

Schedule Margin

Contingency for Schedulers

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Contingency / Management Reserve

Let's start with a question...

Have you ever seen a project without any Contingency (for known-unknowns) or Management Reserve (for unknown-unknowns)?

Hopefully the answer is **No** however, sometimes the answer is **Yes**.

For those occasions where the answer is yes (there is no identified contingency/MR) my contention is that there is indeed contingency but it's been buried in a 'fee' or some other overhead because some clients and regulatory authorities fear such reserves will be included in project baselines and may impact reliable Performance Measurement

So most everyone would agree that Contingency or Management Reserve *funding* exists to deal with the cost of risks and uncertainties associated with our projects.

Schedule Contingency/Reserve

You have probably heard the suggestion that **'The only certain thing about a project completion date calculated by Critical Path Method is that it will be wrong'**

So if we have contingency funds to deal with cost variances, why don't we also hear about a Schedule Contingency/Reserve to deal with the time impacts of those same risks and uncertainties? We may even be doing Schedule Risk Analysis to quantify those possible impacts – but what, if anything, do we do with that information?

Unfortunately, many projects **do** build contingency for schedule uncertainty into the plan in the form of padded durations ,but this technique has several serious flaws.

- Contingency is spread across the project without any way for project managers to identify or control when it is being utilized
- Parkinson's Law (Work Expands so as to Fill the Time Available for its Completion)

Schedule Margin

So we need a way to model schedule reserves in our projects without simply hiding it in overstated durations and addressing the concerns of our customers and the regulatory authorities regarding performance measurement.

Schedule Margin is one such way

Schedule Margin is an approach for calling out a reserve in our schedules to protect both contractors and customers from unplanned delays. Key features are:

- The purpose of the Schedule Margin is to **protect project deliverables**
- Various mechanisms to determine an appropriate amount of reserve
- A way to manage/approve the utilization of the reserve
- A mechanism to track remaining reserve

How does it work?

Schedule Margin is simply a buffer between when you expect to complete the work and when you will commit to have finished to your customer

The margin buffer goes between your 'work' tasks and your contract deliverable

It can be used both for Interim and Contract Completion Deliverables

The size of the buffer is related to the uncertainty surrounding the work to be completed. It may either be based on manager estimates or calculated using techniques like Schedule Risk Analysis. The more uncertainty, the bigger the buffer

It is important that the buffer and its purpose is clearly identified

The exact implementation can vary depending on what your client or industry will allow

This sounds like Critical Chain...

Critical Chain (derived from Goldratt's Theory of Constraints) does have some similar fundamental concepts to Schedule Margin.

Similarities

- Both techniques encourage realistic 'unpadded' duration estimates
- Both techniques create buffers/margins/reserves/contingency to protect project deliverables.

Differences

- Critical Chain determines buffer size/location based on key resources and percentages of duration. Buffers can occur anywhere in the schedule
- Schedule Margin places margin to protect project deliverables and the size of those margins is often calculated using Schedule Risk Analysis

So Schedule Margin is **NOT** Critical Chain

Note to self: Stop calling the Margin a Buffer!

What do the Experts say?

Industry Bodies such as the PMI suggest that Contingency Funds and Management Reserve are indeed a **best practice** both for Cost **and** Schedule. It's a prudent risk mitigation strategy but we unfortunately still hear comments like:

“A schedule must accurately reflect critical and driving paths in the project. Whenever I see schedule margin applied I will work that much harder to understand how it's being used or **misused**.”

“Schedule Margin feels like schedule management reserve which **better be clearly justified** and understood.”

So it's a good idea – but there's still some resistance...

What about contracts?

- Federal Contracts

DID: DI-MGMT-81861

TITLE: Integrated Master Schedule (IMS)

Approval date: 20120620

Schedule Margin. A management method for accommodating schedule contingencies. It is a designated buffer and shall be identified separately and considered part of the baseline. Schedule margin is the difference between contractual milestone date(s) and the contractor's planned date(s) of accomplishment.

This is not new! The previous IMS DID (DI-MGMT-81650) from 2005 contained the same language

What does the DCMA Say?

- **Defense Contract Management Agency**

Although the DCMA has not published formal guidance on the use of Schedule Margin, Deltek has received the following feedback:

“The NDIA Planning and Scheduling Excellence Guide V2.0 guidance regarding Schedule Margin was reviewed by the DCMA.

