Agile and PMBOK v5 Guide Alignment

Introduction
To some people the PMBOK Guide publications represent the traditional command-and-control approach to managing projects that is inflexible and bureaucratic. To others agile methods represent all the excuses to avoid planning and accountability for people who are happier “just winging it”. Of course both views are flawed and stereotypical. The truth is more complex and nuanced, The PMBOK Guide acknowledges and even promotes iterative learning and planning; agile methods have structure, rigor and controls.

This guide helps show the alignment between agile methods and the PMBOK v5 Guide. It provides guidance for practitioners operating in both environments and makes suggestions for reconciling approaches that frequently use different names to describe a similar objective. It also notes where there are some underlying differences in thinking to alert practitioners to the potential for confusion or conflict. The hope is that these issues can be discussed and addressed per project with the relevant project stakeholders since each organization and project is unique and rarely does one solution fit all.

Scope
The words “agile methods” are used in this guide as an umbrella term to cover a variety of project approaches that are characterized as supporting the Agile Manifesto. It is generally agreed that agile methods are a subset of lean theory and include approaches such as (XP, FDD, EVO, DSDM, Crystal, ASD).

While there is active debate as to whether Scrum is agile (because it has ridged processes and artifacts) it is iterative and incremental and shares many of the characteristics of other agile methods. For these reasons Scrum practitioners should find lots of relevant information here for operating in environments that also use PMBOK v5 Guide concepts. Likewise Kanban practitioners, who may not use fixed iterations, but do share many of the same lean thinking principle of agile should also find useful content.

The agile landscape continues to evolve with scaling methods becoming more popular. Approaches such as DAD, SAFe, Nexus, LESS generally offer greater lifecycle coverage (including pre-project and early project work) and more guidance for integration with alternative governance models. One positive is that these frameworks can provide useful links to PMBOK v5 Guide concepts.

However, because they have been developed independently and deliberately want to distinguish themselves from other approaches they tend to use different names and terminology for similar things. So references in this guide has been kept to generic agile concepts whenever possible.
Agile to PMBOK Mapping/Alignment

Concepts
Comparing agile methods to the processes and knowledge areas in the PMBOK v5 Guide shows many obvious alignments and some initially apparent conflicts. While the overall destination of successful projects is the same with high quality deliverables and satisfied stakeholders, often the direction taken to reach this destination can appear different.

As an example the PMBOK v5 Guide describes a comprehensive set of planning activities to undertake prior to project execution. Agile approaches, recommend a lighter approach to upfront planning with more effort to schedule subsequent plan updates. Agile methods accept a comprehensive understanding of desired scope and technical complexity is often not knowable at the start of the project. Instead execution of known components will be more effective at uncovering the remaining scope and complexity than longer, more rigorous initial planning.

These concepts of emergent detail and repeating planning cycles are not at odds with the PMBOK view and align perfectly with the concepts of Rolling Wave Planning and Progressive Elaboration. Instead it is the emphasis and coverage depth these approaches receive in the guides that differ. The PMBOK Guide for instance dedicates 26 pages to cover the 10 types of planning and just 4 paragraphs to describe the ongoing and iterative nature of plan evolution. Agile methods on the other hand, typically dedicate an equal amount of content to describe the ongoing, collaborative nature of (re)planning as they do the role and need for plans. While no content conflicts between the guides the balance of initial vs. ongoing planning will likely seem quite different to readers.

Project Organization
The first chapter of the PMBOK v5 Guide discusses project organization and the hierarchy of portfolios, programs and projects. Since many agile frameworks like DSDM start before a project is formed and extends after the project is complete they can provide strong ties to programs and portfolios that contain projects. These pre and post project activities are undertaken through feasibility studies early in the lifecycle and then benefits realization deliverables after the project completes.

