Introduction: RISKOptimizer 5.5

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Optimization

- Finding the best solution to a problem which has many solutions
- Adjusting allocations to arrive at the best arrangement, calculated by an objective function
- Stochastic v. deterministic conditions
- Variation and “noise”

Optimization Problems

- Linear
- Non-linear
- Combinatorial
- Tabular

Optimization Applications

- Supply chain management
- Pricing strategy
- Marketing strategy
- Capital planning
- Transportation
- Site location
- Quality management
- Personnel management
- Operating structure

About Evolver

- Adds Genetic Algorithm Optimization to Excel

- How Evolver accomplishes this:
  - Specify desired outcome (max, min, target)
  - Specify limitations and constraints you know exist for key inputs
  - Identify solving method

About RISKOptimizer

- Adds Genetic Algorithm Optimization to Monte Carlo simulation to Excel

- What RISKO accomplishes:
  - Optimizes under uncertainty for a given decision
  - Stochastic optimization

- How RISKO accomplishes this:
  - Specify desired outcome (max, min, target)
  - Specify variation you know exist for key inputs
  - Identify solving method

Using RISKOptimizer

- Consider the Problem an @RISK Problem
  - Focus is on variation of the bottom-line
  - Decision variables (cells) exist in the model
- What RISKOptimizer does: Automates the process of
  - Finding the values for the decision cells that maximize/minimize/find the value closest to, a desired value of the bottom-line
- This approach uses RISKOptimizer as a precursor to a full @RISK analysis:
  - Finds the best values of the decision variables.
  - Run @RISK to examine exposure under the best conditions

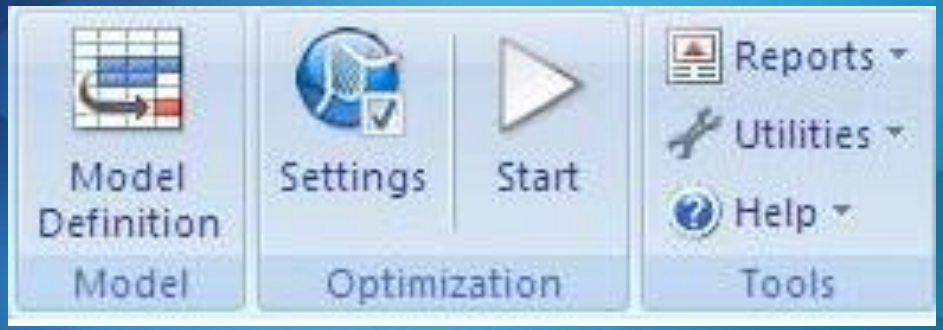
Using RISKOptimizer

- Begin with or Create an @RISK Model
- Define the Bottom-Line
- Identify and Quantify the Adjustable Cells
- Add Constraints
- Set Up the Software to Run
- Run the Optimization
- Review Results

RISKOptimizer: Interface

- Ribbon
- Define Model
- Simulation Settings
- Optimization Settings
- Run-time Window
- Results