Basically, schedule margin as a task is okay as long as it does NOT have any discrete successors anywhere down the logic chain, either directly or indirectly. DCMA prefers that schedule margin be represented as a calculated difference (i.e. float) rather than a task.

Schedule Margin Calculation

As mentioned earlier, the purpose of Schedule Margin is to protect project deliverables. So to calculate the margin we need to understand when we hope to finish versus a date we will commit to in our contracts. If there was no uncertainty then these dates would be the same but as uncertainty increases the margin should become bigger to afford the deliverable more protection.

If you have experienced project managers they may simply be able to suggest a margin which they feel is adequate. For more complex or innovative projects **Schedule Risk Analysis (SRA)** can be used to suggest margins.

Using Schedule Risk Analysis gives business managers an opportunity to define their appetite for risk since Schedule Margin is simply the difference between the deterministic (usually unrealistically favorable) completion suggested by Critical Path Method and the expected finish date suggested by Schedule Risk Analysis for a specific confidence factor.

Schedule Margin Calculation

If the deterministic (from Critical Path Method) completion for a project is calculated as September 26, 2012...

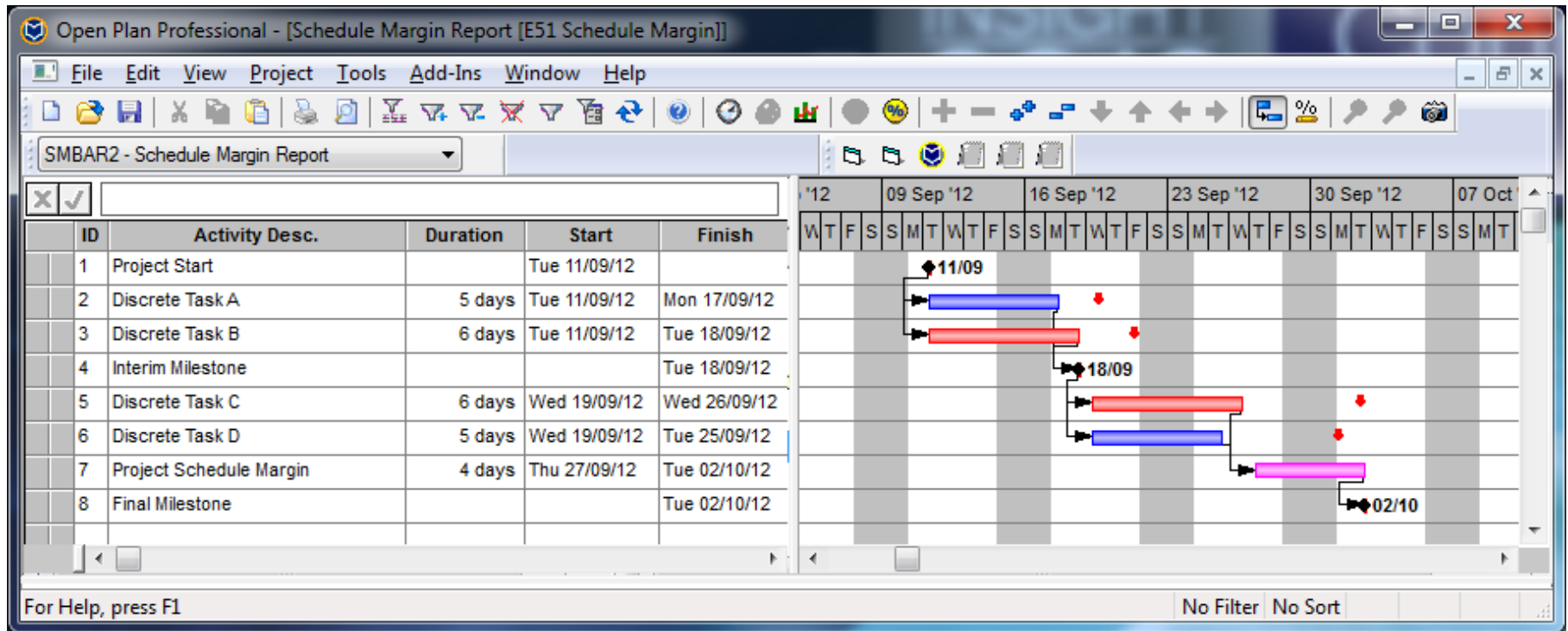
...and your company policy is for a 95% confidence that you can achieve deliverable dates you sign into contracts

...and Schedule Risk Analysis suggests you have a 95% chance of completion by October 2, 2012

Then the schedule margin that needs to be included in the project is 4 working days.

