

# WPM for Agile Projects

### Introduction



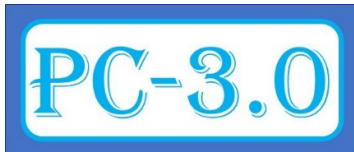
The two fundamental questions standard agile metrics cannot answer consistently are:

1. **How far ahead/behind schedule are we currently?**
2. **When are we expected to finish?**

Using the current tools, any answer will be a personal assessment based on the perspective of the person looking at the charts. While experienced project managers are likely to be fairly accurate in their assessments, different people will come to different conclusions and everyone's answers will be subject to personal bias<sup>1</sup>.

Effective project controls require a consistent, repeatable process based on reliable calculations. The calculated results may be no more accurate than a skilled assessment, but the consistency of process means trends, benchmarking, and other important information can be obtained, and the results relied on.

For most of the last 70 years, the generally accepted way of assessing progress on a project, and predicting its completion, is to use a Critical Path Method (CPM) schedule<sup>2</sup>. However, the CPM paradigm does not fit comfortably with the management of projects using agile or adaptive methodologies. Applying an Agile approach means that there is no predetermined sequence of working that *must* be followed, and therefore it is impossible to develop a CPM schedule that accurately models the way the work will be done<sup>3</sup>.



WPM is the core component of Project Controls 3.0 (PC-3.0). While WPM can be used on its own as an effective project controls tool, its overall effectiveness is enhanced through the implementation of the PC-3.0 paradigm. PC-3.0 shifts the focus of project management and controls towards delivering success, rather than measuring what has happened.

For more on PC-3.0 see: <https://mosaicprojects.com.au/PC-3-00-Overview.php#PC-3-Overview>

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<sup>1</sup> The effect of bias is unavoidable in this situation, for more on bias see *The innate effect of Bias*: [https://mosaicprojects.com.au/WhitePapers/WP1069\\_Bias.pdf](https://mosaicprojects.com.au/WhitePapers/WP1069_Bias.pdf)

<sup>2</sup> The critical path method (CPM) is known to be optimistic (particularly early in the project), but its results are reliably consistent, predictable, and used. For more on the *intrinsic optimism in CPM and improving the accuracy of its predictions* see: <https://mosaicprojects.com.au/PMKI-SCH-041.php#WPM-CPM>

<sup>3</sup> There are a wide range of project types that are not suited to the CPM paradigm, these are defined in *Scheduling Challenges in Agile & Distributed Projects*: [https://mosaicprojects.com.au/PDF\\_Papers/P208\\_Scheduling\\_Challenges\\_in\\_Agile\\_+\\_Distributed\\_Projects.pdf](https://mosaicprojects.com.au/PDF_Papers/P208_Scheduling_Challenges_in_Agile_+_Distributed_Projects.pdf)

The essence of an Agile approach to managing a project is the people doing the work have a high degree of flexibility in choosing the way most of the work is accomplished. There may be a high level 'road map' outlining the desired route to completion, planned release dates, and/or specific constraints on the sequencing of parts of the work. However, while these constraints may provide overall guidance, the core decisions on what work to do next sits with the project team.

This means CPM is an ineffective tool for managing an Agile project. But, in most business situations understanding how the project is progressing and when it is expected to complete is still important – other parts of the organisation are relying on the project to deliver a working product. This means systems are needed that reliably identify the overall status of the work, and predict its likely completion. Personal assessments are helpful, but a reliable and repeatable process is better. This is the function **Work Performance Management (WPM)** has been developed to fulfil, it will reliably and consistently calculate the project status and the projected completion date.

### Calculating Completion

Most of the tools and techniques used to manage Agile projects including Scrum, Bar Charts (Gantt Chart), Burndown (Up) Charts, Kanban Boards, and Velocity; are good at defining the work (done, in-progress, or not started) and can indicate if the work is ahead or behind a nominated planned rate of production, but there is no direct calculation of the time the work is currently ahead or behind, or what this is likely to mean for the completion of the project<sup>4</sup>.

There has been a lot of work done on integrating Earned Value Management (EVM) with Agile, particularly in the USA. Where EVM is used the Earned Schedule (ES) extension to EVM will provide a reliable and repeatable calculation of the current status and consequently the projected completion date. The problem is implementing EVM is a significant challenge for most organizations, and very few projects are managed using EVM and ES.