Ribbon


Model Definition
Model
Settings
Start
Optimization
Reports
Utilities
Help
Tools

Model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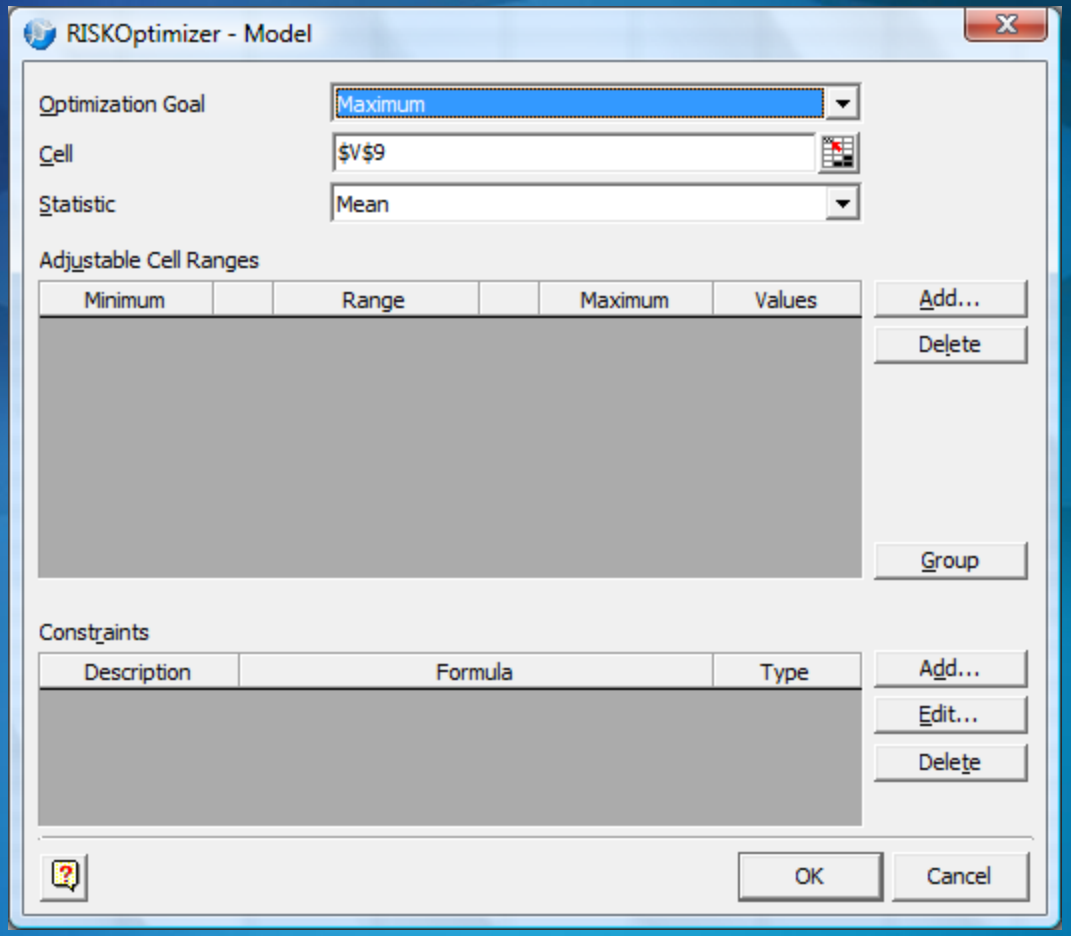
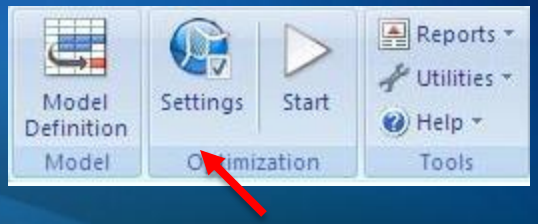
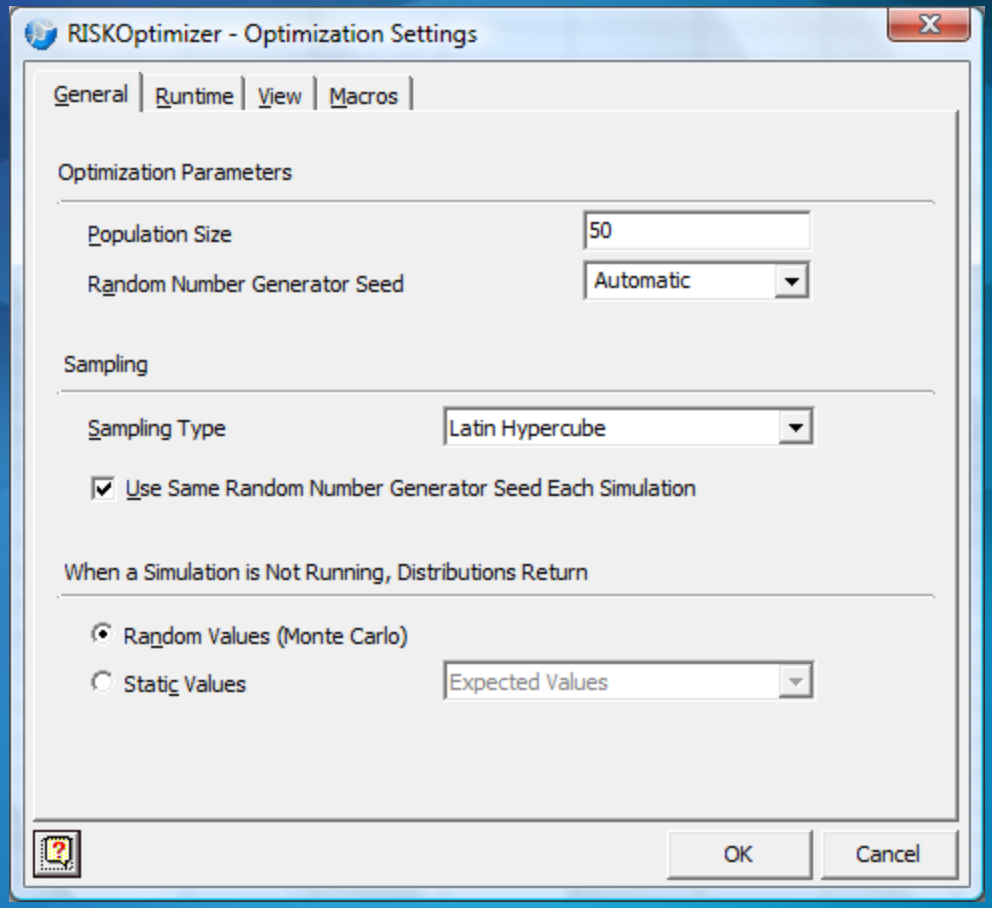
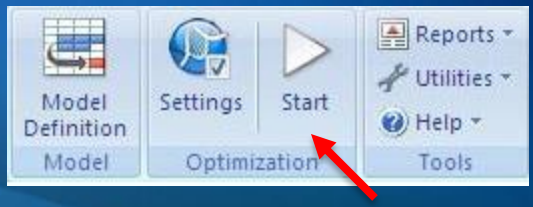