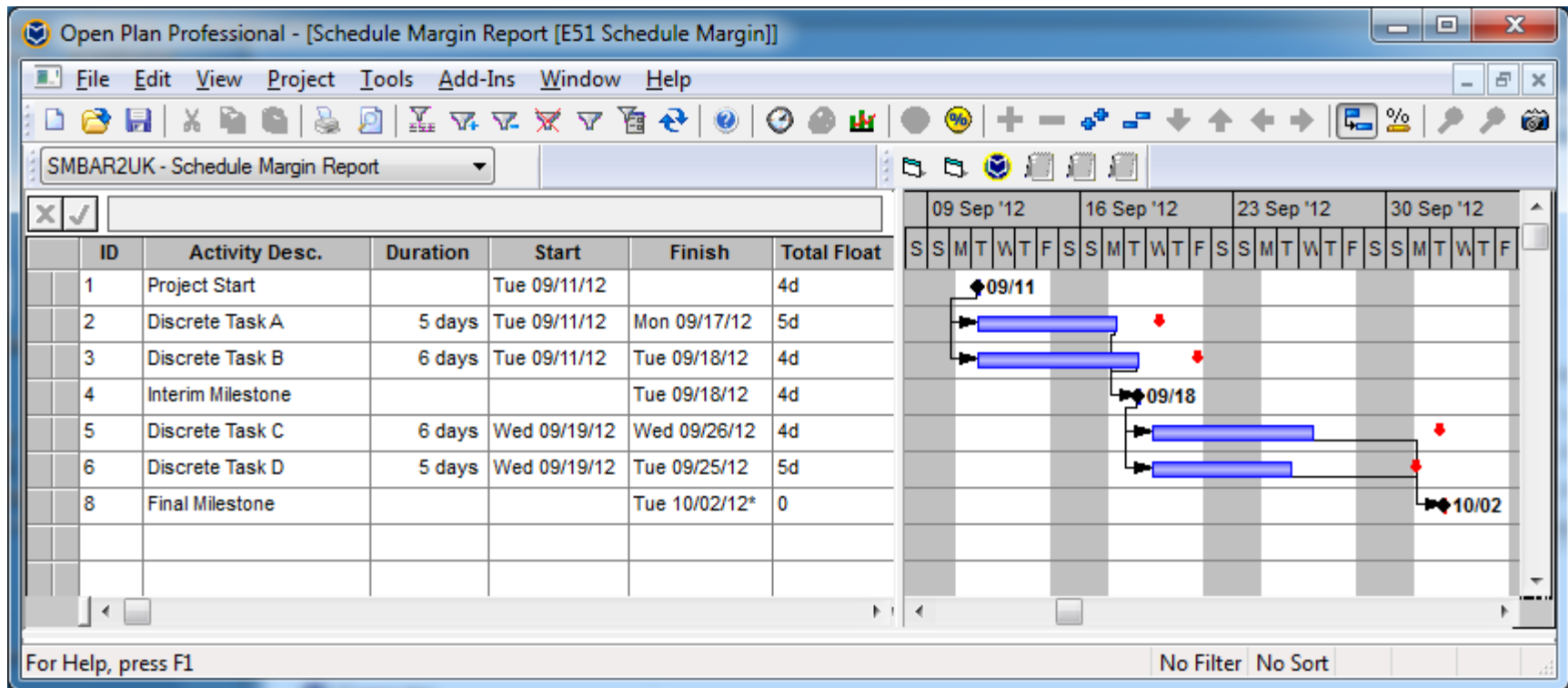
This will protect the project deliverable from up to 4 days of slippage in the tasks preceding the contract deliverable.

Schedule Margin Example 1



In this example we have introduced a Schedule Margin Activity immediately preceding the contract deliverable. The margin duration of 4 days in this example is based on the 95% confidence completion date calculated by Schedule Risk Analysis

