



STUDY INTO THE PERFORMANCE OF Safran Risk vs. Oracle Primavera Risk Analysis(OPRA)

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INTRODUCTION

Over the past 10 years, Oracle Primavera Risk Analysis (OPRA) has been the schedule risk analysis tool most widely used by project risk analysts like me. However, development of OPRA stopped in 2013, the last patch was released in 2015 and the product is no longer supported. Users are seeking better alternatives, and many are considering Safran Risk.

A question a project risk analyst will ask themselves is ‘what are the performance advantages to me when upgrading to using Safran Risk?’

As a project risk analyst for Redstone Risk who spends a lot of time using risk analysis software, I have attempted to answer that question. I have carried out a comparative analysis of the two products, focussing on ease of use and time spent completing a simple QSRA task. One of the reasons we use specialist risk software is to help minimise the time spent building and running a QSRA. If we can reduce the time spent on these tasks, Risk Analysts and Risk Managers would have greater capacity to use their advanced knowledge of risk to further develop and effectively communicate modelled outputs to help clients make better informed decisions. After all, helping senior leaders make better decisions should be a key aim of all risk management efforts.





Preliminaries

My analysis was performed on an HP laptop with an Intel i3 processor. The schedule risk models were run on version 21.1.11 of Safran Risk, and version 8.7.0046 of OPRA.

Loading the Schedule

To ensure a fair comparison between the products, I used the same schedule and risk register for both Safran Risk and OPRA. The schedule and risk register were related to a sanitised past construction project spanning 2858 activities with 78 known risks. I imported the same schedule to both products, which took around 4 seconds in Safran Risk and 16 seconds in OPRA, and then began to create the risk registers.



CREATING A MAPPED RISK REGISTER, INPUTTING RISK PROBABILITIES & THE IMPACT

The process of creating a risk register and mapping the risks to schedule activities was similar within each product. However, I believe the interface for risk data inputs has a more modern look in Safran Risk and feels more intuitive than OPRA. The more significant difference between the products came to light when trying to map and quantify the risks.

INTERFACE COMPARISON

SAFRAN RISK

The screenshot displays the SAFRAN RISK software interface. It features a top navigation bar with tabs for Global Status, Risk Inventory, Schedule, Schedule Network, Project Risk, and Risk Mapping. Below the navigation bar is a toolbar with icons for Filter, Convert Viewports, Import, and Export. The main area is a large grid with columns for risk levels (Low, Medium, High) and rows for risk descriptions. The grid is populated with data, including risk IDs and descriptions.

OPRA

The screenshot displays the OPRA software interface. It features a top navigation bar with tabs for File, Edit, View, Tools, Reports, Crystal Reports, and Help. Below the navigation bar is a toolbar with icons for various functions. The main area is a table with columns for Risk ID, Title, Quantified, Probabil..., and Impacted Task ID(s). The table is populated with data, including risk IDs and descriptions. To the right of the table is a search panel with a list of risk IDs and a search button.

Risk ID	Title	Quantified	Probabil...	Impacted Task ID(s)
RC...	Risk 1	☒	30%	013401
RC...	Risk 2	☒	20%	823478
RC...	Risk 3	☒	15%	823478
RC...	Risk 4	☒	75%	
RC...	Risk 5	☒	10%	101020, 101040
RC...	Risk 6	☒	10%	867004
RC...	Risk 7	☒	10%	101020
RC...	Risk 8	☒	75%	
RC...	Risk 9	☒	15%	201873, 305081, 305001, 201872
RC...	Risk 10	☒	10%	101210
RC...	Risk 11	☒	40%	
RC...	Risk 12	☒	50%	
RC...	Risk 13	☒	25%	
RC...	Risk 14	☒	10%	850218, 407120, 405060, 101260
RC...	Risk 15	☒	20%	109330, 109228, 109261, 109627, 109081, 109090
RC...	Risk 16	☒	25%	109261
RC...	Risk 17	☒	90%	102186
RC...	Risk 18	☒	60%	102162, 102006, 102165

The 'Risks X Activities matrix' in Safran Risk made scanning through and selecting risk-to-activity mappings a relatively simple task, taking 2 hours to complete all the mappings.