RISKOptimizer - Model
Optimization Goal
Maximum
Cell
V9
Statistic
Mean
Adjustable Cell Ranges
Minimum
Range
Maximum
Values
Add...
Delete
Group
Constraints
Description
Formula
Type
Add...
Edit...
Delete
OK
Cancel

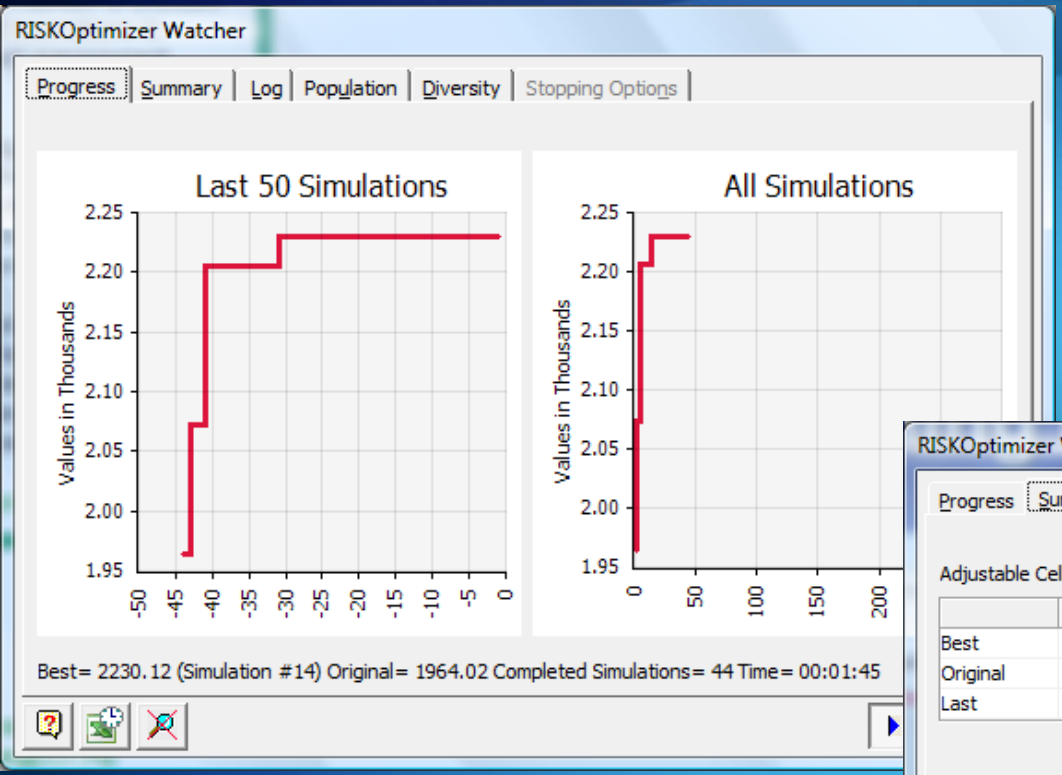
RISKO Settings

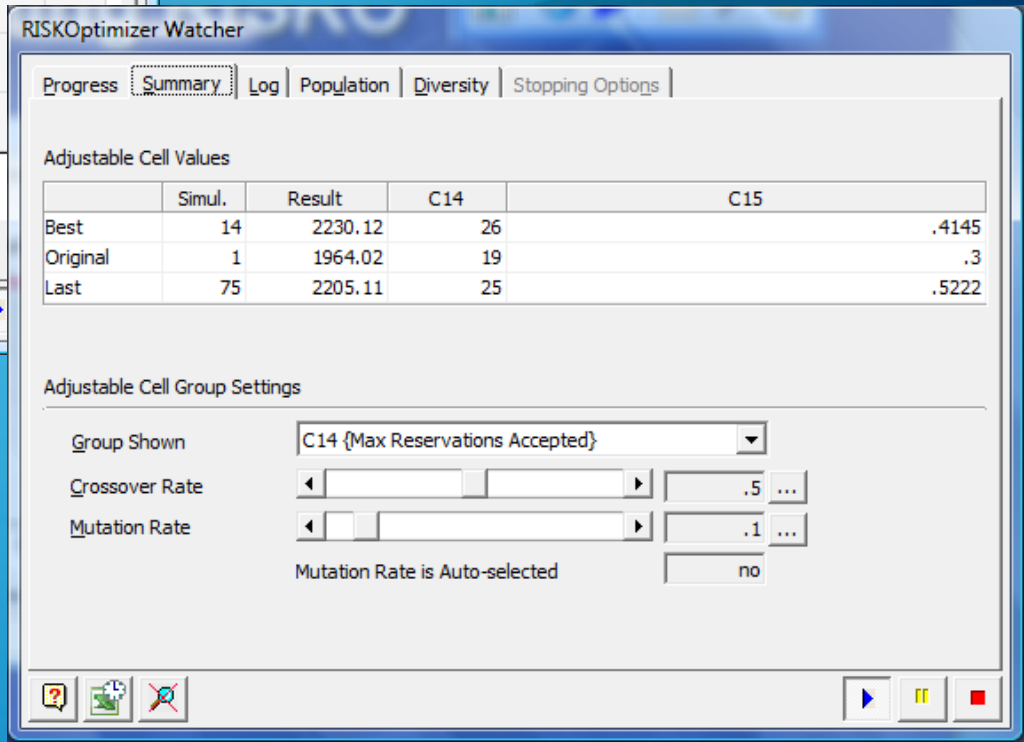




Optimizing







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Solving Methods in RISKOptimizer

» Recipe – independently adjusted inputs
  - Budget – subject to the constraint of a constant total

» Order – sequence modeling
  - Project – with precedence

» Grouping – categories of variables
  - Schedule – by time blocks

RISKOptimizer Results

» Summary
- Original values and best values
- Characteristics of optimization

» Log of simulation solutions
- Statistics of simulations
- Target value of optimization objective

Example: Asset Allocation

- Portfolio Return Maximization
  - Total Return
  - Average Return
- Allocation Components
- Risk Components:
  - Individual historical average return
  - Historical variation

Example: Optimal Sequence

- Process flow modeling
  - Improve efficiency
  - Reduce waste
- Allocation Components
  - Task list order
- Risk Components:
  - Historical variation

Sources of help

- On-line tutorials
- Help menu within the software
- Software manuals (PDF)
- Palisade web-site www.palisade.com
- Helpdesk: http://helpdesk.palisade.com/
- Forum: http://forums.palisade.com/
- Your Palisade Sales Representatives
- Thompson Terry: tterry@palisade.com

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