

# EVOLVER VERSION HISTORY

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# Evolver 7

# Version 7.6.1

Users of any of the DecisionTools Suite products will be notified automatically of any updated releases with a pop-up message that once clicked will open a dialog window with a variety of options to update the software. You can also check for available updates by clicking on **Help>Check for Software Updates** in the @RISK ribbon.

## September, 2019

### Changes of Note

- **Support for Windows Security Updates:** A set of windows security updates in mid August 2019 caused the message "Invalid procedure call or argument" to occur. Palisade has worked around the issue.

# Version 7.6.0

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## Build #35 - October, 2018

### Changes of Note

- **Support for Excel 2019:** Palisade continues to keep pace with Microsoft Excel's version updates by seeing to it that our software is compatible with their latest version of Excel.
- **Improved support for Multiple Monitors:** With more and more of our users utilizing multiple monitors in their day-to-day tasks, we have improved the way our products interact with multiple monitors and various DPI settings.
- **Added product telemetry for all DecisionTools Suite products:** To improve future software releases, Palisade has included the ability to detect how you are using this product. Usage data is anonymous and includes basic information about your computer's environment (e.g. OS version, Office version, system language) as well as some statistics about which features of the product you are using (e.g. commands clicked, function types used, number of iterations performed). You can find out more information in the software's readme file, accessible from the Help>Documentation menu. The user can choose to opt in or opt out of this at any time by choosing the Usage Reporting item from the Help menu.

# Version 7.5.2

Users of any of the DecisionTools Suite products will be notified automatically of any updated releases with a pop up message that once clicked will open a dialog window with a variety of options to update the software. You can also check for available updates by clicking on **Help>Check for Software Updates** in the @RISK ribbon.

## Build #083 - January, 2018

### Changes of Note

- **Data Execution Prevention Security Setting:** Palisade software was incompatible with some more restrictive "Data Execution Prevention" security settings in Excel; this release resolved the issue. This also allows all products in the DecisionTools Suite to run inside the 32-bit Excel process for versions 2013 and higher, meaning processing times are faster and more efficient.
- **Large Address Aware:** Palisade software was previously unable to take advantage of the ability of 32-bit Excel to allow users with 64-bit operating systems (which is most users) to use 4 GB of RAM instead of just 2 GB. This has been fixed to now allow Palisade software to support 4 GB of RAM in this environment, speeding up model performance.
- **Improved Licensing Security for Networks:** The FLEXnet licensing system in Palisade software has been upgraded to take advantage of licensing security improvements. This makes it harder for malicious software to access sensitive directories on network servers.
- **Windows XP and Windows Server 2003:** We will no longer support these older operating systems. This is because the latest version of the FLEXnet licensing system no longer supports these.

**Improved Efficient Frontier Graphs:** The scaling of the y-axis in the Efficient Frontier Excel graphs has been improved to intelligently display more useful increments.

### \*\*\* A Selection of Significant Maintenance Fixes \*\*\*

12621 Buffer overflow vulnerability in FLEXnet Publisher was fixed by upgrading to a new version of FLEXnet software.

12707 If maintenance expired July-Sept 2016, software did not allow running 7.5.1.

# Version 7.5.1

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## Build #146 - October 24, 2016

