how entities flow from activity to activity. Introducing Stations in a conveyor enhances the ability to control flow from conveyor to conveyor.
  - Control speed of conveyors
  - Control distance of conveyors

- Control orientation of entities
- Control accumulation of entities
- Path networks – Resource movement can be added to enhance your model with travel, pick up, and deposit time.
  - Nodes – decisions points of a path network
    - Set limits
    - Flexible connectors – allow for travel of resources to any part of your Visio file where the resource is requested.
  - Segments – connections between nodes
    - Distance is automatically configured by the scale or the model, but can be manually set.
  - Interfaces – connections from nodes to activities or stations. This is how you can control where resources go to interact with an activity/station.
  - Node logic for better control of resources.
- Resource Path network section
  - Choose the path network the resource can move on
    - Control starting, off-shift, and break node.
    - Speed
    - Deposit times
- Entity Conveyor Size – length and width can be assigned to an entity for flow on conveyors.

Regular Bug fixes and Improvements
- Shift Carryover improvements
- Array export sheet naming issues
- Regular bug fixes

Update 10.5.0.4231 – January 15, 2020
Features
System Function

- ScenarioName() - Returns current scenario name when the function is invoked in logic; providing ability for more custom reporting.
- SysClock() - Returns the System Date and Time when the function is invoked in logic.

Regular Bug fixes and Improvements
- Regular maintenance and improvements

2019 SP5 (November 12, 2019) – 10.4.0.4197

Features

System Function
- TimeEntered() - Returns the entity's entry time into the simulation in the units specified.

Regular Bug fixes and Improvements

Noteworthy bug fix and improvements:
- Issues with activated subroutines containing Order statements resolved.
- Regular maintenance and improvements

2019 SP4 (August 12, 2019) – 10.4.0.4145

Six Sigma Analysis

- Process Simulator links and integrates with **Minitab** to provide users with **Six Sigma** Analysis capability. This integration allows for the tracking of **Six Sigma** metrics in a Process Simulator model and the reporting of these metrics in Minitab after a scenario is run.
- By default **Six Sigma Analysis** are checked to Export to Minitab, but can be disabled at any time.
- **Minitab** has been added to the Process Simulator ribbon under **More Tools**. Click on the icon to view selected scenarios within Minitab.

Noteworthy Bug fix and Improvements:
- Addressed file association issues
- Addressed issues with limited user Windows accounts

2019 SP3 (June 27, 2019) – 10.3.0.4090

Ribbon Enhancements

- Revision of the Process Simulator ribbon. The decision was made to move **Model Packaging** under **More Tools** under the **Tools** section of the ribbon. **Convert Diagram** will now show on the right hand side of the tool bar only IF the file needs to be converted to a Process Simulator 2019 simulation model.
- **Model Elements** buttons can be toggled on/off. You can select a model element and the button will stay selected and can be deselected to close that Element window.
- Grouping was also done within the **More Elements** dropdown section of **Model Elements**.

Properties Enhancements

Process Simulator's Properties window has been a great edition to Process Simulator 2019's User Interface. We have now grouped essential processing elements together.

In addition, we have added indicator icons to show which sections in Properties have additional information. These indicator icons will show for **Logic**, **Multi Entity**, **Setup**, **Downtimes**, and **Notes**. If there is nothing in the section you will not see the icon.

 Notes and **Logic**, when you hover over the icon will display a preview of the contents of the section. Clicking the icon will now take you into the section as well.

Model Compilation Speed Enhancements

Speed of Model compilation after you select Simulate, has been optimized. Benchmarking indicated now that there is a 125 – 135 percent improvement from Process Simulator 2019 SP2 release.

2019 SP2 (April 1, 2019) – 10.2.0.3875

This release is a new, redesigned application that supports both 32- and 64-bit editions of Microsoft Visio 2016.

Features

Import Export via Microsoft Excel

Model information is exportable to Excel not only to view it all in one place but also to modify it and import it back into Process Simulator. Model building and management is easier than ever before.

Internationalization and Localization

Process Simulator now supports internationalization or numeric separators, including date and time. Additionally, we now have localization for English, German, Portuguese, and Spanish languages.

Microsoft Visio 2019 Support

Process Simulator now supports all versions and editions of Visio 2016 and 2019 with Service Pack 2.

2019 SP1 (February 2019) – 10.0.2.3806

This release is a new, redesigned application that supports both 32- and 64-bit editions of Microsoft Visio 2016. It is initially available for customers in US and Canada only but will be available for everyone later this year.

Features

Activity Multi-Entity Table

We have added in the functionality of Multi Entities in to Process Simulator 2019.This is the Major change to the 2019. This functionality allows you to convert your existing models that use multi entity, and create new ones as well, without having to code the functionality using logic. In Shape Properties, you can select Multi Entity and then Define.

2019 (January 2019) – 10.0.0.3734

This release is a new, redesigned application that supports both 32- and 64-bit editions of Microsoft Visio 2016. It is initially available for customers in US and Canada only but will be available for everyone later this year.

Features

Dockable Windows

We have redesigned all element property windows and tables and made them dockable within the Visio application workspace. This allows you to keep them open and out of the way so your diagram view space will be clear for quicker modeling changes.

Referenced Hierarchical Models

Submodels now have the ability to be referenced in addition to their current capability of unique instances. This means that activities linking to the same submodel at different points in your diagram will send their entities to that exact submodel (and not just unique copies of the submodel).

Global Elements Across Pages

In support of the referenced submodels, all model elements (e.g. activities, resources, variables, attributes, macros, etc.) will be globally accessible across pages (no more duplicating model elements on each page). This also allows you to utilize multiple pages to build your model without the use of the submodel construct.

Read/Write Data to Text Files

Write out data from your model to a text or CSV file for model troubleshooting or verification. You can also use it to log custom statistics for import and analysis in Excel or another data analysis tool.

Find and Replace

Process Simulator now has its own find and replace capability, separate from Visio, and will search across its elements and objects only. It even automatically brings the shape into view and opens the associated property or field where the searched text is found.

Model Compile

When you run your model, it is checked for errors prior to simulation. In this release, you are presented with a list of all errors, which allows you to quickly navigate to and resolve the issues.

Upgrade Existing Models

You can convert existing models to its new format! This is done by simply clicking the Convert button in the Process Simulator 2019 ribbon. During this process a backup of your original model is automatically saved for you (with a .psbkp extension). However, it is highly recommended that you save a copy of your original models prior to taking them through the upgrade process.

Microsoft Office/Visio 64-bit Support

Process Simulator now supports both 32- and 64-bit versions of Microsoft Visio 2016.

Enhancements

- Intellisense in logic has smarter element filtering. As you type, the filtered list presented to you in Intellisense includes exact matches, in-word matches, and non-contiguous matches (i.e. if you type "int" you will also have filtered words like "**In**spec**t**").
- If you have previously simulated your model, the compile and build phase will be skipped the next time you simulate as long as you have not made any changes to your model.
- A prefix for unique instances submodels is now easily specified.
- Scenario Manager can hide parameter values that are the same as the baseline thus even better focusing your view on exactly which parameters are different in each scenario.
- You can now hide the shape text in the Layout for activities, entities, and resources.
- Flexible routes also list activity names for selection.
- An entity does not need to be connected as an Arrival connection source. The entity can now be set in the shape properties.
- The Process Simulator stencil has be updated to utilize Visio themes.
- The Process Simulator stencil no longer needs to be loaded for Process Simulator to function.

2016 SP1 (November 2016) – 9.3.1.2754

Features

In-Process Resource Utilization Statistics

Access the utilization of your resources at any time during simulation. Using the newly modified PercentUtil() function, you can find out the utilization of individual units of a resource or a summary of all units of a given resource type. This allows you to make dynamic logical decisions or write out custom statistics to an Excel file.

Identify Captured Resource Units

In addition to determining which resource you've captured, you can now find out the specific unit of that resource as well. With the new OwnedResourceUnit() function, you can get the unit number of any resource owned by an entity. This is useful when collecting custom resource statistics at the individual unit level.

Initialize Routing Percentages from External Data

Percentage-based routes now have the flexibility to be initialized by external data stored in Excel using Arrays. This gives you the ability to fine-tune your model or do what-if analysis in Excel without the need to change the model. Utilize this capability previously only available through Macros and the Scenario Manager, by simply entering the Array in place of the percentage value in Routing properties.

Programmatic Export of Statistics

The statistical results of your simulation runs can be programmatically accessed through a new API to Output Viewer. You can get the raw data, down to the individual replication, or have it summarized or

grouped (just like in Output Viewer) prior to accessing it. Either way, you can access your results, for example to load into Excel or a database, for analysis outside of Output Viewer.

- When exporting Array data at the end of simulation, the replication number is no longer written out in the Excel Sheet name if "Export after final replication only" is checked.
- Minitab version 17.3 is now supported.

- When copying and pasting Observation-based variables in the Variables table, the resulting pasted record would display its Stat type as Observation-based when underlying it was incorrectly set to Time-Weighted.
- Opening the Free Form logic window from a specific subroutine record would cause a different record to be selected and thus different logic to be displayed.
- The application was not properly handling number formatting for country regions that don't use a comma or decimal for a thousand separator (e.g. Finnish).
- Termination logic defined in submodels was not being executed at the end of a replication.
- An external arrival file containing blank rows between arrival records, would prevent the model from simulating.
- When using macros to define which resource units are assigned to specific shifts, and assigning those macros as parameters for scenario analysis, if the baseline scenario set the macros to zero the other scenarios would not properly set the resource unit values.
- Stat::Fit was crashing when attempting to execute an AutoFit for some customers.
- In some cases, during installation, the Setup would fail saying that Sentinel drivers could not install.
- If Process Simulator 2016 was installed before ProModel 2016, the product licenses would be invalid.

2016 (June 2016) – 9.3.0.2701

Stat::Fit

Process Simulator now comes with Stat::Fit, which is a comprehensive yet user-friendly curve fitting program. Stat::Fit takes raw data from spreadsheets, text files, or manual input and converts that data into the appropriate analytical distribution for input into Process Simulator. It automatically fits continuous distributions, compares distribution types, and provides an absolute measure of each distribution's acceptability.

Supports Microsoft EMET (Enhanced Mitigation Experience Toolkit)

Process Simulator is compatible with EMET, which is a utility designed by Microsoft to help IT Professionals protect systems from common threats. EMET works by applying security mitigation technologies to arbitrary applications to block against exploitation through common attack vectors.

