

Increasing Team Productivity: A project focus creates waste and leaves value on the table

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Many large organisations currently use a balanced matrix model¹ for staffing software development projects. This is a common model for managing project work. However there are alternatives to this approach that can produce better results. Most project focused companies hope to increase throughput from year to year to meet ever-increasing customer demands. There are two main ways to achieve increased throughput - more people or increased productivity. This paper will focus on the second option – increasing productivity and will discuss how changing a project staffing model could increase the productivity of project teams.

In a matrix model, projects are the central unit of organisation. People and resources are moved to projects. Projects dictate how many of each discipline they require and resource managers strive to achieve the most efficient resource utilisation. Resource managers optimise at the individual employee level. If a project requests two testers, the Testing Manager strives to fill this request with two full time testers, or more part time testers that are working on multiple projects. Adding any more testers to this project is seen as wasteful as there is no work for them. When the project finishes we return the people and resources to their functional teams and make them available for the next project.

In an agile world the team is the central unit of organisation. Teams are permanent. Projects are moved to the team. The organisation optimises at the team level. Teams go through a proven lifecycle – Forming, Storming, Norming, and Performing². This maturation process takes time, often months. Team members know their strengths and weaknesses and have learned how to communicate, collaborate and resolve conflict with each other. Why break up what has become a high performing team? There is published evidence that short-lived groups of people brought together for a project are correlated with lower productivity.³

The Resource Management function disappears with permanent teams. This enables functional managers to concentrate on coaching and up-skilling their staff instead of trying to juggle supply to meet a constantly changing resource demand. Even with the advent of modern project / portfolio tooling, realising a consistent view of an organisations resource demand is challenging. It is far easier to agree to a ranked queue of projects / programs.

¹ (Matrix Organizational Structure - History and Styles, 2008)

² (Tuckman's stages of group development, 2010)

³ (Katzenbach & Smith, 1993)



Projects in the queue are assigned to the team that is in the best position to execute, taking skills and capability into account. See Figure 1: Permanent Teams with project queue. Teams focus on one project until it is finished. The team then begins the next project.

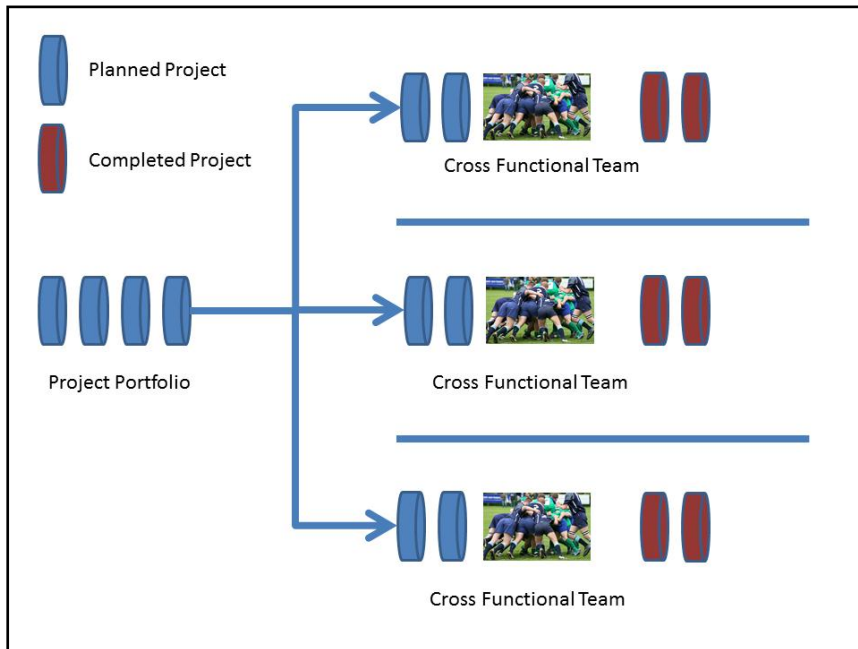


Figure 1: Permanent Teams with project queue

Permanent teams enable consistent estimation, which is not possible using the matrix approach. The customer requires an accurate estimate for the business case. In a matrix model the delivery team has not yet been formed, and so estimation is performed by any available staff (who will not deliver the project.) There is no history for this team making the estimate and so accuracy is poor. Permanent teams have a consistent velocity established through delivery. This can be used to achieve a much more accurate estimate.

Teams can be organised in a number of different ways. Teams can be aligned to Products, Systems, areas on the value chain or to relative performance. On the surface one problem with this proposed approach is that no project will ever have the ideal set of skills available. However it can be argued that this issue exists in the current model due to the number of concurrent projects and resource constraints. How many projects would say that they have a perfect blend of people and skills?

Permanent teams work on one project at a time, pulling new projects off the queue when finished. This results in far fewer active projects. Running too many projects concurrently is a guarantee for slow delivery. An eight year study of projects at a dozen companies and published in the Harvard Business Review concluded that “projects get done faster if the organisation takes on fewer at a time.”⁴ This is corporate multitasking - assigning people to more than one project.

