

# RISK SIMULATOR

## RISK SIMULATOR 2012

### Monte Carlo Risk Simulation

38 Probability Distributions with easy-to-use interface, running Super Speed Simulation (thousands of trials in a few seconds) with Comprehensive Statistics and Reporting, Distributional Correlations with Copulas (Normal, T, Quasi-Normal), Multiple Random Generators, Truncation, Alternate Parameters, Linking capabilities, Multidimensional Simulations and Risk Simulator functions in Excel, and works with Windows 7/Vista/XP with Excel 2010/2007/2003 and MAC (Parallels or Virtual Machine)

### Analytical Tools

Bootstrapping, Cluster Segmentation, Comprehensive Reports, Data Extraction, Data Import, Data Diagnostics (checks for data quality including heteroskedasticity, multicollinearity, nonlinearity, outliers, autocorrelation, and more), Distributional Fitting, Distributional Probabilities (PDF, CDF, ICDF), Hypothesis Testing, Overlay Charts, Sensitivity Analysis, Scenario Analysis, Statistical Analytics, Tornado and Spider Charts, Seasonality Test, Detrending, Cluster Analysis, Structural Breaks, ROV Bistats (160 business statistical models), ROV Decision Trees (Bayes' analysis, risk simulation on decision trees, sensitivity and scenario analysis, utility functions) and more

### Forecasting

Box-Jenkins ARIMA, Auto ARIMA, Basic Econometrics, Auto Econometrics, Cubic Spline, Custom Distributions, GARCH, J Curve, S Curve, Markov Chain, Maximum Likelihood, Limited Dependent Variables (Logit, Probit, Tobit), Multiple Regression, Nonlinear Extrapolation, Stochastic Processes, Time-Series Decomposition, Multivariate Trendlines

### Optimization

Static, Dynamic and Stochastic Optimization with Continuous, Discrete and Integer Decision Variables, Efficient Frontier, Project Portfolio Selection, Linear and Nonlinear Optimization



## WHAT IS RISK ANALYSIS?

How do you make critical business decisions? Do you consider the risks of your projects and decisions, or are you more focused on returns? Do you have a hard time trying to understand what risk is, let alone quantifying risk? Well, our Risk Simulator software will help you identify, quantify, and value risk in your projects and decisions.

**RISK SIMULATOR** is a powerful Excel add-in software used for applying simulation, forecasting, statistical analysis, and optimization in your existing Excel spreadsheet models. The software was developed specifically to be extremely easy to use. For instance, running a risk simulation is as simple as 1-2-3, set an input, set an output, and run. Performing forecasting can be as simple as two or three mouse clicks away and the software does everything for you automatically, complete with detailed reports, powerful charts and numerical results. It even comes in English, Spanish, Chinese and Japanese, with additional languages on their way.

If we have the technology to send spacecrafts half way across the solar system, why can't we spend a little more time quantifying risk? Such technology already exists and Risk Simulator encapsulates these advanced methodologies into a simple and user-friendly tool. We have books, live training (Certification in Risk Management) seminars, training DVDs, consultants and free sample getting started videos in risk analysis and modeling on our website.

Risk Simulator is also integrated with our other software including the Real Options Super Lattice Solver, Employee Stock Options Valuation Toolkit, Modeling Toolkit (Over 800 Functions and 300 Models), ROV Modeler, ROV Optimizer, ROV Valuator, ROV Basel II Modeler, ROV Compiler, ROV Extractor and Evaluator, and ROV Dashboard. Please visit our website for more details.

## MODULE DETAILS

### Monte Carlo Risk Simulation

45 Probability Distributions with very easy-to-use interface, running Super Speed Simulations (thousands of trials in a few seconds) with Comprehensive Statistics and Reporting capabilities, Distributional Correlations with Copulas (Normal, T, Quasi-Normal), Various Random Number Generators, Truncation, Alternate Parameters, Linking capabilities, Multidimensional Simulations and Risk Simulator functions in Excel. All of this in 11 foreign languages including English.

### Analytical Tools

Bootstrapping, Cluster Segmentation, Comprehensive Reports, Data Extraction, Data Import, Detailed Data Diagnostics (heteroskedasticity, autocorrelation, multicollinearity, outliers, and much more), Distributional Fitting, Distributional Exact Probabilities (PDF, CDF, ICDF), Hypothesis Testing, Dynamic Sensitivity Analysis, Scenario Analysis, Tornado and Spider Charts, Seasonality Test, Structural Break, Segmentation Clustering, Cyclicity Detrending, ROV Bistats (160 business statistical models), ROV Decision Trees (Bayes' analysis, risk simulation on decision trees, sensitivity and scenario analysis, utility functions), and much more!

### Forecasting

Box-Jenkins ARIMA, Auto ARIMA, Basic Econometrics, Auto Econometrics, Cubic Spline, Customized Distributions, GARCH Volatility, J Curve, S Curve, Markov Chains, Limited Dependent Variables (Logit, Probit, Tobit), Multiple Regression, Nonlinear Extrapolation, Stochastic Processes, Time-Series Decomposition, Trendlines and more! Watch out for more advanced techniques in future versions!