- Attempting to license and register Process Simulator for the first time could produce a registration error asking the user to contact Technical Support.
- External arrival files with cells referencing data in another sheet were not properly getting the referenced values during simulation.
- A specific situation of a shift carryover taking a resource away from a grouped entity (having captured multiple resources) and then attempting to capture a replacement resource caused a crash.

Includes Output Viewer 4.5.1.1226 containing the following fixes:

- Negative x axis values were being displayed in Time Plot charts for simulation results with a Warmup period and Grouping set to None for the chart.
- An Index out of range error occurred when a grouping of None was selected for a Location State chart.

2014 SP4 (September 2015) – 9.2.4.2624

Microsoft Compatibility

This release supports Windows 10, Office 2016 (32-bit) and Visio 2016 (32-bit).

Fixes

- An out of memory error would occur when attempting to import a model with 1700+ macros.
- An error about the number of resource units assigned "exceeds the total number of resource units" would occur if a macro was used in the Resource Units field of a resource Calendar assignment.
- The Get statement was not working with Resource Groups in Free Form logic.
- Windows DPI set to greater than 100% would cause Builder Logic syntax to look blurry.
- The error "Invalid or incomplete expression" would occur at simulation if multiple Order statements were defined in Builder Logic, and the entities were being ordered to activities defined as submodels.
- The error "Start time must be greater than or equal to the end time" would incorrectly occur when defining multiple arrivals during the 12:00 am hour for a Pattern Arrival by Calendar Date.
- The application would freeze when attempting to Save if a new subroutine was being defined and the Free Form logic window was open.
- If a Buffer activity had multiple Batch by Entity type records, and the model was exported to Excel and then imported back, the Free Form logic would be cleared.
- Subroutine Free Form logic was cleared if the name of the subroutine was changed.

Includes Output Viewer 4.5.1.1223 containing the following fixes:

- The x axis discrete labels on a Histogram chart were displaying negative values when the Bar Width was defined with a number less than 1.
- The decimal precision of values displayed for some bars in a Histogram would exceed the user defined precision when the Bar Width was set to less than 0.17.

2014 SP3 (February 2015) – 9.2.3.2594

Fixes

- Out of memory error was being thrown when importing model data from Excel, which was caused from multiple routings coming from the same activity and going to the same destination activity.
- Arrival logic for arrivals assigned a Calendar was being executed even though the arrival was off-shift.
- A crash would occur after a shift carryover was initiated in a unique case where multiple units of a resource were re-captured and the entity continued to the next statement in logic when it should have waited for additional resources to be captured prior to moving on.
- A scenario would not simulate if only some of the Percentage-based routes out of a given Activity were selected as parameters and not all of them.

2014 SP2 (November 2014) – 9.2.2.2588

Fixes

- "Index was outside the bounds of the array" error would occur upon Export of model data if a Calendar file had parentheses in its name.
- When naming or renaming variables, attributes, macros, etc. using a reserved word like Order, Entry, FreeCap, etc., a misleading error message would be displayed saying that either invalid characters were being used or the name was longer than 60 characters.

2014 SP1 (September 2014) – 9.2.0.2580

Features (Professional edition only)

Process Simulator Professional provides you with the power, flexibility, and freedom to rapidly build highly effective models so you can make better decisions, faster.

Intellisense

Free Form logic now has an intelligent list of all logic elements that pops up as you define your logic so you can quickly write it. Awesome, right? J. This list of elements appears as you type and includes all the statements, functions, activities, entities, resources, variables, attributes, arrays, distributions, etc…basically everything you need to write logic. And the beautiful thing is, you don't have to remember exact names. As you start typing, the list filters to any element containing those characters and highlights the element name that begins with the characters you typed. If the highlighted element is the one you want, select tab, space, or enter and that name will be committed to your logic. Fast and easy!

Syntax Guide

After a statement or function is added to your Free Form logic, a tooltip will appear displaying the syntax for the statement or function with all its possible options. No need to remember what is required or take time to look it up in Help; the Syntax Guide will appear and show you. This saves you time and keeps you focused on completing your logic.

Statements Pane

Can't remember what the possible statements are when writing logic? We've got you covered. Free Form logic now has a Statements Pane you can toggle on and off to show you all the possibilities. Hover over a statement listed in the pane and a quick help tooltip appears describing the statement. Double-click on a statement and it will be added to your logic. Yeah, it's that easy.

Flexible Routing

Route to any activity with a single routing connection! Each entity that enters an activity can specify a unique destination it will route to. Simply store an activity's index number in an entity attribute, array or variable and, as the entity leaves, it will route to the destination specified.

Features (now available in Standard edition)

User Distributions

Occasionally, none of the built-in distributions in Process Simulator can adequately represent a data set. In such cases, the user may define a User Distribution to represent this empirically established data set.

Initialization/Termination Logic

Execute logic at the beginning or end of a simulation to do things such as initializing arrays and activating subroutines or finalizing calculations for custom reports. This logic is accessed from the Simulation Properties window.

Statements and Functions

Activate and Animate statements are now available in the Logic Builder, in addition to the Calendar functions introduced in the original release of the Professional edition.

Features (in all editions)

Getting Started Panel

With the new Getting Started panel, you have immediate access to demo models, a quick start video, training resources, online help, the ProModel Support team, and a whole host of How To videos. It's easy to find since it will be the first thing you see when you start up the application.

Enhancements

- Numeric Macros can be used in the Replications field in Simulation Properties.

Fixes

- Closing Visio with the Free Form logic window open and logic changes were made, no prompt to save the model prior to closing occurred.
- Using an array in the Pattern arrival Qty field would not use the array value if the array was initialized in Initialization logic.
- Row numbers in header of array table were not appearing when reopening the arrays window.
- If Initialization or Termination logic was open, Visio would not appear in the Alt+Tab list of running Windows applications.
- "Error 6: Unable to extract simulation data" occurred when trying to simulate a model with more than 3,200 activities.
- Exporting a model to Excel would change an expression array to type real.
- Free form logic auto-indentation would sometimes alternate between indenting and not indenting.
- Exporting a model to Excel with a '@' symbol in a logic comment caused the export to never finish.

- "Run-time error '5': Invalid procedure call or argument" error appeared opening Scenario Manager if a Routing scenario parameter had been defined for an activity with parentheses ( ) in the name.
- Defining an array with a dimension greater than 32767 would throw an error.
- Excel file defined for array import or export was not being included in a package file.
- An error occurred when trying to specify the cell values of an array using the number pad.
- "Error translating chart. 0:" would appear in some cases when simulating a model with a subroutine built in version 9.0.
- Simulation would not run if ProModel or MedModel was installed prior to Process Simulator.

Includes Output Viewer 4.5.1.1206 containing the following enhancements and fixes:

- On a Turkish Windows OS, statistics for entities and locations were not displaying in Output Viewer.
- Entity Cost table was incorrectly labeled Entity States.

Process Simulator 2014 Pro release (March 2014) – 9.1.0.2080

Features (Professional edition only)

Process Simulator Professional provides you with the power, flexibility, and freedom to rapidly build highly effective models so you can make better decisions, faster.

Arrays

Arrays allow you to store large amounts of data in a single data structure for your model to access and use during simulation. They are used just like variables but rather than defining a variable for every data value you want to keep track of (which could be hundreds of variables), you define a single array to hold hundreds of data values. See our how to video on Arrays.

Import/Export Data via Excel

The quickest and most convenient way to populate your Arrays with data values is by importing data from Excel. Not only does it make it easy, but because most people use Excel it makes it simple to manage and modify the data directly in Excel. If you manipulate the array values during simulation, then you may want to export the data to Excel for data validation and analysis after simulation.

User Distributions

Occasionally, none of the built-in distributions in Process Simulator can adequately represent a data set. In such cases, the user may define a User Distribution to represent this empirically established data set.

Advanced Subroutines

We have extended our subroutine capability in the Professional edition to allow the passing of parameters and the return of calculated values. This enables the leveraging of arrays and execution of parallel process activities.

Complex Expressions

In Professional, you can get complex expressions in property fields by calling a subroutine (where complex calculations and logic can be executed) and returning a single value to the property.

Initialization/Termination Logic

Execute logic at the beginning or end of a simulation to do things such as initializing arrays and activating subroutines or finalizing calculations for custom reports. This logic is accessed from the Simulation Properties window.

Free Form Logic

When you're ready to go beyond the guided, dialog-building method of logic creation, then you'll love the freedom and flexibility that Free Form logic gives you. Not only can you simply type your logic freely, but the Free Form logic window can remain open as you click from one activity to another. This window doesn't have the same restriction as the Builder logic window.

Solution and How To Videos

We have organized and brought together all the Solution and How To videos our Support team has created on YouTube into one convenient location. Check them out!

Enhancements (Standard and Pro editions)

- Deleting multiple shapes and connectors has been optimized and is now faster.
- Histogram charts now have a Cumulative line option

Fixes (Standard and Pro editions)

- For Exit routes, General properties are disabled because they are not executed upon exit.
- The sort order of the "Selected Entities Only" list for attach routes is now alphabetical.
- In some cases, the Process Simulator data graphics were not updating for multiple scenarios.
- An error "Unable to extract simulation data. Error 6, Overflow" occurred during model translation for models with more than 601 activities.
- The attaching of an entity specified as "After Activity" was attaching prior to the Activity Time when it should occur after.
- For Visio .vsdx formatted files, launching Output Viewer from the ribbon did not open output for simulated results.
- Setup was failing during install if the Windows Search service wasn't running.
- Process Simulator wasn't installing even though Visio 2013 Standard was installed.
- Fixed an issue with using the IncOnOrderQty function at a Storage activity.
- "Internal Error: Wait completion event not found" due to an issue with a shift carryover.

Includes Output Viewer 4.5.0.1203 containing the following enhancements and fixes:

- When a Report tab is created by adding a new chart, the name of the Report tab is based on the chart type added.
- A Cumulative Line option has been added to Histogram charts.
- Units in a Resource Usage chart were not being updated to select additional units introduced in new scenarios. Existing PMOV files must be resaved for these changes to take effect.