Quantifying the impacts of risks-to-activities was an intuitive task, taking an hour and a half to quantify all the risks in the register.



8 hour work day

TIME REQUIRED TO
COMPLETE ALL
MAPPINGS



8 hour work day

TIME REQUIRED TO
QUANTIFY ALL RISKS

The ability to add risks such as global and calendar risks, while being able to quantify their impacts by relative percentages meant quantifying the risks was a quick and engaging process. There was a large choice of distributions with the ability to create your own cumulative distribution, which would be useful if there is debate about the suitability of a certain distribution to a particular risk.

Completing the same task in OPRA took significantly longer. It took me a day to manually input all risk-to-activity mappings, which included some re-work due to the risk register crashing and not saving after a morning of completing risk mappings.

Adding in the risk impact data also took more than a day to complete, as I had to first export the durations to Excel to perform calculations before adding data back into OPRA cell-by-cell.



8 hour work day

TIME REQUIRED TO
COMPLETE ALL
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8 hour work day

TIME REQUIRED TO
QUANTIFY ALL RISKS

There was a smaller number of distribution types available in OPRA, which was a challenge when modelling risks with both negative outcomes (threats) and positive outcomes (opportunities), such as, for example, exchange rates.



CHECKING THE RISK MAPPINGS

SAFRAN RISK | CHECKING THE RISK MAPPINGS

Being able to perform checks in Safran Risk on which activities had been selected, by filtering each risk was a great feature. It meant I only spent an hour checking the mappings, where I had found a total of 2 mapping errors.



8 hour work day

TIME SPENT
CHECKING THE RISK
MAPPINGS



2 errors

TOTAL NUMBER OF
MAPPING ERRORS

The 'real time analyser', which runs a 1000 iteration Monte Carlo simulation for the task, produces output probabilities for tasks that enabled me to see the impacts the mapped risks were having on project costs and durations. This feature helped me identify errors, and I can also see it being used to redefine the risk impact distributions after running an indicative uncertainty analysis.

In my test, the same risk to activity mapping process in OPRA was prone to errors, with a total of 7 mistakes found in the mappings. The checks took 2 hours as there was no simplified way to perform them.



8 hour work day

TIME SPENT
CHECKING THE RISK
MAPPINGS



7 errors

TOTAL NUMBER OF
MAPPING ERRORS

When checking through such large lists for activity IDs and then risk inputs, I felt I was less likely to manually spot all possible errors. If an error was not spotted and rectified, e.g., an incorrect risk distribution, I would probably only be aware of the mistake after the entire model had been run. This would mean that you would have to run the model each time you want to see the effect of a risk's magnitude or existence against an activity, and would introduce more time to the process.

The choice of simulation settings for both Safran Risk and OPRA are very similar. To test and compare the runtime of the two software options, I chose a Monte Carlo simulation of 1000 iterations.

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SIMULATION COMPARISON

SAFRAN RISK

4 SEC

It took Safran Risk 4 seconds to complete the simulation, giving distribution outputs as well as useful insights such as probabilistic cash flow, risk and activity drivers, and scatter plots of the cost and duration of each iteration.

ORPA

1 MIN, 52 SEC

It took OPRA 50 seconds to complete the simulation, with an additional 10 seconds to create the risk impacted plan required to initiate the simulation. In contrast to Safran, these outputs are split into different processes in OPRA. Performing analysis on the drivers took a further 1 minute, 2 seconds, meaning the process took an overall time of 1 minutes and 52 seconds.





CONCLUSION

"I found that Safran Risk reduced runtime by 97% over OPRA."

It is quite feasible to see how the time spent modelling could be significantly reduced by using Safran, over OPRA, when analysing more complex schedules and risk data. Waiting time margins would also increase when the risk analyst must run multiple simulations, especially if they were also required to make changes to risk data and risk-to-activity mappings.

ABOUT REDSTONE RISK

Redstone Risk is a risk management consultancy that provides consulting, modelling and analytics to Defence and Energy customers. The consultancy has deep expertise of most of the leading risk analysis tools including OPRA and Safran Risk.

[Click here](#) to visit their website.