### Optimization

Static, Dynamic and Stochastic Optimization with Continuous, Discrete and Integer Decision Variables, Efficient Frontier Analysis, Linear and Nonlinear Optimization with complete control over the advanced algorithm types and precision levels

## SUPPORT MATERIALS

- 10 books on risk analysis, simulation, forecasting, optimization, real options, and options valuation written by the software's creator
- Training DVD on risk analysis (simulation, forecasting, optimization, real options, and applied business statistics)
- Live training and certification courses on general risk management, risk simulation, forecasting, optimization, and strategic real options analysis
- Detailed user manual, help file, and an extensive library of example files
- Live project consultants with advanced degrees and years of consulting and industry experience

## TRIAL AND ACADEMIC VERSIONS

Risk Simulator can be downloaded immediately from our website with a default 10 day trial license. Our philosophy is you get to try before you buy. Once you use it, we are convinced you will fall in love with the simplicity and the power of the tool, and it will become an indispensable part of your modeling toolbox. We also have academic licenses for full time professors teaching risk analysis (and their students) or other associated courses using Risk Simulator or our other software products. Contact [admin@realoptionsvaluation.com](mailto:admin@realoptionsvaluation.com) for details.

## TRAINING AND CONSULTING

Advanced analytical tools such as the Risk Simulator software are built to be easy to use but may get the analyst in trouble if used inappropriately. Sufficient theoretical understanding coupled with pragmatic application experience is vital; therefore, training is critical.

Our **Risk Analysis** course is a two-day seminar focused on hands-on computer-based software training, with topics covering the basics of risk and uncertainty, using Monte Carlo simulation (pitfalls and due diligence), and all of the detailed methods in forecasting and optimization.

We also have a **Real Options for Analysts** course for the analysts who want to immediately begin applying strategic real options in their work, but lack the hands-on experience with real options analytics and modeling. This two-day course covers how to set up real options models, apply real options, and solve real options problems using simulation, closed-form mathematics, binomial and multinomial lattices using the Real Options SLS software.

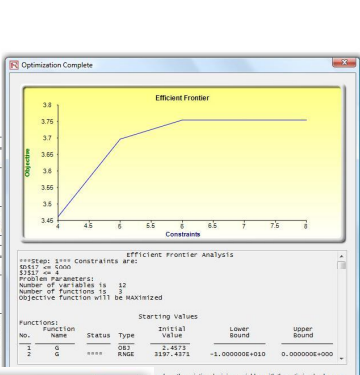
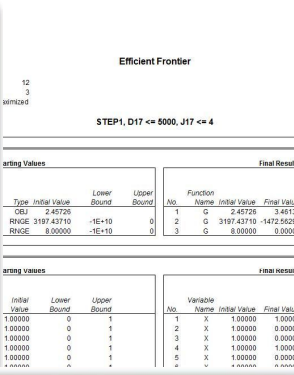
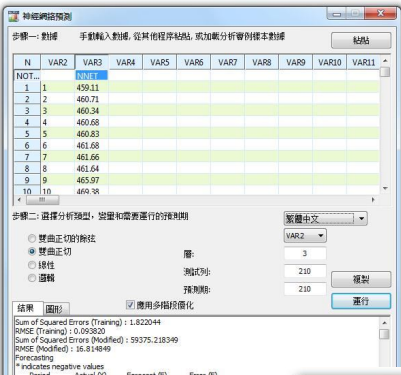
The **Certified in Risk Management (CRM)** seminar is a four-day hands-on class that covers the materials on our Risk Analysis and Real Options for Analysts courses and geared towards the CRM certification provided by the International Institute of Professional Education and Research (AACSB member and eligible for 30 PDU credits with the PMI).

Our **Risk Analysis for Senior Managers** is a one day course specially designed for senior executives, where we will review case studies in risk management from 3M, Airbus, Boeing, GE, and many others. It provides an executive overview of risk analysis, strategic real options, portfolio optimization, forecasting and risk concepts without the technical details.

Also available are other customized decision, valuation and risk analysis courses with an emphasis on on-site trainings customized to your firm's exact needs based on your business cases and models). Consulting services are available, including the framing of risk analysis problems, simulation, forecasting, real options, risk analytics, model building, decision analysis, integrated OEM and software customization.