Process Simulator 2014 release (August 2013) – 9.0.0.1552

Visio 2013 Integration

Process Simulator now integrates with Visio 2013 (32-bit). A few of the new features introduced by Visio 2013 that Process Simulator supports are:

- *Change Shape* - this new capability in Visio allows you to replace any shape already in your diagrams. You no longer need to disconnect the connections, delete the shape, add a new shape, and then reconnect the connections (besides the fact you lose all your simulation properties). Simply select the shape you want to change and then select a new shape from the Change Shape drop down in the Ribbon. All of your simulation properties (duration, shift, logic, etc.) for that shape will be automatically transferred to the new shape.
- *Office File Format* - Visio also implemented the Office compressed file format standard (VSDX). This keeps your files small in size and allows for version history tracking when stored in SharePoint. Process Simulator supports this new format as well as the old VDX and VSD formats.

Percentage Routes in Scenarios

Want to quickly see the impact of changing the percentages at a decision based routing in your process? Simply add the percentage routes as a parameter in Scenario Manger, change their values, and simulate the new scenario. It's that easy.

Attach by Attribute and Time Limit

We've added several new capabilities to the Attach route to make your modeling of assembly, loading, and joining activities easier:

- *Attach by Attribute Value* - reduce your attach connections and entity types by attaching entities based upon their attribute values.
- *Attach with Time Limit* - specify how much time to give the attaching entities before the base entity takes whatever it has and moves on.
- *Attach Before/After Activity* – decide whether the attach action occurs before the base entity has executed its logic or after.

Batch by Attribute

For a Buffer activity, batch your entities based upon the attribute value of each entity. This helps reduce the number of entities defined in your model. For example, if you have a process that has many different parts with unique part numbers and need to batch them for processing. Assign the part number to an attribute and batch by attribute value. One entity, one attribute, very simple.

Default Activity and Move Times

When adding new activities or routing connections to your diagram, they are given default duration and move times. These default times can now be changed to values you prefer for your models. Don't want to

have a default move time? Set the default time to be blank. These defaults also apply when converting pre-existing diagrams to simulation models.

\<Activity Time\> Statement

We've included this new control statement to Activity Logic, which allows you to designate when the Activity time defined in the properties window is executed. By default, the Activity time occurs after the Activity Logic is completed. Now, placing the <Activity Time> statement within your logic gives you control of when it actually takes place.

New Tutorial Video

The Process Simulator Standard Tutorial has been revamped and now has several video segments for you to follow along with. Jumpstart your learning of model building using the Process Simulator Tutorial.

Enhancements

- New options for Tables in Output Viewer allow you to change the font and font size, bold the column headers, and center justify the columns of data.
- Run a specific replication of your model by placing the "@" symbol in front of your replication number defined in the Simulation Properties (e.g. "@5").
- Serial Numbers can be entered during installation and are displayed in the About dialog for easy access and quick reference when calling Technical Support.
- Macros can be used in Percentage routes.

Fixes

- The list of available logic statements in Subroutine Logic could be inconsistent because it was influenced by the previously opened logic window (e.g. Arrival, Activity, or Move logic).
- A circular reference error occurred at model translation when multiple instances of the same page were open in Visio.
- In some cases, a resource reference to a Resource Group was lost when exporting to Excel and then importing it back.
- A runtime error occurred if the frequency of a downtime was less than or equal to zero.
- A space was added between the Total exits label and the value that appears during simulation at the end of a Route to Exit.
- On non-US regional settings, an error was thrown when using a comma as a decimal for numbers in Scenario Manager and Advanced Elements.
- Process Simulator did not support the VDX and VSDX Visio file formats.
- Some resources that took over work from other resources (due to a shift carryover), in some cases would not return to their work after being preempted away for a break or other downtime.
- A resource was not being properly freed and so the entity would produce a "resource still in use" error upon exiting. This would occur when completing its work after the resource was preempted away and used in another resource's downtime logic.
- A "resource can't be freed" error would occur is a specific situation related to shift carryover and other downtimes waiting to occur.
- An "Internal Error: Preempted event type mismatched" error occurred when an entity routed to a location with a preemptive priority (and preempted the location) while at the same time a shift carryover attempted to interrupt the resource carrying the entity.

Includes Output Viewer 4.4.0.1020 containing the following fixes:

- Log statement labels containing a dash "-" in the name would truncate the characters to the right of the dash.
- The title of a Location State time series chart was displaying the incorrect replication number.
- "ChartFX Expired" message was displayed in place of charts.

2011 SP4 (November 2012) – 8.2.2.1056

Enhancements

Upload to ProModel Cloud

ProModel Cloud is our new web-based enterprise application. Upload Process Simulator models and then create and run scenarios in ProModel Cloud. Scenarios are run simultaneously while the results from all models can be compared and analyzed in one central location in Reports. Easily create report dashboards specific to your business KPIs and share them with others. There is nothing to install as ProModel Cloud is accessed from anywhere through an internet browser. It can be hosted on premise or in the cloud and serves as a single unifying environment for predictive analytic collaboration across the organization.

Control submodel layout at simulation

Previously Process Simulator automatically calculated how many submodels should be placed within a row on the layout. You can now control this by either specifying a boundary up to which submodels can be placed or specifying the number of submodels that can be contained per row.

Flexibility in Attach quantities

We've added the ability to enter an attribute for the quantity in an Attach connection. This simplifies the modeling of processes where attach quantities vary from entity to entity.

Improvement in resource requirements analysis

We now allow the number of units specified in a Use request to exceed the total number of units defined for a given resource. This allows you to create scenarios with fewer resources than a task or activity requires, thus effectively extending the overall time a task takes to complete. Compare these with other scenarios of varying resource quantities and analyze the effect on the overall process initiatives.

Compatible with Windows 8

This release has been tested and verified to install and run on the Microsoft Windows 8 operating system.

Fixes

- During simulation, submodels overlapped the main model on the row above them If all submodels placed on the same row as the main model had a height that was less than the main model height.
- On computers running non-US English regional settings, Percentage routes containing numbers with decimal precision were not translating properly at simulation time.
- At the end of the installation on Windows XP, a message would display stating that the setup failed even though Process Simulator was installed properly and worked fine.

- A combination of capturing a resource through a GET, capturing two units of another resource in a USE, and then all resources being preempted for shift carryover could produce a unique situation where a shift carryover would not be fulfilled.
- A crash could potentially happen in a unique situation where multiple resources were captured through first a GET and then a USE, where some of the resources were preempted away while others were preempted for shift carryover and still other resources were not yet captured.
- If resources were transferred to another entity after an unbatch, a problem could occur later for those resources when executing a shift carryover.
- In a certain situation while executing a shift carryover, a "Wait completion event not found" error would occur.
- A resource calendar would be ignored during simulation if a macro was entered in the resource units field of the calendar assignment table and the macro default value was zero.
- An error would be thrown when attempting export a model that has a scenario with a blank name.
- Variable counters in some submodels were offset during simulation.
- In some cases for a storage activity, the IncOnOrderQty statement was changing the wrong activity.
- Extending the application window across multiple monitors while the simulation was running would not show the entire process layout.

Includes Output Viewer 4.3.2.952 containing the following fixes:

- Histogram bar width and Statistics options were not being saved in the Portuguese version.
- Percentile fields for Histograms were not showing up when viewing in Portuguese.
- Some strings in the ribbon were coming up in English when viewing in Portuguese.
- Entity states data was showing up blank if some of the entity types did not exit during simulation.
- Saving a chart with a blank x-axis title caused the application to crash when opening Output Viewer.
- A "Failed to Export error: Object reference not set to an instance of an object" error occurred in some cases when exporting chart data to Excel.
- Changing the model default time units caused Entity summary columns to not display.
- If the pmov file somehow got corrupted it could cause the application to crash when attempting to read the time series results file.

2011 SP3 (April 2012) – 8.2.1.1031

Enhancements

- Process Simulator's stencils are now included in the Visio shape searching field.
- Macros are now usable in the quantity fields in Resource Groups.
- Shift carryover properly executes for resources captured by entities in the middle of unfulfilled logic delay statements and actions such as Wait Until, Batching, and Attaching.

Fixes

- Resources scheduled to change shifts during the hour of a Daylight Saving Time change were off by one hour; they either produced an hour gap or overlapped by an hour.
- Resources scheduled to take a break during the hour change from Standard to Daylight Saving Time (DST) were not coming back online again.

- Scheduling a User Pause that crosses a DST change would sometimes cause the pause to occur an hour before or after the specified time.
- Breaks scheduled to occur during the "dead" hour of DST (i.e. when changing from Standard to DST, this is the time from 2 am to 3 am that is skipped) are now ignored.
- Fixed some issues with allowing zero values for macros used for experimenting with different resource shifts (i.e. in Resource Units in the Resource Calendar Assignments table).
- Copying Advanced Element names longer than 60 characters would crash PCS when attempting to paste the text as the name for other records.
- Exporting of resource names beginning with a zero (e.g. "045") would have the preceding zeros removed by Excel because it was treating the name as a number instead of a string.
- An entity that requested 2 or more units of the same resource and was not able to capture all units, would later cause a crash when capturing the other units if the originally captured units had been preempted away for shift carryover.
- A crash occurred in a unique situation where multiple units of the same resource were preempted away for shift carryover at the same time and other units were not immediately available to fulfill the shift carryover.

Includes Output Viewer 4.3.1.931 containing the following fixes:

- When a resource utilization chart was grouped by scenario, the resource units didn't match the scenario displayed in the chart.
- Sorting of data in charts containing scenarios with varying numbers of resource units, was not taking into account that some scenarios may not have data for a particular unit.
- Time Plot time series charts were showing incorrect x-axis label times when the model had a warmup period and the data was being summarized.
- The Entity Count time series chart was showing incorrect weekly x-axis labels when the model had a warmup period and the data was being summarized with a weekly interval.
- The Entity State chart would show the states adding up to less than 100% if any of the replications had zero exits for the selected entity type.

2011 SP2 (December 2011) – 8.2.0.1027

Enhancements

- **Resource Shift Carryover extended to Use statement –** this powerful capability, introduced in the last release, has been expanded to include resources captured with a Use statement. It enables you to carryover work started by a resource on one shift and continue it with another unit on the next shift. For example, hospitals operating 24 hours a day can transfer patient care from one shift to the next.
- **Output report views and results copied with new model** – when saving an existing model document as a different name, if that model also has saved Output Viewer report views, you will be prompted and given the choice to copy the saved report views and any results files with the new model name.
- **Charts linked in Output Viewer report views** – charts are now automatically linked together if they exist in the same report tab. This means that when you add or remove a scenario from one chart, all other charts will have that scenario added or removed as well. Other Filter Options can also be linked and, if desired, charts can be unlinked so that changes only apply to the selected chart.