Schedule Margin Example 2



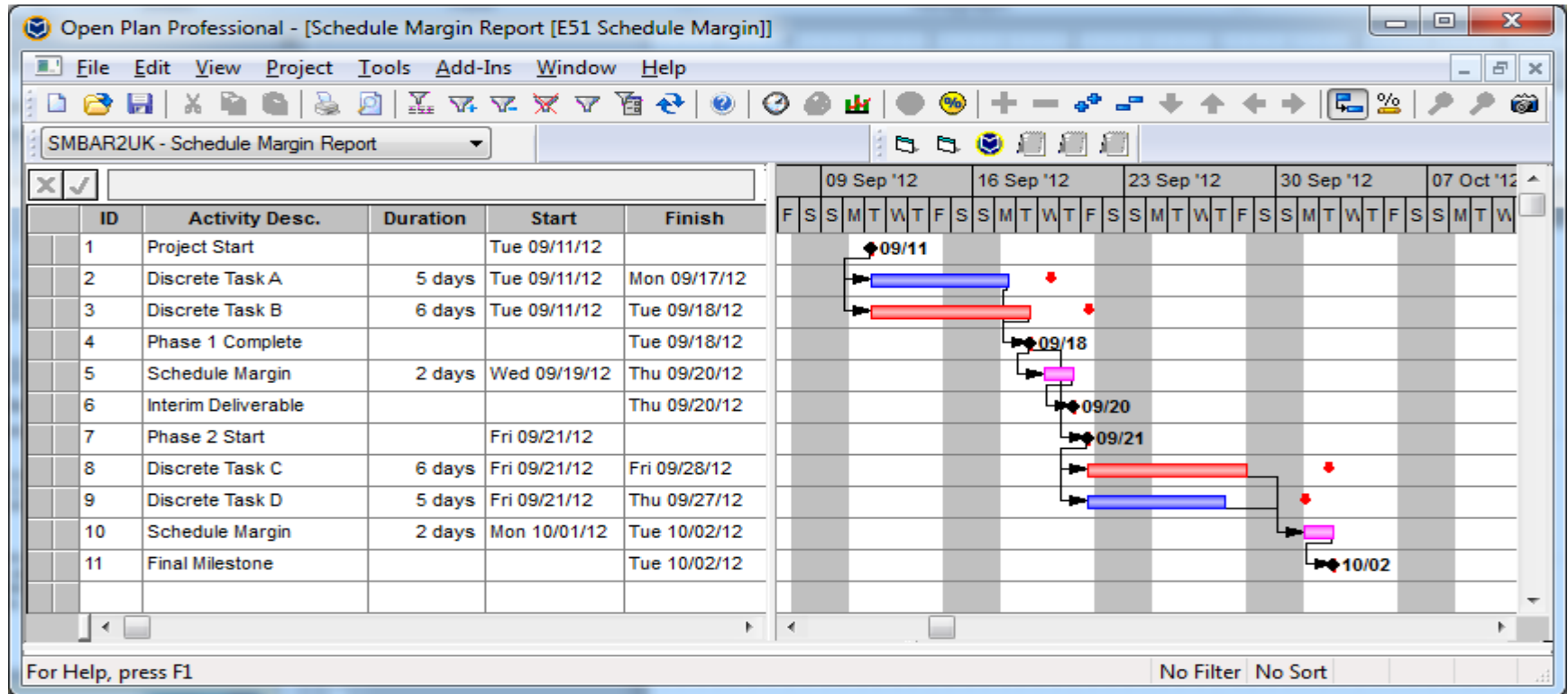
An alternative way to introduce the schedule margin is to use a target constraint date. The big disadvantage of this technique is the loss of visibility into the critical path unless additional logic/constraints are added. Margin consumption is also harder to monitor

Does Schedule Margin affect Earned Value Management?

In environments where strict Earned Value Performance Measurement is employed, it is still possible to use Schedule Margin provided no 'work' activities are successors to Schedule Margin activities.

Federal Agencies require that any margin activities applied to interim milestones are only used to drive the deliverable milestones. Real work successor activities can be controlled using Target/Constraint dates.

Schedule Margin Example 3



The Margin after Phase 1 Complete is only driving the Customer Interim Deliverable. The start of Phase 2 is being constrained by a target date and is not connected to the Margin activity.