## EXPERTISE

**Dr. Johnathan Mun** is the software's creator and teaches the **Risk Analysis, Real Options for Analysts, Risk Analysis for Managers, CRM**, and other courses. He has consulted for many Fortune 500 firms (from 3M, Airbus, Boeing to GE and Motorola) and the government (Department of Defense, State and Federal Agencies) on risk analysis, valuation, and real options, and has written a number of books on the topic, including *Modeling Risk: Applying Monte Carlo Simulation, Real Options Analysis, Forecasting and Optimization, 1st and 2nd Edition* (Wiley, 2006, 2010); *Real Options Analysis: Tools and Techniques, 1st and 2nd Edition* (Wiley Finance, 2005, 2002); *Real Options Analysis Course: Business Cases* (Wiley Finance, 2003); *Applied Risk Analysis: Moving Beyond Uncertainty in Business* (Wiley, 2003); *Valuing Employee Stock Options Under 2004 FAS 123* (Wiley Finance, 2004); *Advanced Analytical Models: 800 Functions and 300 Models from Basel II to Wall Street and Beyond* (Wiley 2008); *The Banker's Handbook on Credit Risk: Implementing Basel II* (Elsevier Academic Press 2008); and others. He is the founder and CEO of Real Options Valuation, Inc., and is responsible for the development of analytical software products, consulting, and training services. He was formerly Vice President of Analytics at Decisioneering, Inc. (Oracle), and was a Consulting Manager in KPMG's Global Financial Strategies practice. Before KPMG, he was head of financial forecasting for Viking, Inc. (an FDx/FedEx Company). Dr. Mun is also a full professor at the U.S. Naval Postgraduate School and a professor at the University of Applied Sciences and Swiss School of Management (Zurich and Frankfurt), and he has held other adjunct professorships at various universities. He has a Ph.D. in finance and economics, an MBA in business administration, an M.S. in the area of management science, and a BS in applied sciences. He is certified in Financial Risk Management (FRM), Certified in Financial Consulting (CFC), and Certified in Risk Management (CRM).

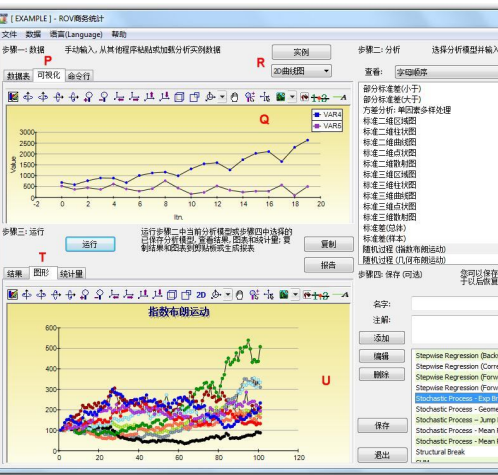
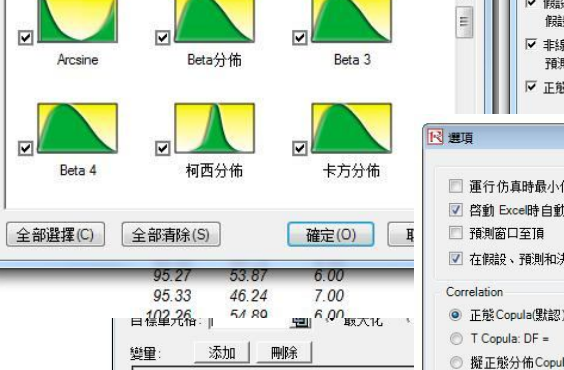
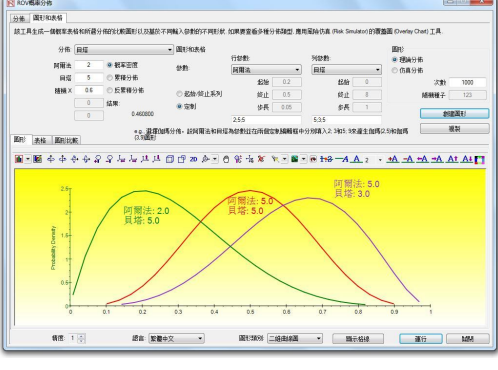
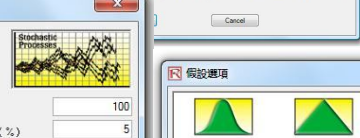
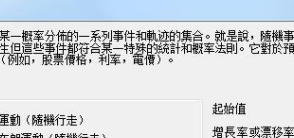
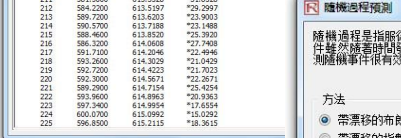


優化被用於在提供最大化收益或最小化成本/風險決策的要求情況下如何分配資源。應用範圍包括存貨管理、金融證券組合、產品混合、專案選擇等等。

物件 方法 約束 統計量 決策變數

- 靜態優化(S)**  
進行一個沒有偽真的靜態優化。通常在採用更高級優化方法前用不來到初始優化組合。
- 動態優化(D)**  
首先進行一次偽真，將偽真的結果應用到模型中去，然後再對這些偽真結果進行一次優化。  
需要偽真的試驗次數: 1000
- 隨機優化(T)**  
與動態優化類似，但是整個過程更重複多次。最終每個決策變數都有顯示其最佳範圍的預測圖。

仿真次數: 1000  
優化次數: 20



English, French, German, Italian, Japanese, Korean, Portuguese, Spanish, Simplified Chinese, Traditional Chinese

Works in Window 7, Vista and XP; integrates with Excel 2010, 2007, 2003; and works in MAC operating systems running virtual machines.