- **Output Viewer Items sorted in original model order** – Filter Options now show all elements in the Items list in the order they appear in the model tables. This is now the default Item sort, however, the list can also be sorted alphabetically.
- **Move a chart and create a new Report** – if you want to move an existing chart into its own new Report tab, simply drag the chart up to the plus "+" tab and drop it there. A new Report tab will automatically be created with your chart in the view.
- **How-To modeling solutions** – learning how to use Process Simulator requires more than just becoming familiar with the product features and menus. It also requires an understanding of how to use the features to correctly create representative models of actual business processes. The how-to solutions, now included in the documentation, help you learn the techniques to model situations you are likely to encounter when doing a simulation study.
- Model package install directory defaults to where the package file resides.
- External Arrival files now support the .xlsm and .xlsb Excel file formats.
- Container objects in Visio are now supported as simulation objects.
- Output Viewer now has context-sensitive online help.
- Simulations can now be run to the year 2100.
- Entity initial cost allows use of distributions.
- Copying rows in a table supports non-contiguous row selection.

Fixes

- Text on a connection in a non-simulation diagram would be replaced with percentage values during conversion to a simulation diagram.
- Process Simulator would appear to freeze up or become very sluggish if a large number was entered for resource units and "Show multiple units graphically" was checked.
- During simulation entities would not follow the defined routing connection path if data graphics were applied to the connection.
- In some cases, activity shape positions would shift in the diagram prior to simulating if they were too close to each other.
- When importing from Excel, any changes made to a Percentage routing would not properly update the numbers displayed on the connection.
- Converting diagrams to have simulation properties would remove existing custom right-click context menu items.
- The error "Out Buffer Capacity must be one of the following" would sometimes occur when trying to add a variable for the capacity of an Out or In Buffer.
- Importing from Excel would not allow variables or macros in the condition value for Detach or Conditional routings.
- In some models created in older versions, the condition operator for a Detach routing would not export to Excel.
- Default name given to Macros when added as a Scenario Parameter would be "<macro name> - Macros" and is now changed more appropriately to "<macro name> - Value".
- A diagram containing Visio guide elements would sometimes shift shape positions prior to simulating.
- Validation on route connections would still occur in some cases even though the option for "Immediate connection validation" was unchecked.
- Downtimes for activities and resources were not using the resource priority if a resource group was selected.
- Create routes default to "After activity" when first created.
- Resources without an assigned a calendar shift would not export to Excel.
- Calendar files were not being included when creating a model package.
- Incorrect reporting of %Waiting statistics for an entity if one of multiple resources captured by an entity with a USE statement was preempted during the USE.

- A "Wait completion event not found" error was occurring when a resource attempted to execute a downtime. This was the result of multiple resources being captured by an entity and some of its resources initiating a shift carryover while others were preempted to go off shift.
- A shift carryover resource was not properly being freed if the resource it replaced on the previous shift was preempted to go off shift as it was traveling to the entity that requested it.

Includes Output Viewer 4.3.0.924 containing the following fixes:

- Output results with a long warmup period (e.g. 5 months) were plotting negative time values.
- The ribbon wasn't displaying properly if the Windows 7 font text was anything other than 100%.
- For Table charts, Time Unit choices in the Options section of the Filter Options panel now only display if they are applicable to the table.
- Double-clicking on an RDB file that is compressed in a ZIP file would produce an error when it attempted to open in Output Viewer.
- When adding a table, if only one scenario is selected in the Filter Options, then the table is displayed with the scenario column hidden.
- Sorting a table by clicking a column header and then changing the time units caused an exception.
- Double-clicking the splitter on the Filter Options panel will collapse and expand the panel.

2011 SP1 (June 2011) – 8.1.0.870

Features

- **Resource Shift Carryover** – this powerful new capability allows you to carryover work started by a resource on one shift and continue it with another unit of that resource on the next. For example, manufacturing facilities that have extended task times or complex processes spanning multiple shifts or days can easily pass work from the first to the second shift. Hospitals operating 24 hours a day can transfer patient care from one shift to the next. Shift carryover works whether it's one resource or multiple resources performing a task. Each resource will independently be interrupted to go off shift and allow resources on the next shift to resume the work. Along with this new capability, you can now assign unique calendars to specific resource units.
- **New Output Viewer time series charts** – we are excited to introduce the following new and modified time series charts:
    - **Activity Utilization** – this new chart displays utilization of activities, as a percentage of contents versus overall capacity, over the course of the simulation run.
    - **Resource Usage** – this new chart shows how many resources were used and when over the course of the simulation. Add a capacity line to the chart and compare the actual usage against the maximum potential resource usage. In order for existing models to generate this report, resources need to have Time Series selected for their statistics in the Resource edit table.
    - **Activity State** – this upgraded chart now includes the averaging of activity states across replications. It is displayed as a 100% stacked column Gantt chart over time.

Enhancements

- **Data Grouping Interval for Statistic series** – when viewing the raw data for time series charts, you can now set the grouping interval if Statistic series are added to the chart.
- **Pooling time series statistics** – Time Plot charts now have a pooling option that allows you to combine the values of the Items selected and display their joint average in the chart. Series for Statistics are also automatically pooled for all items selected and show as one joint Statistic, if the chart type has been set to stacked.

- **Macro availability** – macros can now be used in IF statements, conditional and detach routings, and pattern arrivals.

Fixes

- Renaming a scenario was not properly updating saved report views with the new scenario name.
- Scenario manager was allowing activity capacity to be set above the actual limit which caused an error during simulation.
- Scheduled arrivals set to occur on a Sunday would not actually occur until the following Sunday during simulation.
- Exporting a model to Excel would display the Simulation Properties run times and Scheduled Arrivals times as dates only and not show times.
- Exported Pattern Arrivals would import back into the application with the times to 12:00 am.
- Importing a detach routing connection would lose the condition information.
- A variable used in a Math function was not being updated when the variable was renamed.
- The drop-down list in the logic builder for selecting a subroutine would not show all characters of a long subroutine name.
- The application would sometimes lock up when the name of a variable was changed.
- Importing a numeric macro with a real value containing a comma as a decimal separator (usually for non-US regional settings), would incorrectly import the comma as a period.
- For specific models, scheduled arrivals were arriving in a different month during simulation than what was defined.
- In some cases, copying and pasting logic from one logic window to another was not saving the copied logic.
- Changing the name of a subroutine would take a long time to update.
- Resources in a model built in a previous version would disappear during simulation.
- If the simulation ended during a warmup period, the initial value for activity contents was not being reported.

Includes Output Viewer 4.2.0.830 containing the following fixes:

- A scenario containing a period "." in the name, wouldn't be properly displayed in the Filter Options panel.
- Series from the Statistics list for time series charts were also being stacked when the chart type was set as stacked.
- Statistics series added to time series charts when Grouping was set to None (i.e. viewing raw statistics), were not properly being calculated and, for Entity Count charts, caused an exception.
- Time plot charts wouldn't properly display data truncation annotations if the simulation ended during a warmup period.
- Warmup period was not properly being accounted for in Entity Count time series charts when the simulation had been run as Time Only.
- Zoom capability in Histogram charts has been disabled due to a crash caused by the third-party charting component used by Output Viewer.
- The dialog for exporting chart data to Excel was not remembering the previous directory data was exported to.

Process Simulator 2011 release (March 2011) – 8.0.0.828

Features

- **Output Viewer –** originally released with ProModel 2010, the new Output Viewer was developed in the latest Microsoft WPF technology. It simplifies the creation of views, provides quicker and more open access for modifying charts and tables, and allows for analysis and comparison of multiple output data sources. The user interface follows the Microsoft fluent UI standard and uses a ribbon for providing access to all the reporting functionality. For the Process Simulator 2011 release, we have added the following new capability to Output Viewer:
    - o **Sort Column, Utilization, and State Charts** – sort your chart data based on highest or lowest values. State charts will even let you choose which state should be sorted.
    - o **Export Time Series Data** – similar to exporting Summary data, you can export any of your time series results from any scenario to Excel.
    - o **Change Chart Type** –you can change the chart style from bar to line, from line to area, from pie to doughnut, etc. Choose from several different chart style options.
- **Independent Scenarios**– coupled with the capability introduced in the new Output Viewer, you can run new scenarios independently of each other and compare their results side by side with previously simulated scenarios.
- **Macros** – if you have a distribution that is used in multiple places throughout your model, use a macro and then if you need to change that distribution, modify it one place! Macros can be used in almost any place in your model like activity logic, routing move time, arrival frequency, etc. You can also add them as parameters to be utilized in your scenario analysis.
- **Subroutines** – if you find yourself writing the same logic in multiple activities throughout your model, put that logic in a subroutine. Then, simply call the subroutine from multiple logic locations. Not only will you reduce the amount of time writing logic, but when you want to make a change, you'll only need to make it in one place.
- **External Arrivals** – define multiple Periodic arrivals in an Excel worksheet and have them automatically initialized in your model when the simulation runs. You can also set the arriving entity's initial attribute values for things like part numbers, acuity levels, job numbers, etc.
- **Online Help System** – gives you access to the latest documentation…all the time.
- **Compatible with Visio 2003, 2007, and 2010**!

Enhancements

- Submodel naming prefixes can be defined by including specific text within brackets in the name of the activity which references the submodel. For example, if the activity "Operation 10 – Assemble Parts" references a submodel and you want the elements in the submodel to have the prefix "s10" then you would change the activity name to "Operation 10 – Assemble Parts [s10]". It doesn't matter where the bracketed text is placed within the activity name.
- Entities can be Ordered or Sent directly to an activity that references a submodel.
- The Scenario Manager now contains a row called "Last Run Date" which identifies when the last time a scenario was simulated.
- Copy Model Elements from one model or submodel to another. Cut, Copy, and Paste functionality is available in the Model Elements tables. This excludes Resource Groups and Subroutines, however, you can copy the list of resources or subroutine logic and paste them into another resource details list or subroutine logic respectively.
- You can delete individual rows of logic in an IF statement using the Delete key. Previously all lines within the IF block would be deleted.
- A warning message is given alerting you to the possibility that arrivals may stop occurring for a Continuous Arrival if it is connected to an activity that either has a Calendar definition or less than 100% Availability defined.