**\*\*\* General Maintenance Update \*\*\***

# Version 7.5.0

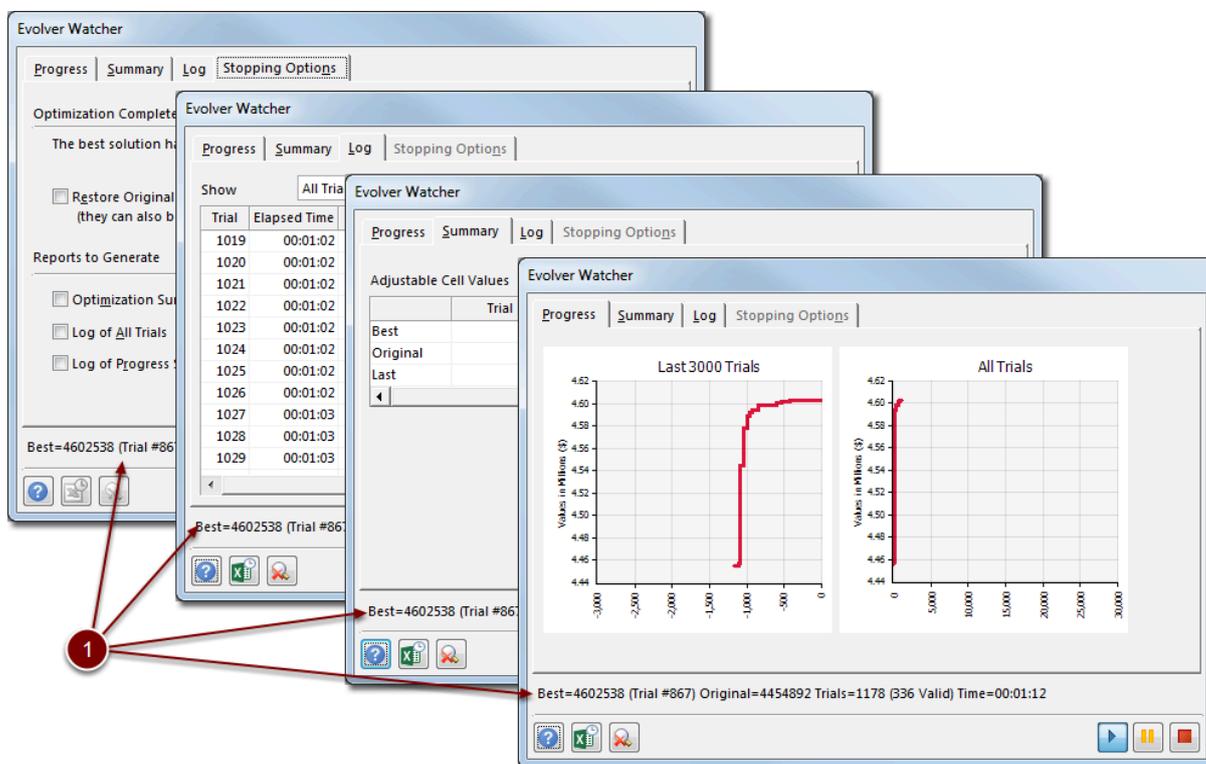
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## Build #104 - July 12, 2016

Users of any of the DecisionTools Suite products will be notified automatically of any updated releases with a pop up message that once clicked will open a dialog window with a variety of options to update the software. You can also check for available updates by clicking on Help>Check for Software Updates in the Evolver ribbon.

## View the status bar anywhere in the Evolver Watcher

Evolver 7.5 allows you to view the status of your optimization on any of the Evolver Watcher tabs. (See #1 below)



## **Optimized for Windows 10 and Excel 2016**

All DecisionTools Suite products, including Evolver, have been retooled for optimal performance and presentation in the latest Windows 10 and Office 2016 environments.

## **Interface Improvements**

The user interface has been updated to make common tasks easier to perform, saving time and clicks.

## **Enhanced Support for Ultra HD Displays**

We've leveraged the power of ultra high definition displays to ensure that all DecisionTools graphs and reports look better than ever.

## **Ability to switch between Languages More Easily**

Switch between any of the language versions without having to change a corresponding code page.

## **Other Changes of Note**

In addition to some minor fixes, the following Maintenance Fix has also been taken care of.

\*\*\* Maintenance Fix \*\*\*

12497 Some examples could not be opened using the Example File List.

# Version 7.0.1

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## Build #393- February 10, 2016

### \*\*\* A Selection of Significant Maintenance Fixes \*\*\*

12084 Obsolete license blocks license manager from being displayed.

12227 Manually installed license file not automatically found.

# Version 7.0.0

Users of any of the DecisionTools Suite products will be notified automatically of any updated releases with a pop up message that once clicked will open a dialog window with a variety of options to update the software. You can also check for available updates by clicking on **Help>Check for Software Updates** in the Evolver ribbon.