Fully customizable colors and charts (tilt, 3D, color, chart type, and much more!)

Multiple language user manuals and help files

42 detailed example models

Linkable to Real Options SLS and Modeling Toolkit

All analyses come with detailed reports

RS functions and right-click support in Excel

Works well with other ROV software including: Real Options SLS, Modeling Toolkit, Basel Toolkit, ROV Compiler, ROV Extractor and Evaluator, ROV Modeler, ROV Valuator, ROV Optimizer, ROV Dashboard, ESO Valuation Toolkit, and others!

6 random number generators, 3 correlation copulas (Normal, T, Quasi-Normal), and 2 sampling methods (Monte Carlo and Latin Hypercube)

**General Settings**

multiphasic optimization

general linear optimization

detailed results including Hessian matrices, LaGrange functions and more

quick optimizations

continuous, integers and binary optimizations

simulation with optimization

quadratic, tangential, central, forward, convergence criteria

combinations of stochastic and dynamic optimizations on multivariate efficient frontiers

**Optimization**

tests for the most common mistakes in your model

runs tests on heteroskedasticity, micronumerosity, outliers, nonlinearity, autocorrelation, normality, sphericity, nonstationarity, multicollinearity and correlations

**Risk Simulator 2011**

extract data to Excel or flat text files and Risk Sim files, runs statistical reports and forecast result reports

retrieves previous simulation run results

deasonalizes and detrends your data

computes exact PDF, CDF and ICDF of all 42 distributions and generates probability tables

create your own custom distributions

Kolmogorov-Smirnov and Chi-Square tests on continuous distributions, complete with reports and distributional assumptions

runs multiple variables simultaneously, accounts for correlations and correlation significance

tests if two forecasts are statistically similar or different

simulation of the statistics to obtain the precision and accuracy of the results

fully customizable overlay charts of assumptions and forecasts together (CDF, PDF, 2D/3D chart types)

**Analytics**

tests the best predictor variables and ways to reduce the data array

hundreds and thousands of static two dimensional scenarios

tests for various seasonality lags

groups data into statistical clusters for segmenting your data

dynamic sensitivity (simultaneous analysis)

descriptive statistics, distributional fitting, histograms, charts, nonlinear extrapolation, normality test, stochastic parameters estimation, time-series forecasting, trend line projections, etc

tests if your time-series data has statistical structural breaks

static perturbation of sensitivities, spider and tornado analysis, and scenario tables

**Business Statistics**

Percentile Distributional Fitting

Probability Distributions

Statistical Analysis—descriptive statistics, distributional fitting, histograms, charts, nonlinear extrapolation, normality test, stochastic parameters estimation, time-series forecasting, trend line projections, etc

ROV BIZSTATS—over 130 business statistics and analytical models: Absolute Values, ANOVA: Randomized Blocks Multiple Treatments, ANOVA: Single Factor Multiple Treatments, ANOVA: Two Way Analysis, ARIMA, Auto ARIMA, Autocorrelation & Partial Autocorrelation, Autocorrelations (Detailed), Autocorrelations (Quick), Average, Control Chart: C, Control Chart: NP, Control Chart: P, Control Chart: R, Control Chart: U, Control Chart: X, Control Chart: XMR, Correlation, Correlation (Linear, Nonlinear), Count, Covariance, Cubic Spline, Custom Econometric Model, Data Descriptive Statistics, Deseasonalize, Difference, Distributional Fitting, Exponential J Curve, GARCH, Heteroskedasticity, Lag Lead, Limited Dependent Variables (Logit), Limited Dependent Variables (Probit), Limited Dependent Variables (Tobit), Linear Interpolation, Linear Regression, LN, Log, Logistic S Curve, Markov Chain, Max, Median, Min, Mode, Nonlinear Regression, Nonparametric: Chi-Square Goodness of Fit, Nonparametric: Chi-Square Independence, Nonparametric: Chi-Square Population Variance, Nonparametric: Friedman's Test, Nonparametric: Kruskal-Wallis Test, Nonparametric: Lilliefors Test, Nonparametric: Runs Test, Nonparametric: Wilcoxon Signed-Rank (One Var), Nonparametric: Wilcoxon Signed-Rank (Two Var), Parametric: One Variable (T) Mean, Parametric: One Variable (Z) Mean, Parametric: One Variable (Z) Proportion, Parametric: Two Variable (F) Variances, Parametric: Two Variable (T) Dependent Means, Parametric: Two Variable (T) Independent Equal Variances, Parametric: Two Variable (T) Independent Unequal Variances, Parametric: Two Variable (Z) Independent Means, Parametric: Two Variable (Z) Independent Proportions, Power, Principal Component Analysis, Rank Ascending, Rank Descending, Relative LN Returns, Relative Returns, Seasonality, Segmentation Clustering, Semi-Standard Deviation (Lower), Semi-Standard Deviation (Upper), Standard 2D Area, Standard 2D Bar, Standard 2D Line, Standard 2D Point, Standard 2D Scatter, Standard 3D Area, Standard 3D Bar, Standard 3D Line, Standard 3D Point, Standard 3D Scatter, Standard Deviation (Population), Standard Deviation (Sample), Stepwise Regression (Backward), Stepwise Regression (Correlation), Stepwise Regression (Forward), Stepwise Regression (Forward-Backward), Stochastic Processes (Exponential Brownian Motion), Stochastic Processes (Geometric Brownian Motion), Stochastic Processes (Jump Diffusion), Stochastic Processes (Mean Reversion with Jump Diffusion), Stochastic Processes (Mean Reversion), Structural Break, Sum, Time-Series Analysis (Auto), Time-Series Analysis (Double Exponential Smoothing), Time-Series Analysis (Double Moving Average), Time-Series Analysis (Holt-Winter's Additive), Time-Series Analysis (Holt-Winter's Multiplicative), Time-Series Analysis (Seasonal Additive), Time-Series Analysis (Seasonal Multiplicative), Time-Series Analysis (Single Exponential Smoothing), Time-Series Analysis (Single Moving Average), Trend Line (Difference Detrended), Trend Line (Exponential Detrended), Trend Line (Exponential), Trend Line (Linear Detrended), Trend Line (Linear), Trend Line (Logarithmic Detrended), Trend Line (Logarithmic), Trend Line (Moving Average Detrended), Trend Line (Moving Average), Trend Line (Polynomial Detrended), Trend Line (Polynomial), Trend Line (Power Detrended), Trend Line (Power), Trend Line (Rate Detrended), Trend Line (Static Mean Detrended), Trend Line (Static Median Detrended), Variance (Population), Variance (Sample), Volatility: EGARCH, Volatility: EGARCH-T, Volatility: GARCH, Volatility: GARCH-M, Volatility: GJR, Volatility: GJR-TGARCH, Volatility: Log Returns Approach, Volatility: TGARCH, Volatility: TGARCH-M, Yield Curve (Bliss), and Yield Curve (Nelson-Siegel).