Fixes

- Scenario names can no longer contain characters that are not valid for use in file names.
- The Digital Certificate was updated so that the VBA macro code could be set as trusted once the old certificate expires.
- In a specific case, changing a variable name was not updating the variable referenced in the model and the old name would remain.
- An entity would enter a submodel at the wrong activity if there was an explicit entry point and multiple implicit ones as well.
- An error message about only one entry point being allowed (explicit and implicit) into a model was incorrectly displayed when one explicit entry was defined and multiple implicit existed.
- Resources placed inside a Container had their graphics duplicated during simulation.
- Any text added to a Plain Graphic was considered a duplicate if attempting to use the same text for a model object name.
- When simulating a model that contained submodels, after simulation was complete you were not taken back to the model window that was active prior to simulating.
- Importing Notes from Excel back into Process Simulator was not retaining the formatting.
- Clicking Cancel in the activities Batching dialog would validate any changes and throw an error if applicable.
- Setting the clock precision to seconds in the Simulation Properties window would produce a simulation error if any activities or resources had less than 100% Availability.
- In some cases, multiple help windows would be opened when accessing F1 context sensitive help if building statements in logic.
- Capitalization of characters in scenario names was not being retained when displayed in the External Data link table for Data Graphic source data.
- If an entity was rerouted through an activity where it initially arrived, it would execute its arrival logic again.
- For Calendar Date-based simulations, depending upon how much time was specified, the Warmup time was incorrectly truncated during simulation.
- When exporting models that were created several versions ago, the Percent Availability was not exported unless you opened the properties window for that activity.
- Exporting model data to Excel 2010 as an XLS file would cause the file to be opened in protected view.
- On non-English regional settings, an error "The variable used in percent available cannot exceed 100 for its initial value" would occur if the if the initial value of the variable had decimal precision.
- When building logic using the GroupQty function, the logic preview in the dialog was not properly showing the resource name selected for the GroupQty function.
- The Simulation Object Explorer was not updating changes made to an Outlet type routing connection.
- When importing model data from Excel, if the Simulation Properties are set to Time Only, the units for Warmup Length and Run Length were not importing.
- A simulation error occurred when specifying a resource group in a GET, USE, or FREE statement and a variable was specified for the quantity.
- Mixing Scheduled Arrival types, Weekly or Calendar, in the exported model data in Excel was not being caught upon import back into Process Simulator.
- The option to apply variability to a Pattern Arrival quantity was not being exported to Excel.
- A simulation error saying that the repeat interval was less than the pattern duration would occur due to Process Simulator allowing seconds to imported from Excel for the repeat
- A simulation error would occur if a Pattern Arrival quantity was set to zero and the "Apply variability to quantity" option was checked.
- Activity properties window would not close until a batch quantity was entered, even though it was set as Rebatch which doesn't need a quantity. This was caused from Process Simulator not properly importing the model data from Excel.

- When exporting, any model element or object that started with a number was improperly getting the number removed.
- A simulation error occurred if more than one entity type had an arrival connection to the same location and the arrival connections each had a calendar file defined.
- "Unable to extract simulation data" error would occur during simulation translation if an entity was created and then additional shapes were added and grouped together.
- During simulation, attempting to zoom using Ctrl + Shift + mouse wheel was not working.
- Commenting out logic that contained object references (e.g. entities, resources, and activities) could potentially cause referencing errors even though the line of logic should be ignored.
- If Pattern Arrivals had a lot of entries in their definition, a simulation error would occur.
- A resource group was incorrectly allowed in conjunction with the OwnedResource function.
- In some cases, a resource reference in Logic would break and cause some error messages during simulation.
- On a Polish Windows OS, distributions in Process Simulator would not properly store commas as decimal places.

Process Simulator 2010 release (May 2010) – 7.0.0.713

Features

- **Microsoft Visio 2010 Compatibility –** there are so many exciting new features in Visio 2010 that Process Simulator takes advantage of.
    - o **Microsoft Office Fluent user interface –** find and access the features and tools you need more quickly with a new user interface that is consistent with other Office applications.
    - o **New and improved Shapes area –** the new Shapes window enables you to more quickly find and select the stencils you want, and easily move between them. Near the top of every stencil – above a faint dividing line – a new Quick Shapes area holds the shapes you want to use most often in a stencil.
    - o **Quick Shapes Mini Toolbar –** add shapes without leaving the drawing page with one mouse click, using a floating window that contains your most common shapes. As you hover over the Quick Shapes mini toolbar, you are given a live preview of where the shape will be placed. Click and drag on the blue arrow that appears and you are immediately changed to the Connector tool allowing you to create a connection to an existing shape on the diagram. This enables you to connect shapes without switching between the Pointer and Connector tools!
    - o **Insert and delete shapes with auto-healing –** insert new shapes into connected flow diagrams without having to move or realign existing shapes. Delete shapes from connected flow diagrams without having to delete or reconnect leftover connectors.
    - o **Page Auto Size –** create larger diagrams without worrying about the page size with an expandable canvas that automatically adjusts to your need.
    - o **Diagram Validation and new and improved Templates –** Visio 2010 has new Business Process Modeling Notation (BPMN) and Six Sigma templates. Diagram Validation ensures accuracy of your BP diagrams by checking them against the BPMN business rules and logic. The Cross-Functional Flowchart template has been completely redesigned making it even easier to insert, move and modify swim lanes, among other new capabilities.
    - o **Subprocesses –** easily and automatically break complex processes in diagrams into more manageable pieces using subprocesses. Select a section of shapes in your existing diagram, choose to create a subprocess from your selection and Visio will automatically move those shapes to another page in your document, replace them in the main diagram with a single shape, and create a hyperlink to the newly create page!

- **Process Simulator Ribbon –** with the introduction of the Office Fluent user interface in Visio 2010, Process Simulator now has a new ribbon that makes access to its functionality easier than ever.
- **Process Simulator Stencil –** the stencil installed with Process Simulator contains new shapes which not only help make your diagrams look more professional but also allow application of the Themes gallery.
- **Microsoft Excel 2010 Compatibility –** in conjunction with the release of Microsoft Office 2010, Process Simulator also supports importing and exporting its data to and from Excel 2010.

Fixes

- A "Do you want to add the Entity" error appeared in some cases after copying and pasting shapes from one diagram to another and then simulating.
- Variable names with mixed upper and lower case letters were not being sorted properly in variable lists.
- An error, "Unable to extract simulation data. Error: -2032465756, Invalid sheet identifier" occurred if several shapes were grouped together and then the diagram was simulated.
- RETURN statement used in logic caused a model to not simulate correctly.
- The header in the first column of the Resource Downtimes sheet of an exported file was labeled Activity instead of Resource.
- For a Detach routing, the Entity Name condition was not being imported properly.
- An error, "Failed to export. An item with the same key has already been added" occurred if shapes or connections were copied and pasted multiple times from a diagram with simulation properties to a diagram without simulation properties and then was exported to Excel.
- An ambiguous "Failed to export. Object name not found" error was thrown upon exporting to Excel when a hyperlink reference to a file that didn't exist was encountered.
- The application would crash upon exporting to Excel if an entity had somehow got into a state where its internal properties were referencing itself.
- Arrival connections with a Calendar assigned , a Start Time defined as zero (i.e. the first arrival occurs at the very beginning of the simulation), and an Interval defined such that entity arrival times coincided with the Calendar starting up again would sometimes prevent arrivals from occurring.
- On a computer running a 64-bit Operating System, if a model contained a Storage type activity, the building and translating of a model would take an exceptionally long time or else the computer would lock up and require a hard reboot.

2009 SP2 (November 2009) – 6.1.1.533

Fixes

- Calendar files only specified in Arrivals would not be included when creating a package.
- Upon simulating, a compiler error stating "Two consecutive math operators encountered" would occur if a Conditional route had been imported from Excel.
- A variable could be deleted even though it was being used in the Units field for a resource.
- A Failed to Export error stating a "String cannot be of zero length" would occur when exporting a model to Excel with a "GroupQty()" (no name within the parentheses) function in Activity logic.
- Numeric values using commas as a decimal separator (non-US regional settings) were not being correctly exported to Excel for several simulation properties.
- If any invalid data was entered in Simulation Properties fields in Excel and then imported, the Import Errors window displays the incorrect row number.
- If invalid data was entered in the Simulation Properties – End Date field in Excel and then imported, the Import Errors window would specify that the data should be a "Time of Day" instead of a "Date."
- In some cases, models built in version 5.3 were not able to have their variables or attributes deleted if

they were referenced in Activity logic.

- Variable graphics would increase in size following a simulation run if a model referenced submodels in a separate VSD file. This did not occur for submodels within the same VSD file as the parent.
- When right-clicking on a column header in the Six Sigma Configuration dialog, an unhandled exception would occur and close the dialog.
- If themes were applied to the document, a background encompassing the entire diagram would appear during simulation that was the color of the theme.

2009 SP1 (August 2009) – 6.1.0.527

Upgrading from Process Simulator 2007 (version 5.x) to Process Simulator 2009 SP1 (version 6.1) requires an Upgrade Serial Number (USN) in order to run the software. Upgrading from version 6.0 to 6.1 will <u>not</u> require a USN. If you know you will require a USN or are prompted for one, please contact your local ProModel sales representative or ProModel technical support.

Service Pack 1 supports additional language operating systems (German, Portuguese, and Spanish) of Windows XP and Vista and Microsoft Office Visio 2003 and 2007. In addition to several fixes, SP1 contains the following new features:

Features

- **Pattern Arrivals** – a new arrival connection type allowing for a cyclical entity arrival definition. It is a user-defined pattern of varying quantities spread over a specified period of time. It can be used, for example, to model fluctuating customer arrivals over the course of a day or week.
- **Arrivals adhering to a Calendar definition** – a Calendar can be assigned to an arrival and will prevent entities from arriving at the activity during a holiday, vacation day, or off-shift period of time. For example, if a periodic arrival is defined to repeat every day, assigning a calendar containing holidays, vacation, and no work to be done on the weekends will prevent the daily arrivals from occurring on the days off.
- All object property windows have been expanded to allow for more space in displaying the properties.
- Detach routes now have the same conditional options as Conditional routes.
- Added a right-click menu to the Scheduled arrivals grid with copy, paste, and delete options.
- The Scheduled arrivals grid can now be sorted, which is accessed through the right-click menu.
- The Attach quantity limit has been increased from 999 to 999,999.
- Improved responsiveness of panning during simulation.
- The new License Manager is included with this release.