## Build #289 - August 13, 2015

### Deployment of Network licenses

Evolver version 7 is available as a network license. For more information please contact your Sales Representative, or email [sales@palisade.com](mailto:sales@palisade.com).

### Deployment of Course Licenses

Evolver version 7 is available as a course license. For more information please contact your Sales Representative, or email [sales@palisade.com](mailto:sales@palisade.com).

### Support for Extended Trial Licenses

If a user has the initial version 7 release (Build #281) of any of the DecisionTools Suite they will be unable to receive an extension code to extend the trial past the standard 15-day trial, without updating to build #289. If the trial has already expired the user will need to download the latest installer from the [Palisade website](http://www.palisade.com) and then enter the code provided by your Palisade representative.

## Original Release - July 31, 2015 - Build #281

*For more details on the following enhancements please visit [http://www.palisade.com/decisiontools\\_suite/7/whatsnew.asp](http://www.palisade.com/decisiontools_suite/7/whatsnew.asp).*

### Efficient Frontier Analysis

An efficient frontier analysis allows you to investigate the effects of a variable constraint on your optimization models.

## New Layout of Constraint Settings Dialog

The Constraint Settings dialog has been modified to make it easier and faster to specify the most frequently used settings.

## Checkboxes in the Model Dialog

Adjustable cell ranges and constraints can be de-activated and activated easily using checkboxes, to make it easy to experiment with different optimization setups.

## Other Changes of Note

**Improved Support for High-DPI Monitors:** High-resolution monitors require special Windows settings that scale up the size of text and some elements of dialogs; otherwise, those items would be too small. Compatibility with this setup has been improved.

**Supported Excel Versions:** Requires Excel 2007 or Higher Evolver now requires Excel 2007 or higher. Excel 2003, or earlier versions, are no longer supported.

### A Selection of Significant Maintenance Fixes:

11064 Protected Workbook dialog sometimes is displayed behind Excel 2013.

11390 The “pipe symbol” list separator ‘|’ prevents StatTools from running properly. StatTools will now check this when the product launches.

# Evolver 6

# Versions 6.3.1 / 6.3.0 / 6.2.1

## 6.3.1

**September 2014** - General Maintenance and Fix of #11124 - VBA Macro warning displayed even if macros are enabled via a Group Policy.

## 6.3.0

**June 2014** - General Maintenance Release

## 6.2.1

**March 2014** - General Maintenance and Fix of #10679 The Operators dialog was displayed when the Esc key was pressed, while the Engine tab of the Optimization Settings dialog was shown.

# Version 6.2.0

## Russian Language Support

Version 6.2 software now is localized for Russian, in addition to the previously available English, Chinese, French, German, Japanese, Portuguese, and Spanish.

*Note: Only the Russian software and a subset of the examples have been localized. Help files and other documentation files are not available in Russian at this time.*

## New XDK Functionality and Documentation

The Evolver Excel Developer's Kit (XDK) has been updated to include a new "Automation Guide" and a large number of new examples to help you get started using this powerful feature.

## Other Changes of Note

### Check for Software Updates

This feature has been streamlined to no longer use the "FlexConnect" utility.

### Support for IPv6

The Palisade licensing system now has support for networks running IPv6.

### Localized Palisade Server Manager

The Palisade Server Manager, which is a utility for managing concurrent or enterprise licenses of Palisade software, can now be installed in English, French, German, Spanish, Portuguese, Chinese, Japanese, and Russian.

### OptQuest optimization engine upgraded

The OptQuest optimization engine was upgraded to version 6.6.1.3. As a result issues #10418 and #10676 were fixed.

## **A Selection of Significant Maintenance Fixes**

10418 Optimizations could get non-responsive, if there were many linear constraints and many integer or discrete adjustable cells.

10544 First trial was sometimes declared invalid incorrectly.

10589 Currency formatting in the Optimization Summary was sometimes inappropriate.

10676 During an optimization with the Order solving method, optimization sometimes stopped before all the possible orderings were tried.