ARIMA autoregressive integrated moving average models ARIMA (P,D,Q)

Auto ARIMA runs the most common combinations of ARIMA to find the best-fitting model

Auto Econometrics runs thousands of model combinations and permutations to obtain the best-fitting model for existing data (linear, nonlinear, interacting, lag, leads, rate, difference)

Basic Econometrics econometric and linear/nonlinear and interacting regression models

Cubic Spline nonlinear interpolation and extrapolation

GARCH volatility projections using generalized autoregressive conditional heteroskedasticity models: GARCH, GARCH-M, TGARCH, TGARCH-M, EGARCH, EGARCH-T, GJR-GARCH, GJR-TGARCH

J-S Curves logistic S and exponential J curves

Markov Chains two competing elements over time and market share predictions

Limited Dependent Variables Logit, Probit, Tobit: logistic-based regressions for forecasting probability of an event

Multiple Regression Analysis linear and nonlinear regression, stepwise regression with detailed reports (correlation, forward, backward, combination)

Nonlinear Extrapolation nonlinear time-series forecasting

Stochastic Processes forecasting using simulation and geometric and exponential Brownian motion, mean-reversion, jump diffusion, and mixed processes

Time-Series Analysis 8 time-series decomposition models for predicting levels, trends and seasonalities

Trendlines linear, nonlinear, power, logarithmic, exponential, moving average with goodness of fit

**Forecasting**

**Simulation**

Arcsine, Bernoulli, Beta, Beta 3, Beta 4, Binomial, Cauchy, Chi-Square, Cosine, Custom, Discrete Uniform, Double Log, Erlang, Exponential, Exponential 2, F Distribution, Gamma, Geometric, Gumbel Max, Gumbel Min, Hypergeometric, Laplace, Logistic, Lognormal (Arithmetic) and Lognormal (Log), Lognormal3 (Arithmetic) and Lognormal3 (Log), Negative Binomial, Normal, Parabolic, Pareto, Pascal, Pearson V, Pearson VI, PERT, Poisson, Power, Power 3, Rayleigh, T and T2, Triangular, Uniform, Weibull, Weibull 3

42 Distributions

Super Speed Simulation runs 100,000 trials in a few seconds

Custom Distribution make your own distributions, running historical simulations, and applying the Delphi method

Discrete and Continuous Distributions correlated simulations, truncation, alternate parameters, multidimensional simulation

Distributions as Excel Functions set input assumptions and output forecasts using functions inside Excel

Correlations correlated simulations with copulas (Normal, T, Quasi-Normal)

Sampling Methods Monte Carlo and Latin Hypercube

Random Number Generator ROV Advanced Subtractive Generator, Subtractive Random Shuffle Generator, Long Period Shuffle Generator, Portable Random Shuffle Generator, Quick IEEE Hex Generator, Basic Minimal Portable Generator