The PMBOK v5 Guide describes how the business benefits of a project may not be achieved for some period after the project completes and so should be measured at a longer term program level. By having benefits assessment deliverables within the agile frameworks, like the DSDM framework, project stakeholders are reminded of the longer term, bigger picture goals at the execution level and are less likely to take a “get it in and done” approach to delivery. Knowing how things will later be measured and deemed a success or failure influences project behaviours and actions.
Organizational Influences and Project Lifecycles

Chapter 2 of the PMBOK v5 Guide deals with organizational influences and project lifecycles. Organizational influences include elements about culture and style, communications, organizational structures, process and deliverables, and all the things that define the thought processes and working practices of an organization.

Agile frameworks are by design flexible and can be adapted to work within for most organizations, but some of these elements can be enablers or potential barriers. Culturally agile methods take a results-focused, flexible and proactive approach to project execution. Tools like agile suitability filters ask if users are accustomed to working in a results focused approach. The use of demos and frequent interaction with the business representatives is easier to arrange when there are not hierarchical boundaries to communications or intermediary roles. As such agile approaches work best when organizational norms support a free flow of communication across roles and divisional boundaries.

Weak matrix and projectized organizational structures work well for sharing project information that may not be extensively documented. In contrast, strong matrix organizations where people report into specializations and do not usually work as cross functional teams typically require more formal documentation to undertake work.

This extra documentation is to help provide context when people task switch between many projects. While task switching has been found to be an inefficient and error prone way of working, it is a reality in many large organizations with matrix reporting structures. Agile teams are recommended to be dedicated to a single project as much as possible and leverage tacit (unwritten) knowledge as a more efficient way of working.

The PMBOK v5 Guides discussion of Organizational Process Assets includes standards around procedures, documents and lessons learned databases. Agile lifecycles work well with these recommendations having defined (albeit lightweight) product definitions and the retrospective review cycle of every iteration provides information for the lessons learned database.

Project Stakeholders and Team Structures

The PMBOK v5 Guide defines a project stakeholder as anyone who may affect, be affected by, or perceive themselves to be affected by a decision, activity, or outcome of a project. Stakeholders include members of the project team as well as interested entities who may be internal and external to the organization. The project manager must manage the influences of these various stakeholders in relation to the project requirements to ensure a successful outcome. These classes of stakeholders and their interaction with the project are depicted below:
Figure 3 – From the PMBOK v5 Guide – Project Stakeholders and Project Team
Agile methods have compatible models for project stakeholders and team members. They describes a project team with solution development members, project members including business representation along with supporting facilitator and coach roles. Together these roles form the same composition and purpose as the “Project Team” in the PMBOK diagram.

An element that differs and is worth mentioning on agile project teams is the preference for Self-Directing Teams. The PMBOK v5 Guide allows for teams to be tightly managed and in a command-and-control style or to operate in a collaborative empowered way. Both models and any point on the spectrum between these extremes work within the PMBOK view. Agile methods however recommend Self Directed Teams that have more autonomy.

Agile approaches recommend the use of self directed teams since projects with high rates of change do not have time to manage work in bureaucratic approaches and wish to avoid “I did my job” mentalities that can sometimes arise in tightly managed teams.
<table>
<thead>
<tr>
<th>Tightly Managed Teams</th>
<th>Self Directing Teams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take directions</td>
<td>Take initiative</td>
</tr>
<tr>
<td>Seek individual reward</td>
<td>Focus on team contributions</td>
</tr>
<tr>
<td>Focus on low level objectives</td>
<td>Concentrate on solutions</td>
</tr>
<tr>
<td>Compete</td>
<td>Co-operate</td>
</tr>
<tr>
<td>Comply with process, regardless of outcome</td>
<td>Continually look for better ways of working</td>
</tr>
<tr>
<td>React in emergencies</td>
<td>Take steps to prevent emergencies</td>
</tr>
</tbody>
</table>

So, while there is no conflict between agile recommendations (the use of Self Directed Teams) and the PMBOK’s agnostic view on team styles, organizations considering agile approaches should consider the practicality and organizational fit of self directed teams.

