

More Realistic Estimating – Separating Risks and Opportunities From Uncertainty

Executive Summary

Primavera Pertmaster's risk register allows you to make much more detailed risk assessments to activities in your projects.

Without using a risk register in your risk assessments, you are limited to describing risk using simple three-point estimates. While this is in itself a great step forward from using single-point estimates, it does not allow you to separate out the reasons for the different outcomes in the three-point estimates.

In this document, an example is used to demonstrate the benefits of using Primavera's new risk register. They include better understanding, planning, communication, negotiation, mitigation and management of risk.

There are huge advantages in making more detailed risk assessments using Primavera's risk register.

This document also shows the undue pessimism that can result from not using a risk register for assessing risk.

Without Separating Risks and Opportunities from Uncertainty

For example, suppose your team is assessing the risk to the duration of task A, which you have nominally base-lined to be 10 days. In trying to understand the uncertainty surrounding it, you have identified the possibility that it could be severely delayed – at worst, it could be 45 days. So you use this as the maximum in your three-point estimate:

ID	Description	Rem Duration	Jan '09						Feb '09			Minimum Duration	Most Likely	Maximum Duration			
			8	5	12	19	26	2	9	16	23						
0010	Task A	10													8	10	45

(You have also established that the most likely is indeed you baseline estimate of 10 days, and there is also a best case of 8 days.)

Your team may well have been reluctant to give this outside estimate of 45 days, even though it is purely a worst-case estimate, as it may reflect badly on them. They may also have experience of such extreme worst-case estimates resulting in zero chance of meeting the target finish date.

Separating Risks and Opportunities from Uncertainty

However, Primavera's risk register allows you to be more specific about the uncertainty surrounding this task. Your team has identified that the worst case of 45 days is down to a specific event. You can put this event in the risk register and:

- Assess it separately;
- Understand it, communicate it, mitigate it;
- Manage it better, by allocating specific responsibility.

As your team thinks about this risk event they estimate it as 5% likely to happen, and the specific delay it causes as between 20 and 30 days. So it goes into the risk register:

ID	T/O	Title	Quantified	Probability
1	R	Risk 1	<input checked="" type="checkbox"/>	5%

And you give it an impact on task A:

Impacts for Risk 1		Schedule			
Task ID	Description	Shape	Min	Likely	Max
0010	Task A	Triangle	20	25	30

You know that this risk event is not the only reason that task A could be delayed. Even without the risk event, your team still feels that the task could be delayed by up to 5 days. As a result you adjust your original three-point estimate accordingly, knowing that the extra delay is safely in the risk register.

ID	Description	Rem Duration	Jan '09						Feb '09			Minimum Duration	Most Likely	Maximum Duration			
			8	5	12	19	26	2	9	16	23						
0010	Task A	10													8	10	15

The project team are happier with this less extreme worst-case estimate of 15 days. They have not ignored the real worst-case of 45 days, but they have had a chance to think carefully about its likelihood, and put it in its real context.

There are further advantages to building and maintaining a risk register in this way. A separate risk register can enhance your contract negotiations (you can include or exclude specific risks from the contract, and negotiate which party bears each risk), as well as improve your project reporting and reviewing functions. Many people even set project contingency based on the results of the risk analysis, and allow the contingency to be freely drawn down to cover risks that were identified up-front in the risk register.

How Risks, Opportunities and Uncertainty are Combined

When you are ready to run the risk analysis in Pertmaster, it will automatically embed the risk event into the task itself. It will look like this:

ID	Description	Rem Duration	Jan '09	Feb '09	Task Existence %	Minimum Duration	Most Likely	Maximum Duration						
0010	Task A	10	8	5	12	19	26	2	9	16	2			
0010.B	Task A	10						8	10	15				
0010.1	Risk 1	0				5%	20	25	30					