## 2012 版有哪些新增功能？

### Risk Simulator 功能完整清單

以下清單列出了 Risk Simulator 的主要功能，強調顯示的部分是 Risk Simulator 2012 版增的最新功能。

#### 一般功能

1. 支援 11 種語言 - 英語，法語，德語，義大利語，日語，**韓語**，葡萄牙語，西班牙語，簡體中文，**俄語**和**繁體中文**。
2. 書籍 – 由 10 本書籍提供分析理論，應用和案例研究支援。
3. 批註儲存格 - 打開或關閉儲存格的批註和決定你是否想在輸入假設，輸出預測和決策變數的儲存格顯示批註。
4. 詳細的示例模型 – Risk Simulator 裡面的 24 種示例模型和 Modeling Toolkit 裡面的超過 300 個模型。
5. 詳細報告 - 所有的分析包含都詳細報告。
6. 詳細的用戶手冊 – 分步介紹的用戶手冊。
7. 靈活的授權方式 – 你可以打開或關閉的軟體的某些功能，能夠讓你定制你的風險分析經驗。例如，如果你只對 Risk Simulator 的預測工具感興趣，您可以獲取一個特定的授權來啟動預測工具模組而不啟動其它的模組從而節省一些軟體費用。
8. 靈活的軟體需求 – 適用於 Window 7，Vista 和 XP 系統；與 Excel 2010，2007，2003 和 Mac 作業系統上運行的虛擬機器。
9. 完全可定制的颜色和圖表 - 傾斜，立體，顏色，圖表類型，以及更多！
10. 動手練習 - 詳細 Risk Simulator 的分步使用指南，包括解釋結果的指南。
11. 多個儲存格複製和粘貼 - 允許對輸入假設，決策變數，預測進行複製和粘貼。
12. 在一個模型中創建多個模擬文檔 - 允許在一個模型中創建多個模擬文檔（在一個模型中可以創建，複製，編輯和運行模擬文檔）。
13. 在 Excel 2007/2010 中修訂了的圖示 -- 完全重新設計的圖示工具列，更加直觀和用戶友好。將有四套圖示來匹配大部分的螢幕解析度（1280 × 760 及以上）。
14. 右鍵快速鍵 – 可以右擊滑鼠來進入 Risk Simulator 的工具和功能表。
15. ROV 軟體集成 - 與其他 ROV 軟體相容的軟體包括，包括 Real Options SLS，Modeling Toolkit，Basel Toolkit，ROV Compiler，ROV Extractor 和 Evaluator, ROV Modeler，ROV Valuator，ROV Optimizer，ROV Dashboard，ESO Valuation Toolkit，以及更多！
16. Excel 中的 RS 函數功能 – 在 Excel 中插入 RS 功能來進行輸入假設和預測設置，並支援用滑鼠按右鍵應用。
17. 疑難排解：此工具允許您重新啟用該軟體，檢查您的系統要求，獲取硬體 ID，等等。

18. 高速分析：這種新的功能能夠高速運行預測和其它分析（在版本 5.2 基礎上提升）。分析和結果與就版本仍是相同的，但現在計算和報表生成的速度更快。
19. 網路資源，案例研究和視頻 – 免費下載模式，開始使用視頻，案例研究，白皮書，和我們網站的其它材料。

### 模擬模組

20. 6 種隨機生成器 – ROV 高級減法生成器，減法隨機打亂生成器，長期打亂生成器，可轉移隨機打亂生成器，快速 IEEE Hex 打亂生成器，基本最小可轉移生成器。
21. 兩種抽樣方法 - 蒙特卡羅和拉丁超立方。
22. 3 種相關性 Copula 函數 - 應用正態 Copula 函數，T Copula 函數，和相關模擬的擬正態 Copula 函數。
23. 42 種概率分佈 - 反正弦，伯努利，Beta，Beta 3，Beta 4，二項，柯西，卡方，余弦，自訂，離散均勻，雙對數，Erlang，指數，指數 2，F 分佈，伽瑪，幾何，Gumbel 分佈最大，最小 Gumbel 分佈，超幾何，拉普拉斯 (Laplace)，邏輯，對數正態分佈 (算術) 和對數正態分佈 (對數)，對數正態分佈 3 (算術) 和對數正態分佈 3 (邏輯)，負二項，正態，拋物，帕累托，巴斯卡，皮爾遜 5，皮爾森 6，PERT 法，泊松，功率，功率 3，瑞利 (Rayleigh)，T 和 T2，三角，均勻，韋伯，韋伯 3。
24. 替代參數 – 使用輸入百分位作為輸入參數的替代方法。
25. 自訂非參數分佈 – 定制自己的分佈，運行歷史模擬，和運用德爾菲法。
26. 分佈截斷 – 設定資料的界限。
27. Excel 函數 – 使用 Excel 函數來設定假設和預測。
28. 多維模擬 - 對不確定性輸入參數的模擬。
29. 精密控制 - 確定模擬試驗次數是否足夠。
30. 超高速模擬- 在幾秒鐘內運行 100,000 次模擬。