# Version 6.1.2

*April 2013*

## **International Documentation Available**

Localized documentation and example files are now available in Chinese, French, German, Japanese, Portuguese, and Spanish.

# Versions 6.1.0 / 6.1.1

*Version 6.1.0 was a Preview Release (December 2012)*

*Version 6.1.1 was an Official Release (February 2013)*

## Support for Windows 8 and Excel 2013

The software has been made compatible with the latest Excel and Windows releases.

## International Language Support

Version 6.x software now has been localized for Chinese, French, German, Japanese, Portuguese, and Spanish.

*Note: The documentation and example files, however, are only available in English. Localized versions of these resources will be made available in Version 6.1.2.*

## Evolver Ribbon Automatically Activated

When the product boots, the Evolver ribbon will be automatically activated.

# Version 6.0.1

*October 2012*

## **Support for Network Licenses**

The version 6.0.0 supported only standalone licenses. Version 6.0.1 adds full support for concurrent and enterprise network licenses.

# Version 6.0.0

June 2012

## New Examples

Evolver 6.0 includes a completely revised set of example files, designed and written by leading MBA professor and author Dr. Chris Albright of Indiana University. Each example includes plain-language descriptions, and may be edited to suit your situation.

## New Video Tutorials

New video tutorials have also been added by Dr. Albright. A new, interactive Quick Start tutorial shows new users how to build and understand a simple optimization model in less than 30 minutes. In addition, other video tutorial resources have been developed to help experienced users get the most out of their software.

## OptQuest Optimization Engine Added

The OptQuest optimization engine has been added to Evolver, providing a powerful alternative to the existing Genetic Algorithm available in previous versions. Evolver is able to examine your model and automatically choose which of the engines is most appropriate to optimize it.

## Linear Programming Added

If a problem is linear, Evolver will detect this and will use linear programming methods to quickly find a solution. This makes the optimization very fast, and also ensures that the best solution found is the best possible solution.

## "Discrete" Adjustable Cells

In previous versions of Evolver adjustable cells could be defined as taking "Integer" or "Any" values; now there is also an option to define adjustable cell values as "Discrete", and to specify the "Step". For example, suppose we want to only consider multiples of 10 between 100 and 1000; we can define a Discrete variable with these values as the minimum and the maximum, and 10 as the Step size. The use of "discrete" adjustable cells reduces dramatically the number of possible solutions compared to adjustable cells for which "Any" values are allowed; this will often result in faster optimizations. "Discrete" variables are supported with OptQuest, but as of

version 6.0.0 they are not supported with the Genetic Algorithm. With the Genetic Algorithm variables defined as discrete will be treated as non-discrete.

## **New License Manager**

A new License Manager has been created to help you view your license information, activate software you have purchased, help you move licenses from one machine to another, and other related tasks.

## **Other Changes of Note**

### **Handling of Linear Constraints**

If a constraint is linear, Evolver will detect this. As long as the OptQuest engine is used, generated solutions will almost always meet the constraints. This makes optimizations faster, since time is not spent recalculating the workbook for solutions that do not meet linear constraints.

### **Handling of Non-Linear Constraints**

With the OptQuest engine non-linear constraints are also handled efficiently, including situations in which the original values of adjustable cells are invalid (do not meet the specified constraints). The Genetic Algorithm generally requires the original cell values to meet the constraints. The "Constraint Solver" tool was added in version 5: it finds a valid solution, if the original solution is invalid, providing a starting point for an optimization. OptQuest optimizations do not require the use of the Constraint Solver. If the original solution is invalid, OptQuest may start the optimization by generating a sequence of invalid solutions. However, during this stage it collects information about how much each solution falls short of meeting the constraints, with the objective of finding valid solutions.

### **Support for Excel-Defined Names**

If a range of cells is named using Excel's interface, Evolver dialogs and reports will show this name instead of the range address (this applies to workbook-level names, not to worksheet-level names).