Schedule Margin

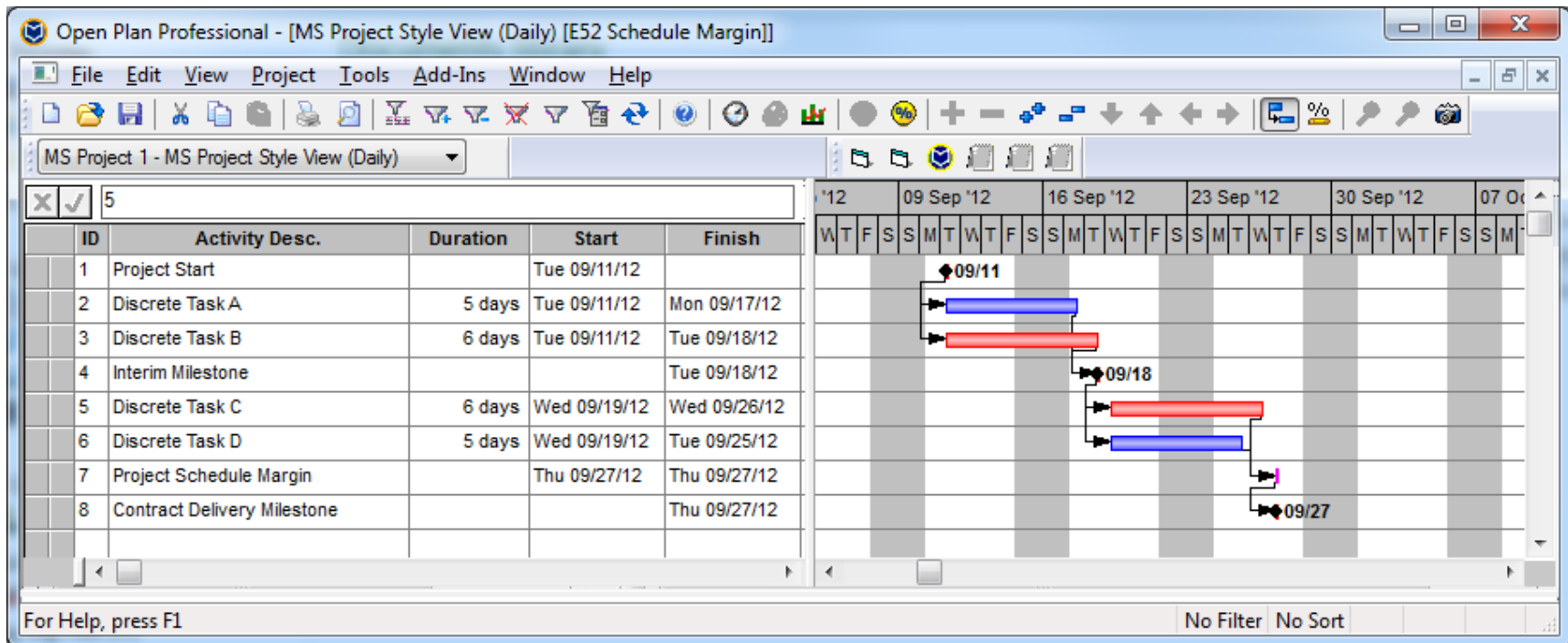
*without changing durations
or using target (constraint) dates...*

Given the concerns regarding artificially introduced duration or target (constraint) dates how about using a technique that requires neither?

How about using baselines or user fields to store the margin information and just use it for reporting?