### 預測模組

31. ARIMA 模型 - 自回歸整合移動平均模型 ARIMA (P, D, Q)。
32. 自動 ARIMA 模型 - 運行 ARIMA 模型最常見的組合，找到最佳的擬合模型。
33. 自動計量經濟學 - 運行數以千計的模型組合及排列獲取對現存資料擬合最佳的模型 (線性，非線性，相互作用，滯後，超前，按速率變化，差異)。
34. 基本計量經濟學 - 計量經濟學和線性/非線性和相互作用回歸模型。
35. 三次樣條 - 非線性插值和外推。
36. GARCH 模型 – 適用廣義自回歸條件異方差模型來預測波動率：GARCH，GARCH-M，TGARCH，TGARCH - M，EGARCH，EGARCH- T，GJR - GARCH，以及 GJR - TGARCH。
37. J 曲線 - 指數 J 曲線。
38. 有限相依變數 - Logit 模型，Probit，與 Tobit。
39. 瑪律可夫鏈 - 隨著時間推移的兩競爭因素和市場佔有率預測。
40. 多元回歸 – 常規線性和非線性回歸，與逐步方法 (向前，向後，相關性，向前-向後)。

41. 非線性外推 - 非線性時間序列預測。
42. S 曲線 - 邏輯 S 曲線。
43. 時間序列分析 - 8 個時間序列分解模型，預測基數，趨勢和季節性。
44. 趨勢線 - 使用線性，非線性多項式，指數，對數，指數和移動平均法進行預測和擬合，並有擬合優度。
45. 神經網絡預測（線性，邏輯，雙曲正切，雙曲正切的餘弦）。

### 優化模組

46. 線性優化 - 多相優化和一般線性優化。
47. 非線性優化 - 詳細的結果包括 Hessian 矩陣，拉格朗日函數和更多。
48. 靜態優化 - 快速運行連續，整數離散和二元制優化。
49. 動態優化 - 模擬與優化。
50. 隨機優化 - 二次，切，中，向前，收斂標準。
51. 有效前沿 - 多元有效前沿的隨機和動態優化組合。
52. 遺傳演算法 - 適用於各種優化問題。
53. 多相優化 - 局部與全域優化測試，從而更好地控制優化如何運行，提高了結果的準確性和相互關係。
54. 百分位和條件均值 - 隨機優化的其它統計資訊，包括百分位元以及條件均值，這對計算在險價值很關鍵。
55. 搜索演算法 - 對於單個決策變數和目標搜索應用是一種簡單，快速，有效的演算法。
56. 動態和隨機優化中的超高速模擬 - 與優化結合的超高速模擬。

### 分析模組

57. 模型檢查 - 測試你的模型中最常見的錯誤。
58. 相關性編輯器 - 允許直接輸入和編輯大量相關性矩陣。
59. 創建報告 - 自動生成模型裡面的假設和預測報告。
60. 建立統計量報告 - 生成所有預測統計量比較報告。
61. 資料診斷 - 運行異方差，微數缺測性，離群，非線性，自相關，正態，球形，非平穩性，多重共線性和相關性測試。
62. 資料提取和匯出 - 提取資料到 Excel 或文字檔和 RiskSim 檔，運行統計報告和預測結果報告。
63. 資料打開和導入 - 重新檢索以前的模擬運行結果。
64. 去季節化和去趨勢化 - 對您的資料去季節化和去趨勢化處理。
65. 分佈分析 - 對 42 種分佈計算精確的 PDF，CDF 和 ICDF，並生成概率分佈表。
66. 分佈設計器 - 創建自己的定制分佈。
67. 分佈擬合（多個變數） - 同時運行多個變數的分佈擬合併考慮相關性和相關性的影響。
68. 分佈擬合（單個變數） - 對連續分佈進行柯爾莫哥洛夫，斯米爾諾夫和卡方檢驗，生成完整的報告和分佈假設。

69. 假設檢驗 – 測試兩個統計量是否統計顯著相同或者有差異。
70. 非參數拔靴法 - 對統計量進行模擬，以獲取結果的精度和準確性。
71. 覆蓋圖 – 對假設和預測生成完全定制的覆蓋圖（CDF，PDF，2D/3D 圖表類型）。
72. **主成分分析** - 測試最佳預測變數和方法，以減少資料的陣列。
73. 情景分析 – 可以生成數以萬計的靜態二維情景。
74. 季節性測試 - 測試各種季節性滯後。
75. 分割聚類 – 分割你的資料，將資料集納入不同的統計類別。
76. 敏感性分析 - 動態敏感性測試（同時進行分析）。
77. **結構突變測試** - 測試你的時間序列資料是否有統計結構突變。
78. 龍捲風分析 - 敏感性的靜態擾動，蜘蛛網分析和龍捲風分析，情景分析表格。