Work Performance Management (WPM) has been designed to solve this challenge. It uses the same concept as Earned Schedule, but is a simple, practical tool that uses project metrics that are already being used for other purposes. The function of WPM is to assess progress and calculate a predicted completion date in a consistent, repeatable, and defensible way by comparing the amount of work achieved at a point in time with the amount of work planned to have been achieved. Based on this data WPM calculates the project status and the expected completion date assuming the rate of progress remains constant.

All the project needs to know to implement WPM is how much work it has to do, when the work needs to be done by, and how much has actually been accomplished. Provided the 'work' is measured in a consistent way, the WPM calculations will be consistent and reliable. Options for measuring the work include story points, function points, planned hours of effort, or any other easily available metric.

### Applying WPM to a project using Scrum

Scheduling the planned work should be as realistic as possible, but in many situations a straightforward pragmatic approach will suffice. For example, looking at a 20-week software project that has 27 stories of various size (a total of 86 story points), and the resource planning is to use 2 scrum teams. In the absence of any other information, you could assume:

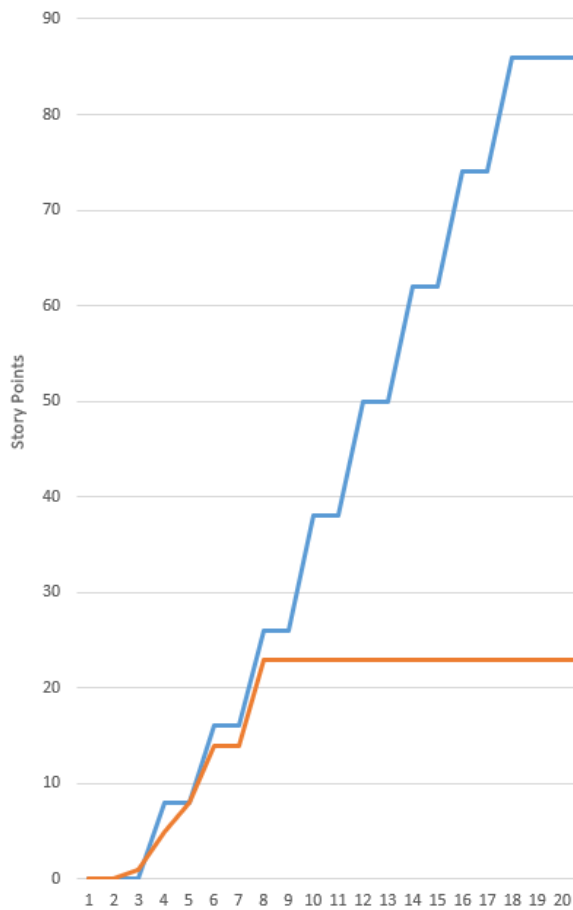
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<sup>4</sup> A full discussion of this topic is in **Calculating Completion**:  
[https://mosaicprojects.com.au/PDF\\_Papers/P217\\_Calculating\\_Completion.pdf](https://mosaicprojects.com.au/PDF_Papers/P217_Calculating_Completion.pdf)



- The first 2 weeks are needed for team development, planning, and other start-up processes
- Sprints are expected to take 2 weeks each, and
- the last two weeks will be for contingencies, bug fixes and other finalization work
- This leaves 16 weeks for productive work: the first stories should be delivered at the end of the first productive sprint, week 4, and all stories by the end of week 18.

This means the rate of planned production between the start of week 2, and the end of week 18 is  $86/16 = 5.375$  story points per week. Based on these assumptions, at the end of week 4 (2 weeks of production) we can expect 10+ story points to be complete, and at the end of week 18 all 86 story points complete. The rest of the planned distribution could simply be a straight line between these two points, or the rate of production could be nuanced to allow for an improving trend and the expected delivery of completed work at the end of each sprint.



We know sprints will not take exactly 2 weeks every time, some will overrun, occasionally some will finish early, and we also know the number of story points generated in each sprint will vary. But on average, if the two sprint teams together are not completing a bit over 10.6 story points every two weeks, the project will finish late (Blue line).