Fixes

- In some cases, activities in a submodel (on another page in the same document as the parent model) were not being linked to their data records in the External Data window.
- Resources and entities in a submodel (on another page in the same document as the parent model) that were not defined in the parent model were not being linked to their respective data records in the External Data window.
- Some of the shapes in the Process Simulator stencil could not be assigned data graphics without first grouping the graphics that make up the shape.
- The Index in the Process Simulator User's Guide had incorrect page references for some of the topics.
- Activity Multi-Entity Priorities were not being imported.
- Canceling the simulation during translation would sometimes cause the error "Error #91 creating graphic library: Object variable or With block variable not set."

- To reflect how the simulation runs in weekly time, Sunday is now listed last in all day of the week lists.
- "Error: Unable to extract simulation data, Error 5, Invalid procedure call or argument" would occur if a resource group was specified in the FreeUnits function. Resource groups are not allowed.
- A resource graphic could be incorrectly duplicated if the translation was canceled after the simulation was initiated.
- Changes to object properties were not saving if the change was made and then immediately followed by running the simulation.
- A model would fail to export if it had an activity with no time defined and then a scenario parameter of that activity's time was listed in the Scenario Manager.
- A resource shape placed as the left-most shape in the diagram would cause a misalignment during simulation.
- You are no longer prompted to trust the publisher or change your Visio security settings after first installing Process Simulator.
- Changing the text color in ProModel would cause text color to change during simulation in Process Simulator.
- Importing an invalid value into the Scenario Manager from Excel would cause all parameters to be reset to their base values rather than retain their modified values.
- The Simulation Object Explorer and Model Elements windows were not being refreshed when switching between pages in the document.
- A "Run-time error '381': Invalid property array index" message would sometimes appear when increasing the column width beyond the Model Elements window boundaries.
- "Object reference not set to an instance of an object" error would occur when attempting to import from Excel where the Resource Group quantity was blank.
- A resource downtime definition specifying to use itself during the downtime was not causing an error to be thrown when imported from Excel.
- An "Internal Error" would occur if no external data was selected to be collected in the Visio External Data Customize dialog accessed from the Simulation Properties.
- Notes for a Scheduled arrival were not being imported back into the diagram.
- Not all the data in the Scheduled arrival table was being copied when attempting to copy the entire table.
- A misleading "Must be one of the following: Number greater than or equal to 0, Distribution, Variable" error would occur if an improper or misspelled time unit was added to an activity time.
- The simulation property to launch the 3DR Output Viewer was always being checked when importing from Excel.
- Text boxes were causing the animation to be misaligned with the diagram during simulation.
- No error was occurring when importing from Excel alerting you to the fact that the Quantity column for a Buffer activity was blank.
- "The file is being used by another process" message would appear in some cases if both 3DR and Visio External Data were both selected to be launched after simulation.
- The application would crash at the end of simulation if it ended when an activity or resource was on vacation, holiday, or other time off.
- In some cases, a resource sharing the same calendar as another resource would never go off-shift or otherwise adhere to the calendar assigned to it.

Includes 3DR version 2.0.14.106 containing the following fixes:

- The hotkey to invoke the Histogram creation dialog was Ctrl+V and conflicted with the standard Windows hotkey to paste contents from the Clipboard.
- Failed arrival records showing zero failed arrivals no longer are included in the table.

Process Simulator 2009 release (April 2009) – 6.0.0.438

Features

- **Data Visualization with Data Graphics –** the most exciting new feature is how Process Simulator takes advantage of Data Graphics and External Data linking in Microsoft Office Visio 2007 Professional. With External Data linking, you can directly connect your simulated results to the shapes in your diagram and visually display them with Data Graphics. Imagine being able to view your Activity Utilization on the actual activities in the diagram or have the activities change color based upon the value of the Utilization. Next imagine taking this same visualization and applying it to multiple scenarios so that the results are displayed and easily compared together on the diagram! With this kind of visual analysis you can more clearly see the results of your changed inputs and make better decisions faster in determining optimal solutions.
- **Export/Import to and from Microsoft Office Excel** – model information is exportable to Excel not only to view it all in one place but also to modify it and import it back into Process Simulator. Model building and management is easier than ever before.
- **Calendars** – definition of shifts and time off (holiday, vacation, etc.) for activities and resources is now done using a new .NET calendar program called Calendar Editor. It provides a more accurate and intuitive way for scheduling resource and activity availability.
- **Enhanced Scheduled Arrivals** – individual arrival definitions now have the capability to be repeated, which can significantly reduce the number of arrival definitions. And with the introduction of Calendars, your scheduled arrivals are also definable by a calendar date.
- **Simulation run length by Calendar Date** – with the introduction of calendars, we are also bringing you the capability to define your simulation warmup, start, and end dates by calendar.
- **Adjust for Daylight Saving Time** – because you can now run your simulation by calendar date, we enabled the ability for the simulation to account for daylight saving time. Based on the regional settings of the computer running the model, choose whether or not to account for daylight saving.
- **New Licensing Wizard** – Process Simulator now uses the latest .NET licensing component making it more intuitive to license and register.
- **New Auto-Update** – Process Simulator now uses the latest.NET auto-update component making it both easier and more intuitive to get updates to your software.
- **New Windows Installer technology** – Process Simulator now installs using the standard Windows Installer technology. Microsoft encourages the use of Windows Installer framework so that install programs synchronize correctly with other installers and keep the internal database of installed products consistent. This means that Process Simulator installations should be more robust and compatible with Windows operating system standards now and in the future.
- In Scenario Manager, the base scenario "Base Values" can now be modified to whatever name you want. Simply double-click on the name of the scenario to change it.
- Access the Calendar Editor from the Process Simulator menu and toolbar.
- Calendar files are automatically loaded into the Calendar Editor when launched from the Calendar Selection dialog (formerly the Shift Selection dialog) for activities and resources.
- Added a right-click menu in the Scheduled Arrivals grid so that it is more obvious that Cut, Copy, Paste, and Delete functions are available.
- Added right-click menus containing a Delete option in the grids for variables, attributes, resource groups, downtimes, multi-entity, batching, etc.
- Clicking on a row header in the Scheduled Arrivals grid now highlights the row. Previously, only clicking on a cell in the row would highlight the entire row.
- In the GroupQty() system function, the entity name is now optional. Previously, if multiple entity types were batched or attached, only the total for the entity specified in the GroupQty was returned. Now the total for all entity types batched or attached can be determined.

Fixes

- The error "Unable to extract simulation data. Error: 5, Invalid procedure call or argument" was received when simulating if a resource had parentheses in its name and it was used in a system function (e.g. "GetResRate(Worker(23))").
- Received a "Failed to rebuild references" error when loading an older model that contained multiple pages.
- A reference for a variable used in the Resource Units field was not being created, which would result in the variable being allowed to be deleted without removing the variable from the Units field first.
- An error message was received and had to be clicked 31 times before it would go away if the capacity of an activity was changed to something greater than 1 and there was at least one item in both the Multi Entity and Setup tabs.
- Resolved an issue where an entity couldn't be deleted because it had a reference to it that didn't actually exist. This was associated with a Conditional or Detach routing where a variable or attribute was used in the condition.
- In Windows Vista there was an issue where the text (Scheduled, Unscheduled, or Usage) in the Basis column for an Activity Downtime appeared blurry.
- An error message occurred when clicking on the "Format Painter" on the Visio Standard toolbar.
- The default parameters for a Normal distribution were a mean of 5 and a standard deviation of 10. The standard deviation has been changed to a more appropriate value of 1.
- Simulation Object Explorer was not updating when switching between two or more open models.
- In some cases if Process Simulator was minimized during simulation it could not be restored until the simulation was complete.
- Editing the week value of a new scheduled arrival and then clicking on the Notes tab would cause the application to crash.
- In the Properties window, the order in which moving from one field to the other, using the Tab key, was not following an expected sequence.
- The tab key would not take you from cell to cell in the Weekly Time grid in Simulation Properties.
- The Frequency for a Storage activity triggered by Time was not properly updating during simulation if used as a parameter in Scenarios. Also, the time unit for the Frequency in the Base scenario was always set to Min even though it might be set to something else in the Properties dialog.
- In some cases, removing an element from an IF statement would cause the Logic Builder to fail to reopen until Process Simulator was restarted.
- Modifying an IF statement by changing an Operator to blank (if it previously had an AND or OR) would create a blank row in the IF statement grid that could not be deleted.
- A blank activity time was being translated as a WAIT 0 for the Base scenario which caused it to run differently than the normal run and they are supposed to simulate the same.
- <None> was removed as a choice for the Priority field for Multi Entity, Setup, and Downtimes.
- In some cases, the font of the text for the Route to Exit statistics was being changed from the default.
- Choosing Unbatch, Rebatch, or None for activity batching was disabling the Quantity field but not clearing out the value which, even though the value was not used, was a source of confusion as to whether or not it was using it since the value could still be seen.
- Views during simulation were not panning and zooming to the appropriate diagram. This issue was magnified when the model had several submodels.

Includes 3DR version 2.0.13.104 containing the following fixes:

- Changing the value of the Average/Total data by period for an existing time series plot would reset the custom zoom settings without being warned.
- Placing a ":" in the name of a View prevented the saved view from being displayed and if deleted would cause 3DR to crash.

5.3.1.336 (February 2009)

Enhancements

- Drawing scales in Visio other than just 1:1 are now supported in Process Simulator.
- The Process Simulator stencil now contains a Multi-Cap shape which looks like the General Activity shape but has the simulation properties of "infinite" capacity for the activity with no buffer capacities defined.
- The default properties of the Decision shape in the Process Simulator stencil have been modified so that the capacity is "infinite", the buffers have no capacity, and there is no activity time.
- Clicking on "Convert to Simulation Model" will now search the active simulation document for any shapes that do not have simulation properties and then add them.