Kim Clark and Steven Wheelwright studied the impact of multitasking on productivity. Their findings are shown in Figure 2 : Productivity of Development Engineering Time. It makes sense that if you

⁴ (Adler, 1996)

only have one task to work on at some point you will become blocked waiting for something. The research shows that two tasks are the optimal number. However consider when this research was undertaken – 1993. Given the increased complexity of today’s environment – smart phones, instant messaging, presence based communications etc. – one task can be taken up responding to the demands of modern communication. Hence all bars should be shifted one place to the left.

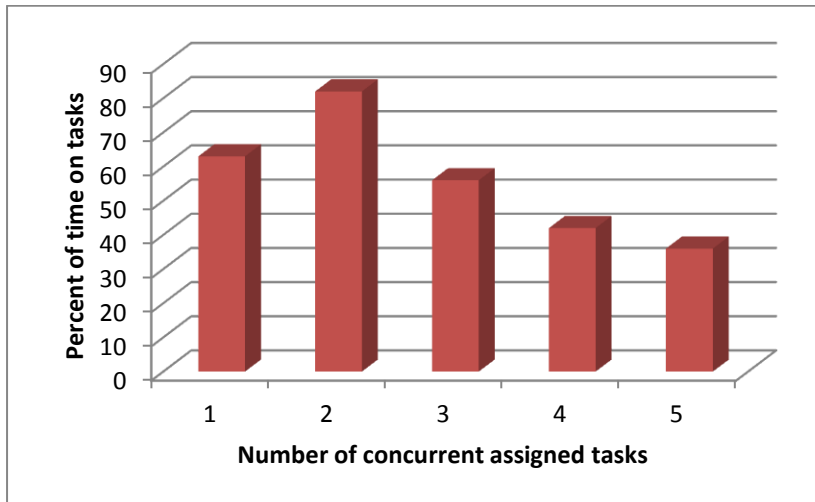


Figure 2 : Productivity of Development Engineering Time⁵

Running a smaller number of active projects will also enable value to be returned to the organisation much more quickly. Consider the example of two projects A and B both three months in duration (for full time staff). Using the matrix model it is common for both projects to start together and have staff allocated at 50%. Neither project will finish for at least six months (more like seven and a half months if you include the added cost of staff multitasking.) Put differently, no value is returned to the organisation for six months. If the highest priority project is run with 100% staff allocation then it can be finished in three months. Then the second project is started and finished in the next three months. Note that the total elapsed time is the same, but with the fully allocated team approach the organisation receives the highest value early.

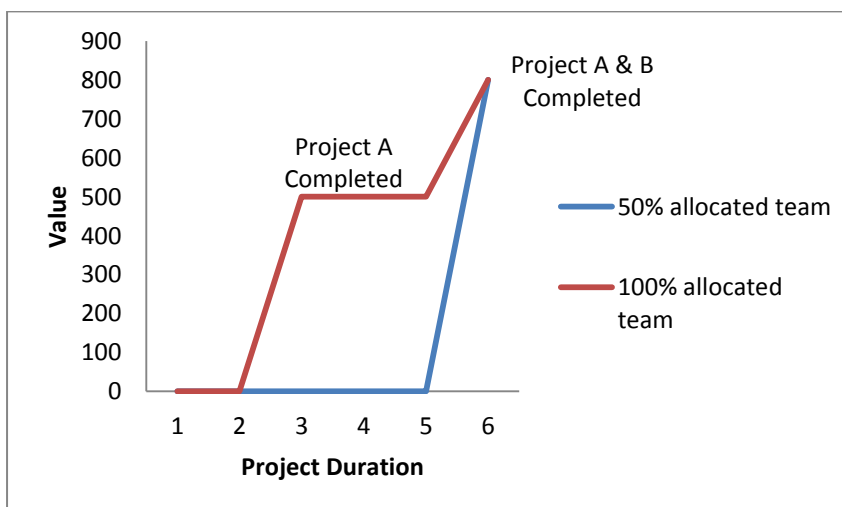


Figure 3: Impact of part time project staff allocations

⁵ (Clark & Wheelwright, 1993)

However some projects do need genuinely scarce specialist skills. Where this is the case we need to share those specialists across many teams and the teams will adjust their schedules around the availability of the specialists. Moving only real specialists around is a lot easier and more efficient than shuffling everyone. If we don't have enough specialists to go round then we have an obvious bottleneck that needs to be addressed.

In conclusion, moving from a matrix system where project teams are formed ad-hoc to a permanent team structure - changes the nature of the way projects are executed and can significantly increase productivity of teams. A new approach can help with estimates, eliminate unnecessary resource management and meet the increased throughput demands of the organisation.

About Rob Maher

Rob Maher is a Microsoft Visual Studio ALM MVP. He is currently an Agile coach, and has helped several companies transition to Scrum and improve their software development lifecycle using solid ALM practices. Rob's experience includes everything from working as a Scrum Master coaching teams in Scrum and software development practices to helping testers master automated testing techniques. He is NZ's only Professional Scrum Trainer and Professional Scrum Developer Trainer with Ken Schwaber's Scrum.org (<http://scrum.org>).

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