

## USING RISKOLGY (VERSION 4)

The purpose of this note is to make the Riskology simulator accessible to you and give you some idea of how to tailor it for your own needs.

### What riskology is not

First of all you need to know that riskology is not a parametric estimator. That is, it does not have the logic built into it to tell you how long your project will take or how much it will cost. All it can tell you is how wide a window you'll need to leave in order to cover all the uncontrollable risks of your project. You will still have to use a parametric analyzer or equivalent in order to calculate the most optimistic delivery date. Once you have come up with that, it becomes an input to riskology.

Riskology is also not a free-standing program. You need to purchase a copy of Excel or other compatible spreadsheet program to run the simulator. Riskology was constructed using Office X, so a version of Excel or equivalent from 2002 or beyond will probably be sufficient.

### Basic use of the simulator

Open the spreadsheet called RiskologyV4.xls. If your version of Excel queries about macros, click to enable. This should present you with a workbook of a dozen or so pages. In the yellow boxes on the first sheet, fill in the name of your project, its start date, and its most optimistic end date. In order for this exercise to have any meaning at all, it is essential that the end date you offer not be totally unreasonable; there has to be at least some possibility of achieving the date. It should represent the best case scenario, a date achievable if and only if all variables break in your favor (no turnover, maximum productivity, virtually no change of spec, etc.).

Once these three basic parameters are filled in, click once on the Run Simulation button. After a short delay, the graph will present the result of 500 simulations of your project. The graph should be interpreted as an uncertainty diagram, showing delivery in different date ranges due to differing impact of the five core risks on the project.

### Toggling risk factors on and off

Next, click on the tab for the second page of the workbook, entitled "Risk Factor Setup." This page is where you enable or disable up to ten risk factors, the five core risks plus customized risks of your own.

You can disable any of the risks and then run the simulation again by returning to the first page. You *must click on the Recalculate button (back on the first page) each time you want to see the result of your changes*, since calculation mode is set to Manual. By toggling a risk factor off and on, you can see the impact it is having on your result.

### Overriding the core risks with data of your own

Worksheet tabs 4-8 show the data and logic used to implement that portion of the simulation associated with each of the five core risks.

- Tab 4: Schedule Flaw

- Tab 5: Employee Turnover
- Tab 6: Size Inflation
- Tab 7: Specification Flaw
- Tab 8: Productivity Variation

You can override any of our data if you have more reliable data of your own. Fill in your own assessment of minimum, maximum, and most likely penalty factor in the yellow input boxes provided, and these will be used in place of the built-in industry database for that factor. By using company data instead of industry-wide data, you can expect to narrow the spread of results somewhat, since the variation across the entire industry is likely to be greater than for any one country.

By supplying only three points on the risk factor uncertainty curve, you are causing the simulation to assume a triangular distribution rather than the more traditional Rayleigh shaped curve. This simplification introduces some error into the simulation, but it should be small compared to the intrinsic noise in the process.

You need to be extremely wary about your overrides, since the presumption of the simulation is that the factors are independent of each other. So, for instance, since turnover typically decreases when productivity trends upward, you need to define your notions of turnover and productivity with the overlap between them removed. In general, the five monikers given to the core risk factors need to be understood in the this light. Productivity variation, to take just one example, needs to be understood as variation due to everything but the secondary effects of the other factors.

Remember that each time you alter one or more of the factors, the results will not show until you press the Recalculate button on the first page (or use the Manually Calculate keyboard shortcut, typically F9).

### **Adding in your own customized risks**

You can add up to five custom risk factors of your own. Go to the RF Setup page and choose an unused risk factor. Enter a short name and a brief description for that risk in the associated yellow boxes. Toggle the risk on using the button to the right side of your new risk factor.

Next click on the page tab associated with your chosen risk factor. E.G., if you are adding Risk Factor 6, click the RF6 page tab. Click to select either binary or continuous risk type. Enter your data in the yellow boxes provided. Hit the Recalculate button to make the simulator take account of your changes.

### **Daunting information for the undauntable**

Riskology is trying to do something — Monte Carlo simulation — that spreadsheet tools really and seriously don't want to do, so it has taken a bit of jumping through hoops to pull it off. For this reason the logic of the spreadsheet—should you decide to go into it—is complex. Our apologies for that. Feel free, if inclined, to alter and improve the simulation as you like.

### **Enhancements planned**

Version 4: Additional five custom risk factors

Version 5: Interface to receive direct input of company turnover data

Version 6: Dollar and effort impact analyser

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