### **Process of Defining Constraints Simplified**

With the "Simple" constraint "Entry Style", constraint limits no longer need to be fixed values. In version 5, when defining a constraint with Simple Entry Style, constraint limits had to be fixed values. For instance, if A1:C1 were adjustable cells, one could not specify A1>B1>C1 using the

Simple Entry Style. The Entry Style had to be changed to "Formula" before the constraint could be entered (and it had to be entered as two separate formulas). This limitation no longer exists.

## **Numeric Information about Constraints Provided in the Log**

In version 5 the log specified only whether a constraint was met on each trial; in version 6, additional numeric information is provided. For instance, if we have a constraint saying  $B3 > 1000$ , the log provides the value of cell B3 on each trial. Note it is not always possible to report the result of the evaluation of a constraint as single number. For example, consider a constraint saying  $A1 < B1$ , where both cells are adjusted during optimization; in such cases the program still reports only whether the constraint was met.

## **Reporting Complex Constraints as Individual Constraints**

A constraint can be specified in terms of ranges of cells; for example, we may have a constraint saying that  $A1:A3 < B1:B3$ . In version 5 a constraint like that would be reported in one column in the log. In version 6 it is reported in 3 separate columns ( $A1 < B1$ ,  $A2 < B2$ ,  $A3 < B3$ ), providing more detailed information as to which parts of the original constraint are met, and which ones are not.

## **Single Set of Genetic Algorithm Parameters**

This change only affects users with models created with versions of software released before version 6, and only if multiple groups of adjustable cells were defined in the model. In version 5 it was possible to specify a different mutation rate, crossover rate and genetic operators for each group of adjustable cells. In version 6 there is one mutation rate, crossover rate and one selection of genetic operators for all adjustable cells. Models created with version 5 or earlier versions are automatically converted to the new format by version 6. For example, if different mutation rates are specified for different groups of adjustable cells, after opening with version 6 the same mutation rate will be used for all adjustable cells (and it will be the mutation rate specified for the first group of adjustable cells). If the workbook is saved and subsequently used with version 5 of the software (or older), then the mutation rate will be set to the same value for all the groups of adjustable cells.

## **Precision Parameter Added to Constraint Settings Dialog**

The definition of a hard constraint now includes "Precision". This refers to violations of constraints that are so small that Evolver will disregard them, and will treat a solution as valid despite these small violations. This small imprecision in the handling of constraints relates to the fact that computers can only handle mathematical operations with finite precision. In vast majority of optimizations this setting can be left as "Automatic." With the automatic option, the optimization summary report includes the specific precision value that was selected automatically.

# Licensing Changes

## Ability to Select From Multiple Software Licenses

In some cases, you may have more than one license for a Palisade product. For example, if you are both employed by a company that gave you a professional license, but also have a student license from a university you attend, there is more than one possible license that could be used.

In version 5.x you were given no choice in this matter; the software would choose one of the licenses for you and proceed to run. In version 6.x, the Activate License Dialog now allows you to look at all your existing licenses, and choose which one to use.

## Improved Support for SSD Installations

New licensing capabilities ease installation and licensing when SSD drives are used.

# Evolver 5

# Version 5.7.1

*May 2011*

## General Maintenance Release

General maintenance and fix of #7143 Buttons overlapped the graph in Job Shop Scheduling.xls example.

# Version 5.7.0

*September 2010*

## Support for 64-bit Excel

Starting with version 5.7, Evolver is compatible with the 64-bit version of Microsoft Excel.

## Support for Simplified Chinese

Starting with version 5.7 Evolver is available in Simplified Chinese.

## Faster Log Generation

Writing the log to Excel after optimization can take a significant amount of time with many thousands of trials to log. In this version it takes about half as long as in the previous version.

## Mutation and Crossover Rates Can Be Changed Programmatically during Optimization

The `MutationRate` and `CrossoverRate` properties (part of the Developer Kit interface) can now be used to change the values of these rates during optimization. (In the previous version those values could be changed through the Watcher, but not programmatically.)