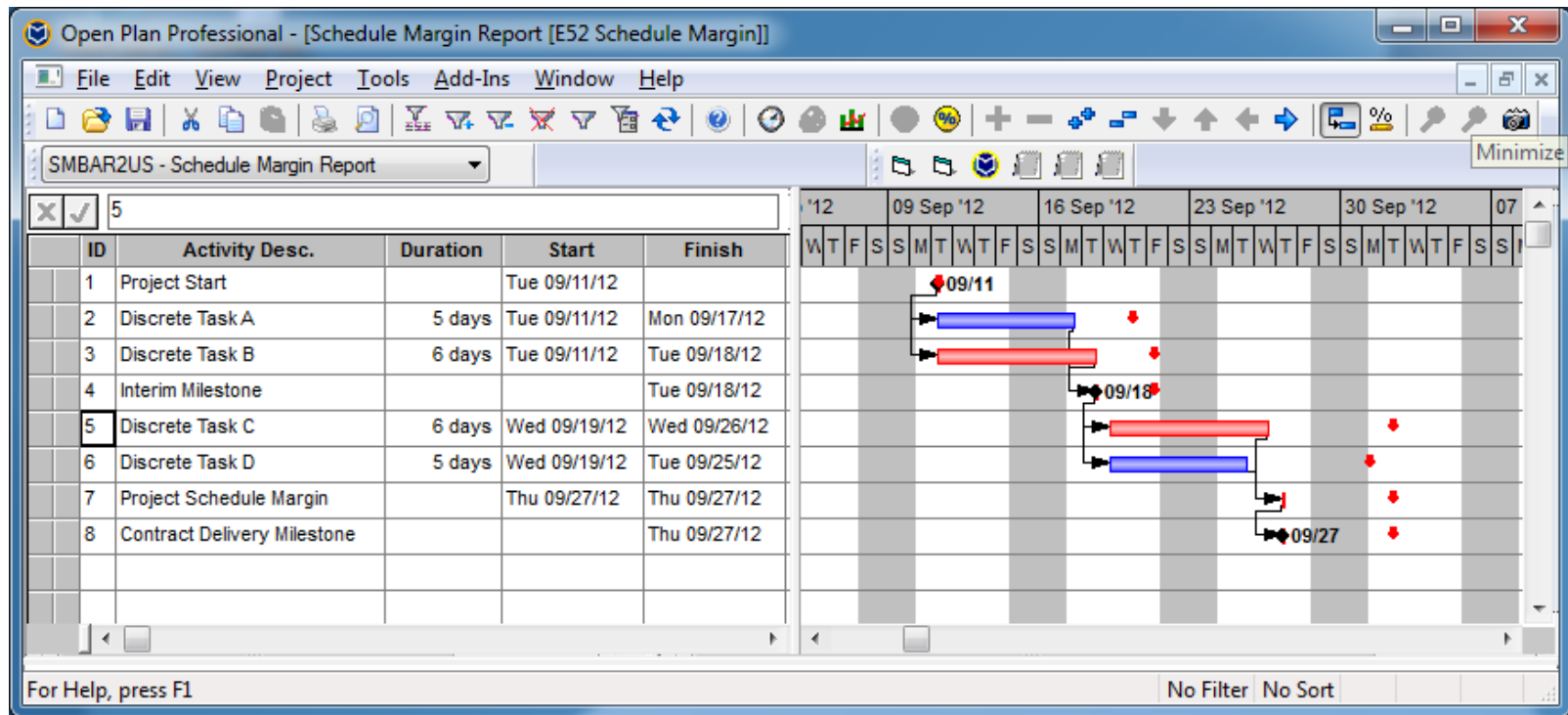
Worked Example

- The schedule has been defined and CPM is predicting a completion date of 9/27



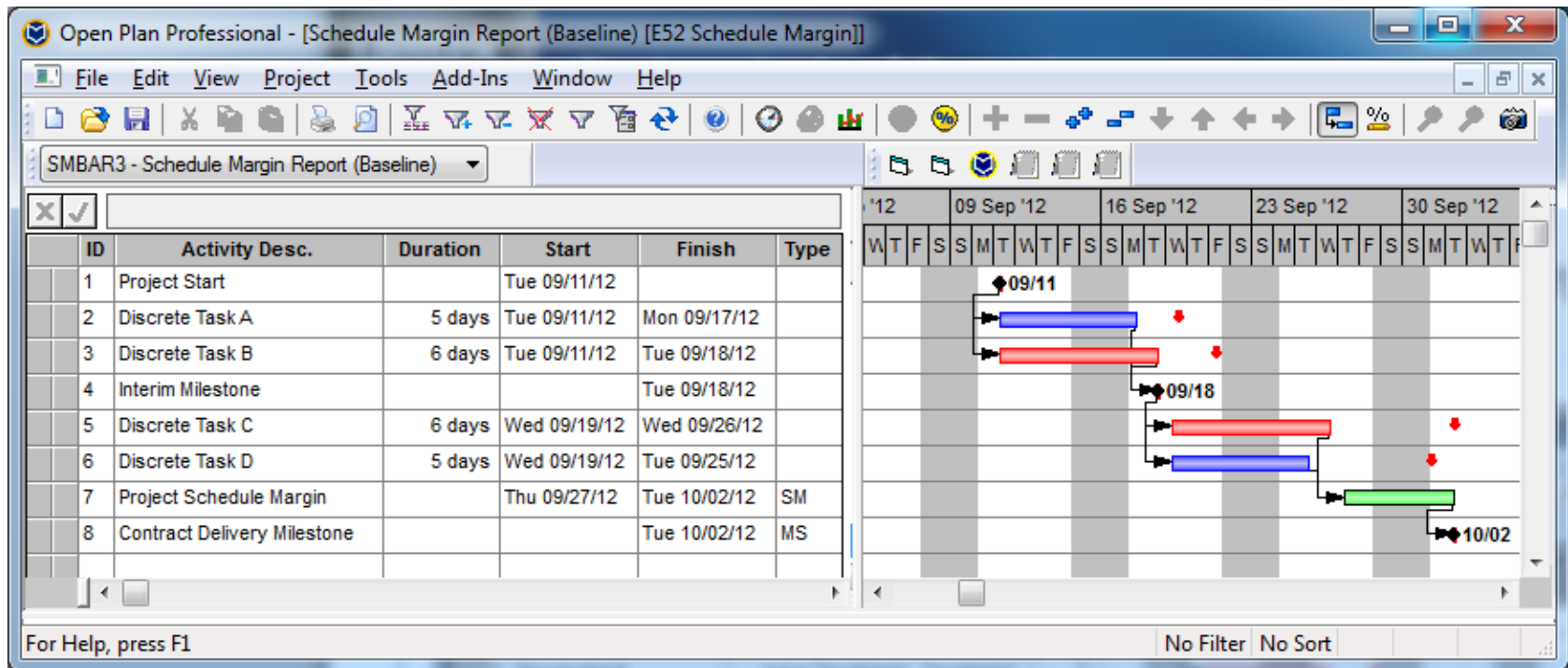
Schedule Risk Assessment