**Process Groups and Knowledge Areas and Project Lifecycles**

The PMBOK Guide describes five process groups involved in running a project:

- Initiating
- Planning
- Executing
- Monitoring and Controlling
- Closing

These can be depicted as a single project flow as follows:

![Project Flow Diagram](image)

**Figure 5 – From the PMBOK v5 Guide - One approach to managing a project**

However the PMBOK v5 Guide is clear to point out that the processes can also be repeated with a single project multiple times and overlapped.
Using these PMBOK v5 Guide images as a starting point it is easy to create a model that is compatible with elements of a full lifecycle agile approach such as Disciplined Agile Delivery (DAD) or DSDM. The diagram below shows how the five PMBOK processes map to the pre-project and execution work of a three release project.

**Initiating Process Group**

Most of the extended lifecycle agile approaches that include DSDM, DAD, and SAFe contain early project activities that correspond to the PMBOK v5 Guide’s Initiating Process Group activities. They all cover the early project activities and complement the goals of clearly defining the project parameters and confirming feasibility.
Planning Process Group
The PMBOK Guide set of planning processes describe all the activities performed to define the total scope, objectives and course of action for a project. It assumes that with sufficient analysis these tasks are knowable and development is then largely the execution of these plans. The PMBOK v5 Guide describes the concepts of Progressive Elaboration and Rolling Wave Planning as effective mechanism to tune plans to emerging details and they act as accepted extensions to generally detailed initial plan.

Agile approaches to planning are deliberately more incremental and recommend a process that iterates to discover and refine scope. These concepts can be made to exist within the PMBOK framework too by making the PMBOK ideas of Progressive Elaboration and Rolling Wave Planning more of a central theme rather than supporting process.

When describing an agile project in a PMBOK environment it is important to explain initial plans will be deliberately light and progressively enriched as early iterations clarify understandings and provide additional information. It is also useful to describe the ownership shift from project manager as primary planner to the team as primary planner. Agile methods encourage shifting much of the planning responsibilities to the team (including business representation) which takes the form of release and iteration planning and backlog prioritization.

Executing Process Group
The PMBOK v5 Guide’s approach to execution is to “go do the items identified in the project plan” and update and re-baseline the plan if changes occur. These changes may be necessary due to changes in activity durations and resource productivity or availability based on unanticipated risks and issues. To some people there is an assumption that planned activities are fully understood prior to starting work and complete according to plan.

Agile methods employ a more dynamic execution approach where higher level of replanning are the norm. This is due to the complex nature of software projects and high rates of change, due to technical uncertainty and requirements evolution. It is assumed that all aspects of work are not knowable in advance and learning with adaptation will be necessary to complete these tasks.

Execution on an agile project occurs through multiple iterations. Each iteration is a short, immovable, focussed time period to undertake work followed by a demo and retrospective review. The retrospective allows any issues with execution or scope changes to be discussed in a timely fashion. It also acts as a review point to check progress against the plan and determine if any changes to the project execution process, scope or schedule are necessary.

Monitoring and Controlling Process Group
The Monitoring and Controlling processes described in the PMBOK V5 Guide explain how to track, review and manage progress. They outline how to identify where changes to the plan are required and
then how make the required changes. The overall view is akin to a thermostat model, once the plan is made measurements are used to determine if adjustments during project execution are necessary when feedback indicates acceptable tolerances have been breached.

Agile approaches use different techniques for monitoring, with more demos and feedback rather than tests to specification. These demos and business discussions are more subjective, but eventual success is often a subjective measure. In addition to the Thermostat Model of feedback a Scientific Experimentation Model is used. The Scientific Experimentation Model makes experimentation and learning a key part of the process for the project.