Fixes

- Clicking on the "Attach to" list box for an Attach routing would revert to selecting "Selected Entities Only" even though the original choice was "Any Entity" or "Creator".
- A simulation translation error would occur if a blank line in any Logic window was commented out. The error message was similar to: "Error 'Compiler Error' Context: Process: For All Entities at Activity_:Operation line 1 Source /"
- The Keep checkbox was not remaining checked if immediately after checking it, another tab in the Activity properties window was clicked on.
- References to variables were not being properly tracked if the variable name did not have the exact case for each character in the name (e.g. ThisVar1 vs. thisvar1).
- References to variables were not being tracked in some places where the variable could be used (e.g. Activity Multi-Entity time, Activity Setup time, Storage Trigger Level, etc.). This could result in the variable being deleted without a prompt to remove or replace the instances in the model where the variable is used.
- Adding a second percentage routing to an activity was not properly changing the first routing percentage to 50%, which caused an error on both routing connections.
- Simulation properties would stop being added to shapes after a routing connection was added and then removed by using the Undo while the simulation properties window was open.
- If a shape is encountered that does not have simulation properties, properties will now be automatically added.
- Simulation properties would stop being added to shapes after changing Resource Units, closing the properties window, and then undoing the action.
- In some cases on computers with non-US regional settings, the Permanent Attach option was not saving when checked.
- A downtime was inadvertently being added to an activity if that activity was double-clicked on in the Simulation Object Explorer, which opens the activities properties.
- Undo would stop working in Visio when a shape was copied and pasted.
- In some cases Redo in Visio would stop working.
- When the same shape is added to the layout two or more times the default naming convention was "Shape", "Shape 1", "Shape 2", etc. Now the naming convention follows "Shape", "Shape 2", "Shape 3", etc.
- Simulation properties were not being added to a shape when placed on the layout if that shape had been previously saved to a stencil from the layout with simulation properties. Note: simulation properties are deleted when a shape is added to a stencil. Process Simulator does not currently support the saving of simulation properties with a shape added to a stencil.
- "Must have at least 1 entry for scheduled arrivals" error would appear 33 times if all scheduled arrival details were deleted and then another action was attempted like selecting another shape.

- The purchase button on the licensing and registration window was pointing to a non-existent web page.
- "The capacity must be larger than the initial level" message would appear 37 times after entering an initial level for a Buffer activity that is greater than the capacity. It now only appears once.
- "Value must be a number greater than or equal to zero..." message appeared 37 times after entering text, for example, in a numeric-only field of the Multi-Entity, Setup, or Downtimes tab for an Activity or Resource.
- "Unable to extract simulation data. Error: 5, Invalid procedure call or argument" error occurred when a resource group was defined in a submodel but not in the main model.
- The User Guide had references to other ProModel products names instead of Process Simulator.

Includes 3DR version 2.0.12.103 containing the following fixes:

- Total time in use is now collected for Resources and is reported as Work Time.
- Chart properties like the zoom or x axis time unit were being automatically reset when modifying the chart items. Now you are prompted whether or not to reset the chart properties.
- When running multiple replications, an informational or warning message will appear if data in a Time Series chart (Time-weighted, Simple, or Counts) is truncated to match the replication with the shortest run length. If all replications have the same run length, no data is truncated.

5.3.0.319 (October 2008)

Enhancements

- **Permanent Attach** – if you are attaching entities to a base entity and never intend to detach them later on (i.e. in an assembly type of activity), then using the permanent attach feature is the recommended approach. By permanently attaching entities, cost statistics will be appropriately passed to and reported by the base entity.
- **Simulation precision** – you now have the ability to choose the simulation clock unit precision in Simulation Properties. This helps resolve an issue seen during the simulation where activity times were shorter because they were defined in seconds.
- **New Shift Editor** – the Shift Editor has been completely rewritten in .NET. You can more quickly define your shifts and breaks in an easier to use interface.
- **Latest simulation engine files** – this version contains the ProModel 7.5 simulation engine files.
- **Zooming during simulation** – Functionality for one-click zooming, zooming to a selected region, and mouse wheel zooming has been implemented or updated.
    - **Ctrl + Shift + Left-click** – zoom in
    - **Ctrl + Shift + Right-click** – zoom out
    - **Ctrl + Shift + Left drag** – draws a region (or "box") to zoom into
    - **Ctrl + Shift + Mouse wheel scroll** – zooms in and out
- **Panning during simulation** – Functionality to click and drag the layout to pan to different areas of your model has been implemented and improved.
    - **Ctrl + Shift + Right drag** – pans the layout

Fixes

- The error "Run-time error '381': Invalid property array index" was received when copying and pasting logic from one activity to another when the logic contained two or more local variables.
- A Continuous arrival connection would stop producing continuous arrivals if the entities were batched at the arriving activity.
- Too many exits of a particular entity were being reported if that entity arrived at an activity

(through an arrival connection), created more than one other entity type through a create routing, and then exited the system implicitly (i.e. there was no route to exit connection defined at the arrival activity).

- The error "File conversion error in 'Getting Entity Activity Data' section of the file…" was sometimes encountered when attempting to view simulation results. This was due to changing from one entity type that is collecting statistics to another entity type that is not collecting statistics.
- In Windows Vista, the user specific working directories were not properly created for all other users of the computer except for the user who installed the software.
- Sometimes during simulation, the scale of the shapes and connections were huge while the animation of the resources and entities were on a smaller scale.
- Entity and resource graphics appeared smaller during simulation.
- A package file could not be installed if the path to the package file was greater than 128 characters.
- If an activity had two or more routes to Exit, each was listed with the same name in the Add Analysis Item dialog accessed from the Six Sigma Configuration window.
- When opening the Scenario Manager, a runtime error 457 was thrown. This was caused from two objects having the same internal unique ID.
- Resource units would not update properly when changing the number of units and then switching to another page in the Visio document.
- Attempting to generate Six Sigma reports in Minitab, on a non-English OS or with a non-English version of Minitab, was failing and giving an error, "*ERROR* Illegal Sequence arguments."
- Using the same local variable name in the logic of two or more Ordered arrivals to the same activity would generate a simulation compile error stating, "The identifier is already in use."
- There was a way to define entities, activities, and resources with blank names, which would cause errors when simulating.
- Entities would stop taking the second of two routes out of an activity, if the entity was given a new name for the second route and there was a Continuous arrival coming into the activity.
- Copying Activity, Arrival, or Routing logic from one document (or page) to another was not warning the user that references to Activities, Resources, Entities, Variables, or Attributes in the logic would be lost and must be reassigned for each statement that might use one of these model elements.
- The error "Unable to extract simulation data error 9" was occurring when a model built in version 5.1 with variable counter graphics was simulated in version 5.2.
- In a specific case, the error "Run-time error '13': Type Mismatch" occurred when attempting to open the Variables and Attributes dialog.

Includes 3DR version 2.0.11.93 containing the following fixes:

- When modifying chart items to add or remove series in an existing chart, the titles in the chart were being reset to their default formatting.
- When changing the decimal precision, the chart title was being reset to its default formatting.
- In Windows Vista, scroll bars in reports and charts were being clipped so that they were only partially in view.
- 3DR would throw an error and not load the statistics RDB file if the path and filename were longer than 126 characters.

5.2.0.312 (April 2008)

Features

- Six Sigma analysis with integration to Minitab

Fixes

- Resolved the "The digital signature has expired" warning where the Process Simulator macros are disabled upon starting the application.
- In some cases, pressing F1 to access Help would bring up duplicate instances of the html page in Internet Explorer 7.0 and Firefox tabbed web browsers.
- Many shapes in the stencils included with Process Simulator were not entering text edit mode when double-clicking on them.
- Many shapes in the stencils included with Process Simulator were allowing individual pieces that make up the entire shape to be selected and moved.
- Uninstall more thoroughly removes remnants of the Process Simulator install on Windows Vista.
- An error occurred when attempting to license the Lite version from **Help | About**.
- Apostrophe and Tab characters in activity names were causing simulation compiler errors.
- In a specific case an error would occur when opening the Variables and Attributes window.
- Redundant tooltip text for the Pointer and Hyperlink icons in the Process Simulator toolbar was being added each time a document was opened and closed thus causing the tooltip textbox to extend off the screen.
- A Resource group could be selected to Move an entity but it wasn't used during simulation.
- The Process Simulator license agreement PDF document is installed with the software.

5.1.2.141 (February 2008)

- Output buffers were being added to all Activities when running scenarios.
- A Break Loop statement contained in an If-Then statement that is nested in a While Do loop was improperly marked as an "invalid use of the statement".
- Using the GroupQty function in an Assignment statement was causing an error at model translation (to resolve this, you must delete and then recreate the statement in Logic).
- If an Activity name started with a number, the first character in the number would be removed when simulated.
- The number pad in the Logic Builder now has a comma "," for the decimal separator when the computer regional settings are set to use commas.
- The position of an Outlet routing was being reset in the Simulation Object Explorer when any of its properties were modified.
- In a specific case, attempting to delete a variable in Activity Logic would give an "Error 5 invalid procedure call or argument" error.

5.1.1.140 (December 2007)

- In the Scenario Manager, using a semi-colon ";" (for some computer regional settings) as a parameter separator in a distribution was causing a simulation error.
- If more than one shape in a Visio document had the same name, when converting it to have simulation properties the variables and attributes table would not open.
- If a shape was deleted while the Properties window was open, Undo would become disabled until Visio was restarted.
- The length of the path and filename specified for a Shift file was limited to 125 characters and has been increased to 244.
- Lines of logic would end up in the inverse order when copying and pasting within the begin and end brackets of an IF or WHILE statement.

- The opening of the Scenario Parameters selection window was optimized to show more quickly.

Includes 3DR version 2.0.8.89 containing the following fixes:

- Changing the name or "alias" for a chart series in a saved View was not persisting after the View was closed, reloaded and resaved.
- The starting point for bucketing values in a Counts Time Plot chart was based on the first data point in the series rather than zero (or the warmup end time).
- The line width and style of a series in an existing chart, if changed, was being reset when adding or removing series from the chart.
- Saved views were not persisting when first created (i.e. the IVD file was not generated) in the case where 3DR was left open and a simulation was started (which triggers 3DR to be automatically closed).
- The General table in the General Report was coming up blank if a saved view contained a Failed Arrivals table but the simulation generated no failed arrivals.
- Colors were incorrectly displayed in a State Values Time Plot chart containing series from multiple scenarios if the chart was part of a saved view and the model was resimulated with one of the scenarios disabled.

5.1.0.132 (May 2007)

Features

- Scenario management has been simplified by consolidating the two separate windows into one easy to use table.
- Attach route has been enhanced to allow selection of specific base entities to be attached to.
- Average Cycle Time variable has been added to explicit Route-to-Exit connections where Total Exit variables were previously solely displayed.
- Supports Visio 2007!
- Supports Windows Vista! (32- and 64-bit versions)

Fixes
- Adding a Resource shape from the Process Simulator stencil to the layout was not properly having simulation properties added.
- Adding a shape from a non-Process Simulator stencil was not properly having simulation properties added.
- A new folder was not being created when installing or creating a model package containing an authenticated UNC path.
- In some cases, changing the number of units of a Resource and then changing focus from the properties window would cause some internal errors.
- An entity request for multiple resources using a GET JOINTLY statement was not being fulfilled in a situation where the resources were not initially available but later became available.
- The events list in the simulation engine was not properly clearing out after each replication which resulted in unnecessary memory accumulation.
- The percent availability for an activity or resource during simulation sometimes would be completely different than what was defined.
- Resolved the expired security certificate error which would prevent the use of Process Simulator.