- A Schedule Risk Assessment is performed (arrows show 95% confidence dates for activity completion).



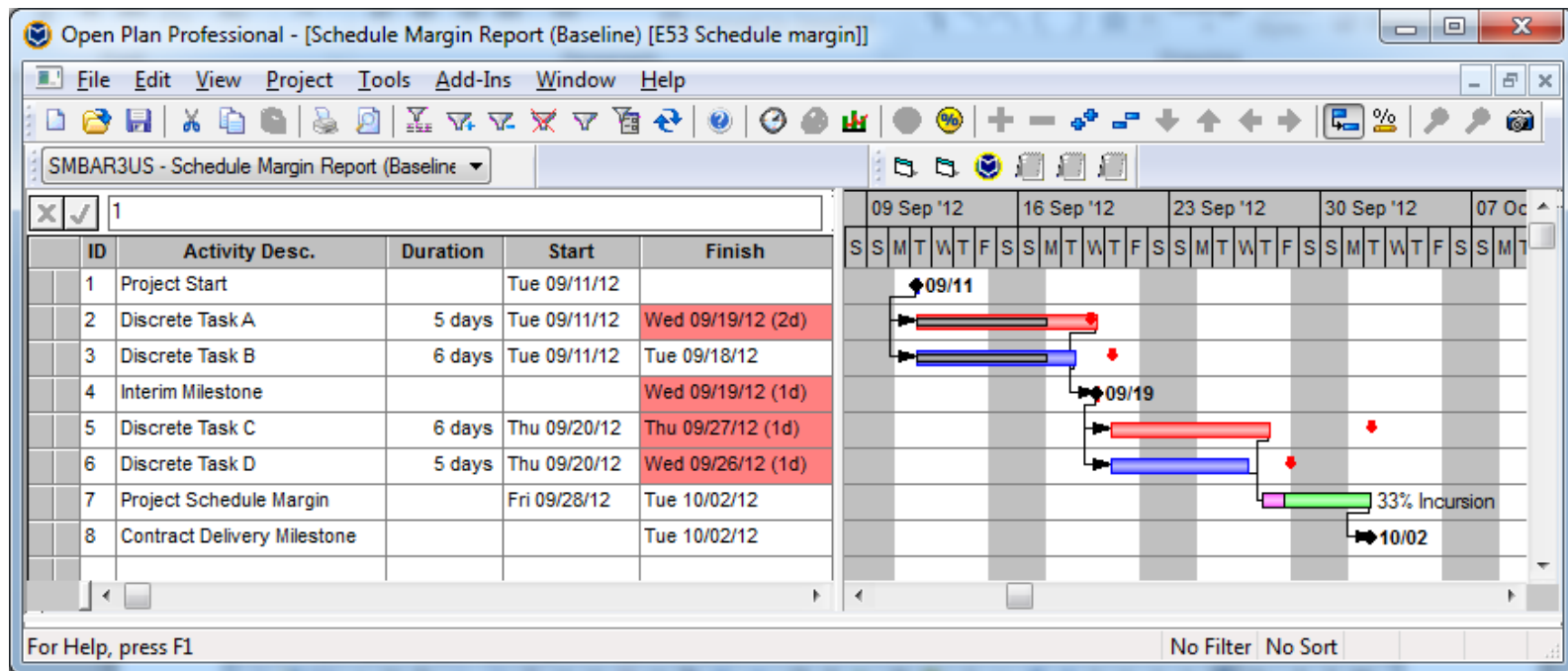
Schedule Margin

- A baseline is used to capture and display the initial margin based on the 95% confidence results from SRA