### 統計學和 BizStats 模組

79. **百分位分佈擬合** – 使用百分位和優化，以找到最佳擬合分佈。
80. **概率分佈圖表和表格** - 運行 45 種概率分佈，計算它們的四個矩，CDF, ICDF, PDF，圖表，疊加多個分佈圖，並生成概率分佈表。
81. 統計分析 - 描述性統計，分佈擬合，長條圖，圖表，非線性外推，正態性測試，隨機參數估算，時間序列預測，趨勢預測等。
82. **ROV 決策樹軟體用於創建和評估決策樹模型。高級方法和分析包括：**
  - 決策樹模型
  - 蒙特拉羅模擬
  - 敏感性分析
  - 情景分析
  - 貝葉斯定理(連接及後可能性更新)
  - 期望數值資訊
  - 極大極小
  - 風險文件
83. **ROV BIZSTATS** - 超過 130 種商業統計和分析模型:

Absolute Values, ANOVA: Randomized Blocks Multiple Treatments, ANOVA: Single Factor Multiple Treatments, ANOVA: Two Way Analysis, ARIMA, Auto ARIMA, Autocorrelation and Partial Autocorrelation, Autoeconometrics (Detailed), Autoeconometrics (Quick), Average, Combinatorial Fuzzy Logic Forecasting, Control Chart: C, Control Chart: NP, Control Chart: P, Control Chart: R, Control Chart: U, Control Chart: X, Control Chart: XMR, Correlation, Correlation (Linear, Nonlinear), Count, Covariance, Cubic Spline, Custom Econometric Model, Data Descriptive Statistics, Deseasonalize, Difference, Distributional Fitting, Exponential J Curve, GARCH, Heteroskedasticity, Lag, Lead, Limited Dependent Variables (Logit), Limited Dependent Variables (Probit), Limited Dependent Variables (Tobit), Linear Interpolation, Linear Regression, LN, Log, Logistic S Curve, Markov Chain, Max, Median, Min, Mode, Neural Network, Nonlinear Regression, Nonparametric: Chi-Square Goodness of Fit, Nonparametric: Chi-Square Independence, Nonparametric: Chi-Square Population Variance, Nonparametric: Friedman's Test, Nonparametric: Kruskal-Wallis Test, Nonparametric: Lilliefors Test, Nonparametric: Runs Test, Nonparametric: Wilcoxon Signed-Rank (One Var), Nonparametric: Wilcoxon Signed-Rank (Two Var), Parametric: One Variable (T) Mean, Parametric: One Variable (Z) Mean, Parametric: One Variable (Z) Proportion, Parametric: Two Variable (F) Variances, Parametric: Two Variable (T) Dependent Means, Parametric: Two Variable (T) Independent Equal Variance, Parametric: Two Variable (T) Independent Unequal Variance, Parametric: Two Variable (Z) Independent Means, Parametric: Two Variable (Z) Independent Proportions, Power, Principal Component Analysis, Rank Ascending, Rank Descending, Relative LN Returns, Relative Returns, Seasonality, Segmentation Clustering, Semi-Standard Deviation (Lower), Semi-Standard Deviation (Upper), Standard 2D Area, Standard 2D Bar, Standard 2D Line, Standard 2D Point, Standard 2D Scatter, Standard 3D Area, Standard 3D Bar, Standard 3D Line, Standard 3D Point, Standard 3D Scatter, Standard Deviation (Population), Standard Deviation (Sample), Stepwise Regression (Backward), Stepwise Regression (Correlation), Stepwise Regression (Forward), Stepwise Regression (Forward-Backward), Stochastic Processes (Exponential Brownian Motion), Stochastic Processes (Geometric Brownian Motion), Stochastic Processes (Jump Diffusion), Stochastic Processes (Mean Reversion with Jump Diffusion), Stochastic Processes (Mean Reversion), Structural Break, Sum, Time-



Series Analysis (Auto), Time-Series Analysis (Double Exponential Smoothing), Time-Series Analysis (Double Moving Average), Time-Series Analysis (Holt-Winter's Additive), Time-Series Analysis (Holt-Winter's Multiplicative), Time-Series Analysis (Seasonal Additive), Time-Series Analysis (Seasonal Multiplicative), Time-Series Analysis (Single Exponential Smoothing), Time-Series Analysis (Single Moving Average), Trend Line (Difference Detrended), Trend Line (Exponential Detrended), Trend Line (Exponential), Trend Line (Linear Detrended), Trend Line (Linear), Trend Line (Logarithmic Detrended), Trend Line (Logarithmic), Trend Line (Moving Average Detrended), Trend Line (Moving Average), Trend Line (Polynomial Detrended), Trend Line (Polynomial), Trend Line (Power Detrended), Trend Line (Power), Trend Line (Rate Detrended), Trend Line (Static Mean Detrended), Trend Line (Static Median Detrended), Variance (Population), Variance (Sample), Volatility: EGARCH, Volatility: EGARCH-T, Volatility: GARCH, Volatility: GARCH-M, Volatility: GJR GARCH, Volatility: GJR TGARCH, Volatility: Log Returns Approach, Volatility: TGARCH, Volatility: TGARCH-M, Yield Curve (Bliss), and Yield Curve (Nelson-Siegel).