The retrospective review that follows an agile iteration is one visible component of the Scientific Experimentation model in play. Iterations can be created to trial new technology or test new process changes in addition to building new functionality. These short cycles provide important feedback on what is working and what needs further tuning.

**Closing Process Group**

The goals of the Closing Process group include verifying all the defined processes are complete, conducting post project or post phase reviews and closing out procurement. The Closing Process group also gets executed whenever a project or phase is closed prematurely.

On an agile project lessons learned are collected as the project progresses after every iteration rather than at the end of the project. This has two main advantages, the first being lessons can be acted on immediately to get the benefits on this project rather than a subsequent one, the second being more lessons learned information is captured since it is done more frequently.

Asking a team to think back a year to the requirements gathering portion of the project and recall “What went well?” and “What did not go well?” is not as likely to yield as much useful information as pausing every two weeks to record this information while it is still fresh.

Work on an agile project is prioritized to undertake the highest business value items first. This means that if the Closing Process group is exercised to prematurely close a project or phase on an agile project there is a high chance that some useful business value will already have been generated. Perhaps making the premature closure less of a failure and more of an early benefits realization, quick win, or proof of concept for the business rather than purely sunk costs.

**PMBOK V5 Guide Knowledge Areas**

The PMBOK v5 Guide has 10 chapters describing knowledge areas of generally accepted project management good practice.

The 10 Knowledge Areas referenced by their PMBOK v5 Guide Chapter numbers are:
4. Project Integration Management  
5. Project Scope Management  
6. Project Time Management  
7. Project Cost Management  
8. Project Quality Management  
9. Project Human Resources Management  
10. Project Communications Management  
11. Project Risk Management  
12. Project Procurement Management  
13. Project Stakeholder Management  

A mapping of each PMBOK v5 Guide knowledge area to agile principals, tools and techniques can be found in “Appendix 1 – Agile and PMBOK v5 Guide Knowledge Area Mappings”. The appendix acts as a guide for practitioners looking for specific explanations regarding project management practices.

**Agile Alignment with Other PMI Standards**

**PMI Software Extension to the PMBOK**
The Software Extension to the PMBOK Guide is the newest standard to be published by the PMI on using the PMBOK Guide for software projects. It covers the full range of software development life cycles from Highly Predictive, waterfall approaches to Highly Adaptive agile, lean and kanban based approaches. Agile methods fit perfectly with the Adaptive category discussions of effectively executing software projects.

**PMI Standard for Program Management**
The PMI Standard for Program Management, now in its third edition, helps program managers deal with a variety of factors such as linking projects under one program and providing the best allotment of resources between those projects. The standard is a valuable tool for program, project and portfolio managers alike, as well as project stakeholders and senior management.

Full lifecycle agile methodologies such as SAFe, DAD and DSDM provides an excellent fit with larger enterprises through their philosophy of alignment to strategic goals and focus on delivery of incremental business benefit. Agile methods enable faster ROI by working on the highest business value items first, with the potential to use the financial return on early increments to fund future increments within the project or program.
Appendix 1 - Agile and PMBOK v5 Guide Knowledge Area Mappings

This appendix is not intended to be read as a stand along document. It accompanies the “Agile and PMBOK v5 Guide Front Matter Alignment” White Paper and provides more detailed guidance and commentary on PMBOK v5 Guide to Agile mappings.

The PMBOK v5 Guide has 10 chapters describing knowledge areas of generally accepted project management good practice. Each knowledge area is numbered according to the PMBOK Guide chapter number it occurs in, starting at number “4” and broken into sub-processes.

Each sub-process is described with:
1. An overview of its objectives. Where the intent of the PMI Definition is not immediately clear a Simplified Definition will also be provided.
2. A list of Inputs that feed into the process
3. A description of the Tools and Techniques employed within the process
4. A list of the Outputs generated.