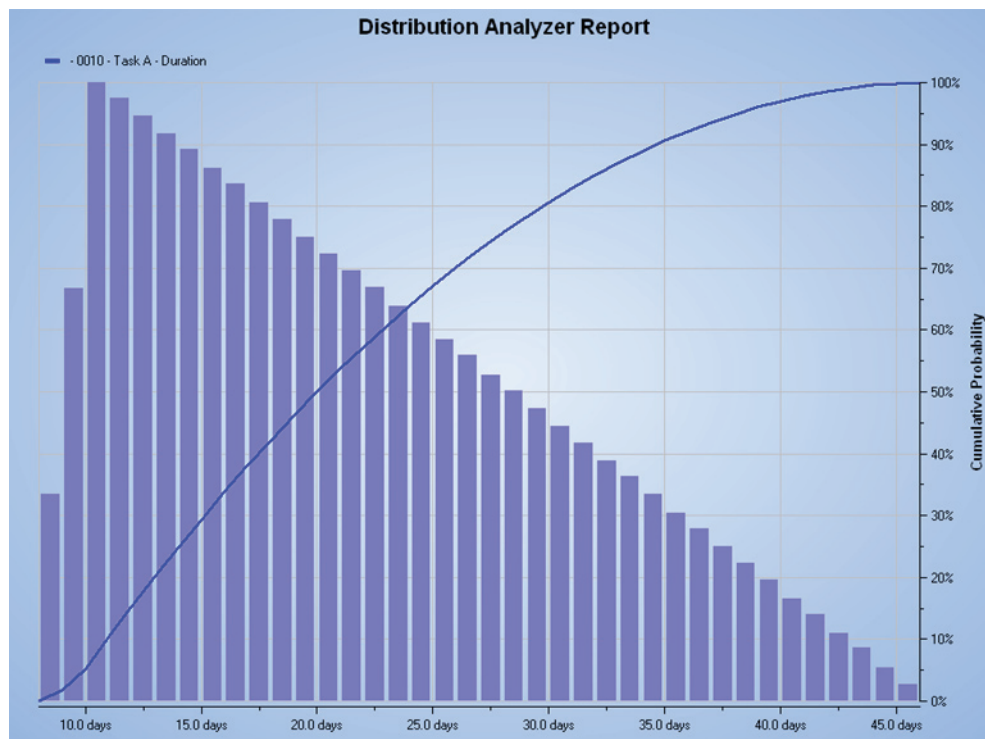
The project bar chart (Gantt chart) shows how the risk event delays the task. It shows the risk event as having zero duration, since you are planning for it not to happen.

This simple example does not cover Pertmaster's ability to allow both risks and opportunities. It also does not cover the case of a risk (or opportunity) impacting more than one task, or of having many risks (or opportunities) impacting a task.

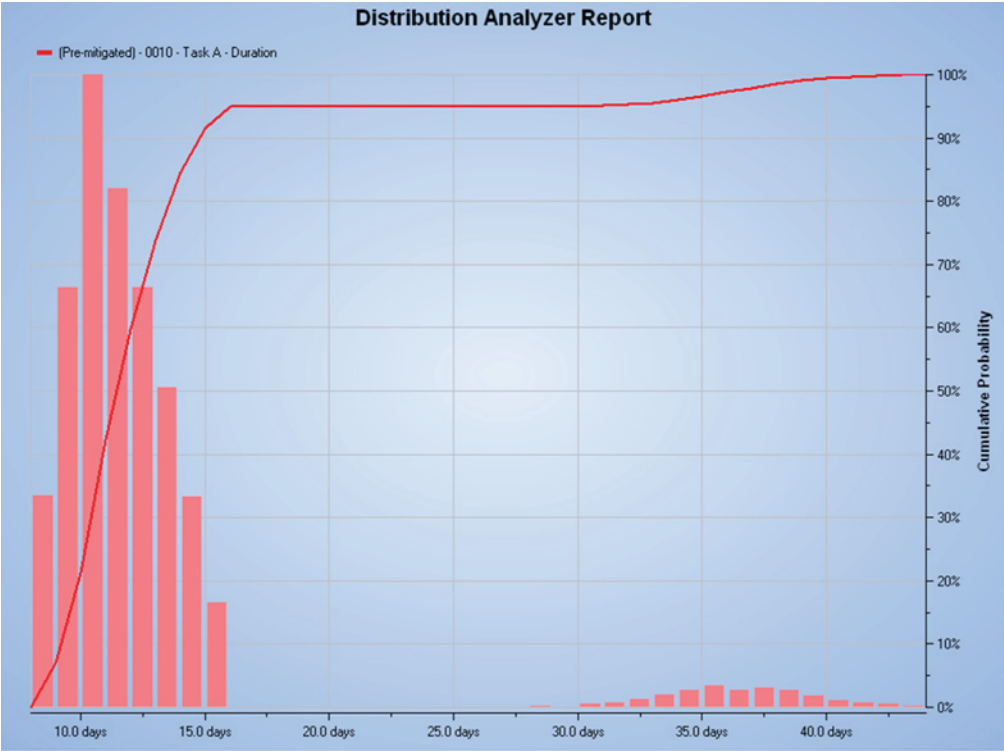
Whatever combinations of risks and opportunities impact multiple tasks in the project, Pertmaster automatically combines all the risks and opportunities that affect each task, along with each task's uncertainty, in the way shown on the left.