5.0.2.110 (November 2006)

- In some cases a shift file was inadvertently being modified during model packaging.
- Custom stencils were not being properly created when the Process Simulator stencil was open.
- When the regional settings on a computer were set to use a 24 hour clock, scheduled arrivals could not be created for times above the 12th hour.
- Activities were being listed as valid choices for the FreeUnits function in Logic.
- Improved the warning message that appears when more than one entry point is defined in a submodel.

Includes 3DR version 2.0.6.85 containing the following fixes:

- In a specific case the order of variables listed in the statistics table was not matching the order they were listed in the application.

5.0.1.108 (October 2006)

- An entity that was created through a Create route and then later renamed through routing would not attach to its original creator.
- In a specific situation the process diagram graphics were not synchronized with the animating entities during simulation.
- Logic functions pertaining to Activities, Storages, or Buffers when used in sub models were producing simulation errors.

Includes 3DR version 2.0.5.84 containing the following fixes:

- Warmup time was not being properly displayed for a Time Plot State Values chart.
- Time Plot State Values chart was showing an Activity's state as Empty/Idle instead of Waiting while in an ATTACH state.

5.0 Release (July 2006) – 5.0.0.104

Features

- A new activity type, called a Storage, replaces the Order Signal and simplifies and extends your ability to model entity reordering (triggered by level or by time).
- Multiple Storage activities can be connected together to create a Lean Supermarket object.
- A new SEND statement can trigger the release of entities to an activity via a Send route (formerly called the Ordered route).
- A new activity type, called a Buffer, allows entities to be queued by LIFO, FIFO, or by entity type.
- A Buffer activity also allows you to define batching quantities by specific entity types.
- Unique processing times and resource requirements can be easily defined for multiple entity types at an activity.
- Machine Setup (or changeover) is definable for activities.
- Scheduled-, Unscheduled-, and Usage-based downtimes can be defined for resources and activities.
- The Attach route has a new option which allows you to attach whatever quantity exists (the exact amount specified for the Attach or fewer) and immediately continue on.
- You can now have multiple Create routes at the same activity.
- Simulation event tracing and logic debugging capabilities during run-time have been added for improved model troubleshooting and verification.

- Percentage routing validation requires route connections to add up to 100% and the percentage value can be modified directly on the routing connection.
- Resources can be assigned to groups which in return allows for easier resource selection and unique statistical reporting.
- Initial animation speed can be set in Simulation Properties prior to running.
- Undo has been improved and optimized.
- More stencils have been added.
- Model Packaging allows you to collect and compress all the files associated with a model into one file (all Visio diagrams, shift files, and 3DR saved views files) which then can be easily shared with others.
- The Logic Builder has been enhanced to allow for easier logic definition including the ability to enter numbers directly into fields. Less mouse…more keyboard.
- Simulation Object Explorer has an option to auto scroll the layout to view the object selected in the window.

Fixes

- A space at the end of a Scenario name caused statistical collection to fail.
- A scenario parameter is no longer allowed to have the same name as another parameter.
- In a particular case, a variable graphic and its label would become disconnected.
- In some cases a graphic for a resource would appear thinner during runtime.
- Changing the value for resource units and then clicking on the layout would create the correct number of resource graphics but label them incorrectly.
- When pasting data into a scheduled arrival record an "invalid data" error would occur and the value for Week would be set to 1 regardless of its true value.
- Current cell selection is more easily recognizable in the scenarios and parameters grids.
- Removing a scenario parameter from the list when that parameter had its user defined range selected would cause PCS to crash.
- If an activity had Availability defined by percent or time and that activity had a continuous arrival, in some cases the arriving entities might stop.
- Once a main routing type (Percentage, Conditional, Send, or Attach) is connected from an activity, the next new routing connected from that activity will be of the same type as the first. Previously, a new route connection would always be created as a Percentage type routing.
- Line color of connection lines can be changed while still enforcing PCS connection style.
- Double quotes in the alias name of scenario parameters caused errors.
- A type mismatch error occurred if text was entered into the user defined range of a scenario parameter.
- If an activity's In or Out buffer capacity was defined as infinite, they wouldn't show up in the scenario parameters list.
- Automatic spacing between resource unit graphics was inconsistent depending upon how the number for units was entered.
- The "Finished Goods" connector in the Value Mapping stencil would animate the entity movement during simulation in a strange way.
- Variables and Attributes are now listed in the right-click menu for activity Duration.

4.2.2.70 (May 2006):

- Value stream mapping stencil had an expired digital certificate.
- PCS licensed with a hardware key sometimes crashed when the simulation was run.
- Simulation engine files updated to 7.0.5.207.

Includes 3DR version 2.0.2.79 containing the following fixes:

- A manual change to the Y-axis value of a Time Weighted Time Series Plot was not persisting in a saved view.
- Values using a comma as decimal point when the computer regional settings are defined to handle a comma were being saved with a decimal point.
- Views saved in German regional settings did not open correctly in English regional settings.
- Axis range values changed in Time-weighted Time Series Plots when the time unit was set to anything other than hours were not persisting in a saved view.
- An error occurred when using a comma as a decimal in the value specified for the bar width of a Time Series Histogram.
- Changes made to chart properties were not persisting when selecting or deselecting a series element in the Display & Alias window.

4.2.1.69 (April 2006):

- Digital Certificate has been updated so an expired message no longer appears.

4.2.0.68 (March 2006):

- PCS model version added to VSD file.

Includes 3DR version 2.0.1.77 containing the following fixes:
- Changing the position of an object (variable, entity, etc.) in its corresponding table breaks any saved views containing that object.
- 3DR does not load properly if it was previously closed when minimized.
- "Value History" text is appended to the name of a variable if the word "Contents" is at the end of the variable name.
- A tooltip displaying "Y axis" incorrectly appears when the mouse hovers over the X axis in the Time Series State Plot
- State Charts do not show all percentage values when displaying Point Labels.
- Graphic color on the end of a bar in a State Chart is gray.
- In some cases, the order of variables listed in the General Report is inconsistent with the order in the model.

4.2.0.67 (February 2006):

- Updated the simulation engine files to ProModel version 7.0
- Optimized a PCS routine so that simulations should be slightly faster
- Fixed an issue where an order signal would add an extra arrival record which resulted in a simulation error

4.1.0.63 (February 2006):

- Days of the week are now listed Monday through Sunday in the Simulation Properties and Scheduled Arrivals dialogs so that it is consistent with the start of a week (Monday instead of Sunday) during simulation.
- Wrong names in the column headers of the Scoreboard have been fixed.
- When saving views, changes made to chart and table properties were not persisting.

4.1.0.60 (January 2006):

- If Resource Percent Availability was less than 17%, a run-time error would appear during simulation.
- Run-Time Error when checking the Input to Submodel option in the Arrival Properties dialog.
- Order Signal arrival logic was not enabled and Order Signal arrivals were not generated in the correct order.
- IncInventory statement would update the wrong activity in some specific cases.
- Using the "day" time unit for a scenario parameter would cause the box to not be edited again properly and the day wouldn't get saved to the Visio file. So when you simulate, the day time unit would not get translated over to the MOD file.

4.0 Release (May 2005) – 4.0.0.48

Features

- Hierarchical Modeling!
- Support for limited-access and multiple user accounts on Windows XP and 2000
- Improved support for Windows regional settings
- Multiple levels of Undo/Redo in the Logic Builder

3.0 Released (July 2004) – 3.0.0.81

Features

- Renamed to Process Simulator
- Added a distribution builder to assist in defining statistical distributions
- Added right-click menu access to Distribution Builder and list of variables and attributes
- Automatically add multiple resource unit graphics to diagram layout
- No longer dependent upon ProModel Professional license (now licensed separately)
- Enhanced logic windows to provide syntax checking and guided logic statement creation
- Model upgrade - models from previous versions are now automatically upgraded to latest version when loaded
- Routing and arrival connections show an error when not properly connected to shapes
- Object reference list window – appears when deleting simulation objects that are referenced elsewhere in the model and provides a means for removing the references before the object can be deleted.
- Unique object names enforced.
- Order fulfillment/replenishment – new functionality to model order fulfillment and replenishment is added which includes a new Ordered arrival and routing type connections and a new connection type called an Order Signal.
- Throughput count displayed on all route to exit connections added at simulation run time
- Improved the Simulation Object Explorer usability and added a toolbar
- Added context sensitive help throughout the application
- Added validation of property values throughout the application
- Complete connection validation and visual error feedback
- Added Alternate and Outlet routing type connections
- 3DR default statistical view of key metrics such as throughput, activity state, resource utilization, etc. (previously was only a blank slate when statistics were viewed relying on the user to choose what to see post-simulation)

2.1.0.27 (February 2003)

Features

- Updated and improved the variables and attributes window including sorting by column headers
- Simulation Object Explorer added to provide a hierarchical overview of all simulation objects contained in a diagram

2.0 Release (July 2002)

Features

- Renamed to ProModel PI (which stands for Process Improvement)
- Custom built property windows
- Improved stencil containing new shapes
- Entity batching and unbatching
- Ability to define logic for precise process modeling
- Added Resource objects
- Added Continuous and Scheduled type arrival
- Added Conditional, Attach, Detach, and Create type routings
- Shift definition for resources and activities
- Multiple units and percent availability definition for resources
- Scenario Management
- Variables and Attributes

1.1 Update (April 2002)

This update contains bug fixes, improved installation, and better compatibility with Visio.

Features

- Animation window now contained within the Visio application (it previously ran in a separate window)
- Included the new 3DR output viewer

1.0 Release (March 2001)

Originally called the ProModel Plug-in for Microsoft Visio. The purpose of this version was to introduce a free plug-in that would allow the simulation of existing Visio diagrams with little effort.

Features

- Auto-add simulation properties to the shapes contained in an existing Visio diagram
- Create a simulation diagram from an existing simulation template and stencil
- Activity and Entity objects
- Can change basic properties such as activity capacity, duration, and cost
- Percentage-type routing only
- Periodic-type arrivals only
- Change the simulation run length and number of replications
- Simulate and view statistics