### Assessing progress

Once the planned rate of production has been determined for the project, all that is needed is the actual amount of work accomplished to date. The orange line shows progress at the end of week 8.

WPM uses this information to calculate the time variance at Time Now (TN) and then to predict the Expected Completion (EC).

In this example, at the end of Week 8, three sprints should have been completed by both teams, and we are expecting 30 story points complete. But only 23 have been delivered. Velocity calculation will indicate more sprints will be needed, and the burndown chart will show the work is behind plan, but what does this mean from a time perspective?

You can do a calculation manually, but it is easier and quicker to load the data into the WPM Worksheet and have the answers calculated immediately:



**Results:**

<b>Planned Completion</b>	<b>20 Weeks</b>	
<b>Time Now</b>	<b>8 Weeks</b>	
<b>Time Earned</b>	<b>7.7 Weeks</b>	
<b>Work Performance Variance</b>	<b>-0.3 Weeks</b>	<b>( -1.5 Working Days )</b>
<b>Work Performance Index</b>	<b>0.9625</b>	
<b>Expected Completion</b>	<b>20.7792 Weeks</b>	
<b>Variance At Completion</b>	<b>-0.7792 Weeks</b>	<b>( -5.5 Calendar Days )</b>
<b>Expected Completion Date</b>	<b>22-Nov-23</b>	
<b>Note: This date is an approximation, WPM does not include a detailed calendar.</b>		

The value of a system like WPM is the ease of repeating the analysis every couple of weeks to see if a trend is developing. A steadily developing negative trend shows the project team as currently resourced will be unlikely to deliver on time – management action is needed<sup>5</sup>.

## Conclusions

WPM is designed to fill an identified gap in the management of Agile projects. It is designed to be a simple robust performance measurement system that will provide an accurate assessment of how far ahead or behind plan the work currently is, and based on this information, the likely project completion date based on the assumption work will continue at the current rate

The two requirements to implement WPM are:

- A consistent metric to measure the work planned and accomplished, and
- A simple but robust assessment of when the work was planned to be done

The metric used can be a core deliverable (eg, 2000 computers replaced in an organization), or a representation of work such as ‘story points’, or the \$ value of the components to be delivered to the client. Peripheral and support activities can usually be ignored when establishing the WPM metric, they rarely impact the project delivery independently; failures in the support areas typically manifest in delays to the primary delivery metric.

<sup>5</sup> *This project is one of three free sample projects that can be downloaded from:*  
[https://mosaicprojects.com.au/shop-easy-WPM\\_WS.php](https://mosaicprojects.com.au/shop-easy-WPM_WS.php)



Take the guesswork out of predicting project completion

PERFORMANCE

Work Performance Management

Bring your projects home on time:

WPM Calculates the completion date based on the work performed – no need for a schedule!

### Try WPM on your projects:

The *Easy WPM Workbook*, is a practical spreadsheet that performs the calculations needed to implement Work Performance Management (WPM) to accurately calculate the status and projected completion of your projects.

Download the free sample files, or buy the *WPM Workbook* and instructions for use for \$20 (plus GST for Australian purchasers only), from:

[https://mosaicprojects.com.au/shop-easy-WPM\\_WS.php](https://mosaicprojects.com.au/shop-easy-WPM_WS.php)

### Other key papers in this series:

1. **WPM Overview:** [https://mosaicprojects.com.au/Mag\\_Articles/AA037\\_-\\_Overview\\_of\\_WPM.pdf](https://mosaicprojects.com.au/Mag_Articles/AA037_-_Overview_of_WPM.pdf)
2. **How WPM Works:** [https://mosaicprojects.com.au/Mag\\_Articles/AA038\\_-\\_How\\_WPM\\_Works.pdf](https://mosaicprojects.com.au/Mag_Articles/AA038_-_How_WPM_Works.pdf)
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5. **Easy WPM Workbook** instructions for its use:  
[https://mosaicprojects.com.au/PDF-Gen/WPM\\_Instructions.pdf](https://mosaicprojects.com.au/PDF-Gen/WPM_Instructions.pdf)

For more on WPM and how it works see: <https://mosaicprojects.com.au/PMKI-SCH-041.php#Overview>

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