Avoid Unnecessary Pessimism

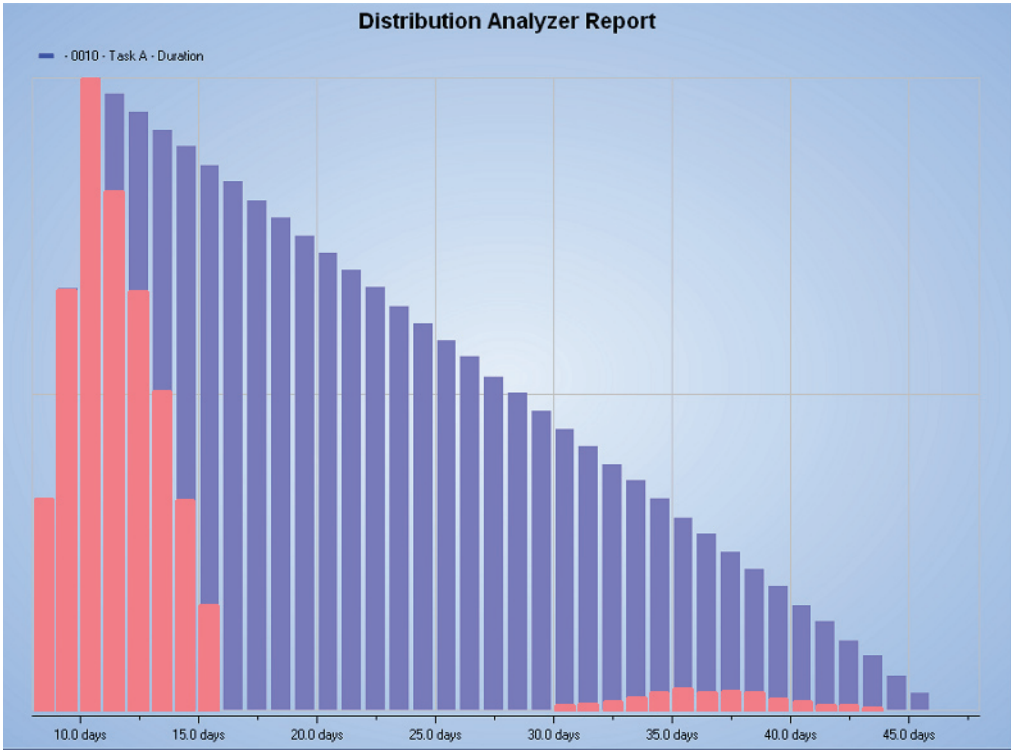
Aside from the benefits given above, using the risk register to specify the individual risk events gives you a much more realistic assessment. The difference can be dramatic. Not separating out your risks usually gives you far too much pessimism. In the example below, by not separating out the risk event, task A has a triangular distribution on its duration:



When you separate out the risk event and put it in the risk register, task A's duration distribution looks very different. The far left of the graph represents cases when the risk does not happen. The far right of the graph represents cases when the risk does happen.



The difference is dramatic, as this comparison shows. By not separating out the risk, you are assuming all this unnecessary pessimism (represented by the blue area of the chart).



Conclusion

While using three-point estimates is a great step forward from single-point estimating, there are huge advantages in making more detailed risk assessments using Primavera's risk register. By identifying and recording separate risks and opportunities in a risk register, you can:

- Assess the risks and opportunities separately, and gain the benefit of the team's understanding of the risk events themselves (e.g. what causes them, what are their effects);
- Understand, communicate, and mitigate the risks;
- Manage the risks better, by allocating specific responsibility
- Improve contract negotiations
- Set and make available well-defined project contingency

And by not using a separate risk register, estimates will usually result in significantly over-pessimistic risk analysis results.

About Primavera Pertmaster

Primavera Pertmaster is a full lifecycle risk analytics solution integrating cost and schedule risk management. Pertmaster provides a comprehensive means of determining confidence levels for project success together with quick and easy techniques for determining contingency and risk response plans. It provides an objective view of required contingency to account for cost and schedule uncertainty as well as analyzing the cost effectiveness of risk response plans. These combined form the basis of a 'risk adjusted schedule' which today is becoming the norm within the planning and scheduling process.

About Primavera

Primavera is the world's leading provider of project, resource and portfolio management software. Our industry-specific solutions help project-driven companies create a competitive advantage by making better portfolio investment decisions, improving governance, prioritizing project investments and resources, and delivering tangible results back to the business.

Projects totaling more than \$6 trillion in value have been managed with Primavera by more than 75,000 customers around the world. Our employees, global partners, award-winning customer support and professional services teams are deeply committed to helping organizations achieve their vision and strategy.

We encourage you to learn how Primavera can help you meet your project goals and business objectives. For greater detail on Primavera solutions and real-world customer successes, visit www.primavera.com today.



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