The 10 Knowledge Areas referenced by the PMBOK v5 Guide Chapter numbers are:

14. Project Integration Management
15. Project Scope Management
16. Project Time Management
17. Project Cost Management
18. Project Quality Management
19. Project Human Resources Management
20. Project Communications Management
21. Project Risk management
22. Project Procurement Management
23. Project Stakeholder Management

Each of these knowledge areas are discussed in this Appendix referencing the complementary Agile concepts and products.
4 Project Integration Management

The Integration Management knowledge area is not related to software integration but instead deals with how the previously described Process Groups (Initiating, Planning, Executing, Monitoring and Controlling, and Closing) are combined to effectively manage a project holistically.

The PMBOK Guide is industry agnostic and covers domains as diverse as civil engineering, mechanical fabrication and bio-sciences. In many industries projects bring together disparate disciplines and an important role of the project manager is to integrate the plans, execution, monitoring and control of these different threads of work to achieve a successful project.

Agile methods can and often are used on projects outside of the software space, but never the less has their origins in building software systems. Planning and conducting a software project is usually a collaborative endeavour rather than coordination of subsidiary plans. So, agile methods speak less about integrating plans but does share the same goals of clearly explaining roles and responsibilities.

4.1 Develop Project Charter

This is the process of developing a document that formally authorizes a project or phase and documenting initial requirements that satisfy the stakeholders’ needs and expectations. It establishes partnership between performing group and requesting group and formally initiates the project. It defines the project W5+ characteristics

- **What** the project is for – scope outline
- **Why** the project is being undertaken – business benefits
- **Who** will be undertaking the project and who will be impacted – identify stakeholders
- **When** the project will occur – schedule outline
- **Where** will the project be done – logistics outline, resources required
- **How** the project will be undertake – approach outline

In an agile project the Terms of Reference and the Outline Plan that are created in the early Pre-Project and Feasibility stages of the project address the same information needs and can be used to satisfy the PMBOK v5 Guide Project Charter requirements.
Some items worth noting are that the PMBOK v5 Guide lists inputs to the Develop Project Charter process of “Project Statement of Work” and “Contract”. When working on an agile project the initial statement of work might be deliberately light on detail since it is anticipated that more accurate details will best emerge through iterative prototype evaluation rather than further upfront analysis. Also the contract being used may be an agile inspired contract that seeks “fitness for business purpose” rather than exact specification compliance.

If this is the first use of agile methods in an organization then the PMBOK Project Charter or Outline Plan developed should explain any new approaches that will be used to set expectations, such as iterative development, increased business involvement, empowered teams, frequent retrospectives, etc.

4.2 Develop Project Management Plan

In the PMBOK v5 Guide this is the process of documenting the actions necessary to define, prepare, integrate, and coordinate all subsidiary plans. It explains how the project will be managed. Include how the project will be executed, monitored controlled and closed.

The PMBOK acknowledges that the plan is “refined until closure”, it is a living document and uses the term “progressive elaboration” to describe the ongoing nature of the updates. This term and concept are useful for explaining the iterative nature of planning on agile projects.

Traditional inputs to the Develop Project Management Plan include the Project Charter and outputs from early planning processes. For an agile project these may be candidate features or users stories that are already known early in the project lifecycle. Agile methods use multiple plans, an Outline plan developed in the Feasibility Stage that defines the basic scope and approach at a high level and a more detailed Delivery Plan or Release Plan that outlines a dates for key increments and deployments. Together these products satisfy the needs of the Project Management Plan.

4.3 Direct and Manage Project Execution

PMI Definition: The process of performing the work defined in the Project Management Plan to achieve the project’s objectives.

Simplified Definition: Actually doing the work identified in the project plan. Due to the PMBOK Guide being industry agnostic it cannot list how all different project types should be best executed, project managers are expected to follow industry best practices.

Work is typically reprioritized and re-sequenced more frequently on agile projects. The Change Request process is integrated with iteration planning, change requests, defects and new features are all considered for subsequent iterations and releases. A Prioritised Requirements List is used to manage upcoming work. The rate of work done is tracked as Velocity.