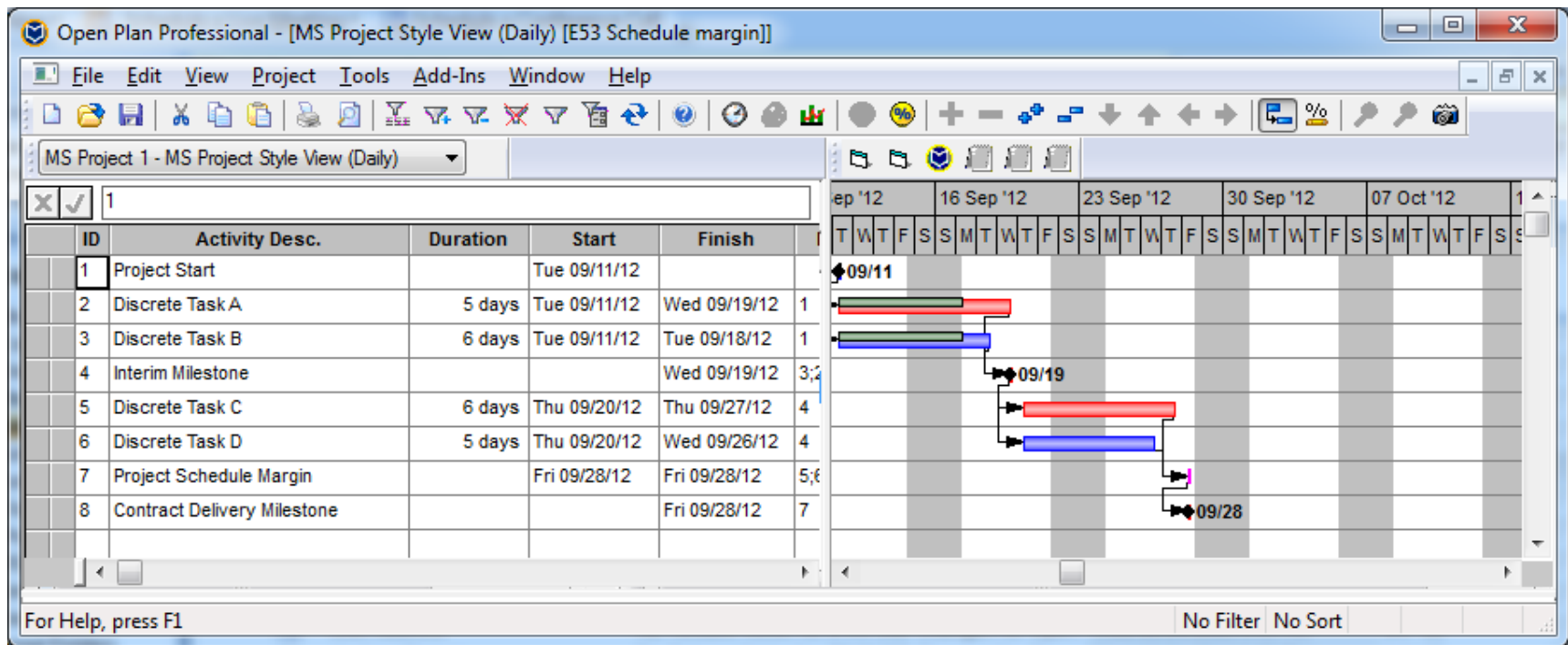
After Status Update

- The project has started and progress has not gone according to plan.
- The slippage is highlighted as consumption of the margin



Standard CPM report

- The standard CPM reports show the slippage of the project forecast completion to 9/28



Summary

Schedule Margin...

- Protects both contractors and clients by offering visibility and control into risk and delays
- Can be used without causing federal agencies heartburn
- Has no impact on Performance Management

A little survey...

Do you use Schedule Margin?

Do you use Schedule Risk Analysis?

Previous Survey Results

During a recent Projects at Work (www.projectsatwork.com) presentation on Schedule Margin the attendees were asked the following two questions:

Do you use Schedule Margin? 22% responded Yes

Do you use Schedule Risk Analysis? 52% responded yes

So my question is: What are the 30% doing with the results from SRA?



Thank You!

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<http://forums.deltek.com>

<http://kona.com>