## Duplicate Testing

In an attempt to increase the Population's diversity Evolver now, in certain circumstances, keeps a list of all solutions generated and tries not to generate solutions that have already been tested. This does not apply to solutions in the initial Population, just those generated after the solutions in the initial Population have all been evaluated. This feature is used if and only if there are no non-integer adjustable cells. This means that if there are any non-integer adjustable cells (which can only be specified with "recipe" and "budget" solving methods), then the duplicate testing is not performed. Note that duplicate solutions can still be generated, since Evolver tries to generate unique solutions, but if it cannot find one within a limited number of tries it goes ahead and uses a duplicate.

## Maintenance Fix

7126 Clicking Stop button did not bring up the Stopping Options with some optimizations that were set up with the Developer Kit.

# Version 5.5.1

*January 2010*

## **Optimization with Password Protected Sheets**

Evolver now allows you to perform optimizations with worksheets that have been password protected in Excel (as long as the adjustable cells specified in the model are not locked, since the objective of an optimization is to change the values of those cells).

## **Loading Other DecisionTools Suite Add-ins**

A new menu item in the Utilities menu allows you to load other Palisade DecisionTools products from within Evolver.

## **Evolver Now Appears in Excel's Add-in List**

You have always been allowed to add Evolver add-in (Evolver.xla) to the Excel add-ins list so it will automatically load every time Excel starts. However, this process was difficult because it required you to browse for the correct file. Now, Evolver will automatically appear in the add-ins list (unchecked) the first time you launch it, making it easier to access.

## **Language Switching Does Not Require Administrator Permissions**

If you have installed more than one language version of Evolver on a machine, you can now switch the active language (via the Application Settings) even if you do not have administrator rights.

## **Loading Evolver and RISKOptimizer in a Single Excel Session**

Evolver and RISKOptimizer can now be loaded in a single Excel session.

## **A Selection of Significant Maintenance Fixes**

5510 Progress graph inaccurate

5905 Problem handling disjoint ranges specified as adjustable cell ranges in Model dialog

6046 Evolver failed during optimization if bad macro name was specified in "At End of Optimization" field

6144 Errors in some models when deleting constraints, if both hard and soft constraints were present

6314 Fixed incorrect handling of cell references in penalty function formula

# Version 5.5.0

*May 2009*

*Version 5.0.1 released in May 2008*

## Constraint Solver

The Constraint Solver feature has been added, enhancing Evolver's ability to handle complex sets of model constraints.

## Evolver Developer Kit

Complete documentation for the Developer Kit was provided in this version. Also, a backwards compatibility layer was made available so that macros you have written using the Evolver 4.0 macro control language will continue to function.

## Maintenance Fixes

3606 Cannot use Arrow keys or CTRL arrow keys in all Excel references selectors

3782 Missing descriptions in Developer Kit Manual in Method, Properties, Members, etc.

3925 Constraints described without sheet names in Summary Report

3929 Selecting reports other than only Summary causes reports workbook to be hidden by original workbook

3961 Summary Report: incorrect display of time spans longer than 24 hours

3962 Mistype Sheet name in Evolver Settings Formula True field brings up Update Values (save as) screen many times

3999 Optimization Summary: incorrect percent change amount for progress stopping condition

4023 MacroControl.xls example should not have fixed seed

4055 Settings outside selected tab in Optimization Settings dialog don't get validated

4060 Cannot use macros from another workbook that has spaces in name

4064 After adding range and adding/editing group, grid scrolls back to beginning

4065 Bad handling of formulas in adjustable cell min/max ranges

- 4066 Bad handling of formulas and adjustable cells in simple constraint min/max specification
- 4071 Error after deleting cells with adjustable cell min/max values
- 4072 Error after typing non-numeric value in cell specifying adjustable cell min/max
- 4074 Error after deleting constrained range specified in Simple Entry Style constraint
- 4075 Errors after deleting min/max ranges specified in Simple constraint
- 4076 Errors after deleting range referred to in Formula constraint
- 4077 Errors after deleting range referred to in stopping formula
- 4092 Clicking on cell while entering formula deletes existing text