Inputs to the process include the Project Management Plan and Approved Change Requests. Work on an agile project is managed in the Prioritized Requirements List which will contain a combination of initially defined work and approved change requests. Another input is Lessons Learn reports from other projects.
that may impact how the project is executed. On an agile project the ongoing collection of retrospective findings and recommendations also factor into directing and managing the project execution.

Tools and techniques used in this process include project management information systems and on an agile project these may be in the form of agile backlog management tools. A technique not mentioned in the PMBOK v5 Guide for this process is Prioritization, yet agile projects will make extensive use of Moscow prioritization to help direct and manage the project.

The PMBOK v5 Guide lists “Work Performance Information” as an output from this process which on an agile project may take the form of Velocity data. Change Requests are another output which on an agile project will added to the Prioritized Requirements List and finally Project Management Plan Updates that take the form of updated iteration and release plans in agile methods.

4.4 Monitor and Control Project Work
The process of tracking, reviewing and regulating the progress to meet the performance objectives defined in the project management plan. Monitoring includes collecting, measuring and distributing performance information and analyzing trends. Focussed on looking for areas that may need attention and re-planning.

This process aims to check that the project is running correctly. For complex or high change projects this may mean within agreed tolerances rather than to the initial plan. The PMBOK v5 Guide lists “Performance Reports” as an input to the process which may seem an alien concept to agile projects but really equates to velocity data and bug and change request metrics.

Outputs from the process include Change Requests and Project Management Plan Updates. On an agile project these will be handled via adding new items to the Prioritized requirements List and updating the Delivery Plans (Iteration Plans). The concepts are the same; it is just the artifact (product) names that changes.

As the project progresses details of bugs, change requests, and velocity metrics are tracked. Review sessions (retrospectives) are held to capture lessons learned throughout the projects. Business user engagement is kept high to learn of any business changes, risks, and monitor general business confidence.

4.5 Perform Integrated Change Control
The process of reviewing change requests, approving changes, and managing changes. In an agile project it is the mechanism to determine if the business wants to undertake the changes, and proceed with approved changes.

Where the PMBOK v5 Guide describes inputs as being the Change Requests, Project Management Plan and Work Performance Information, this is where an agile project would be reviewing The Delivery Plan and Iteration plans along with velocity metrics to determine if the project schedule still looks viable and where requested new features should be prioritized in the backlog.
Instead of using Change Control Meetings as a Tool and Technique, agile projects typically call these sessions Iteration Planning meetings. (Re)Prioritization happens frequently and Backlog Grooming, or the process of working with the business to review and Prioritized Requirements List is part of every iteration.

As such change control in an agile project truly is integrated, it is not seen as an exception or event to schedule when needed, instead just part of the natural project cadence. It is something that is done alongside task execution and demonstrations.

Outputs from the process in the PMBOK Guide are listed as Change Request Status Updates and Project Management Plan Updates. These take the form of an updated Prioritized Requirements List and Updates to the Delivery Plan and Iteration Plans.

4.6 Close Project or Phase
The process of finalizing activities across all the process groups to formally complete the project or phase. It centers on getting stakeholders to agree that a phase or project is done

There are not many changes to the Close Project or Phase step for agile projects. Usually some low priority items are left over in the backlog. These may be reviewed and deferred or handed over to the support group for completion along with any support issues that may occur.

5 Project Scope Management

Figure 10 - Project Scope Management Overview

5.1 Plan Scope Management
This is the process that defines how the project scope will be defined, validated and controlled. It explains how scope will be managed throughout the project to interested parties. The Tools, Techniques and outputs recommended include Meetings, a Scope Management Plan and Requirements Management Plan.

On an agile project it is arguably more important to clearly define how scope will be managed since the approach may be different for some people. An explanation of how the Prioritized Requirements List is
managed and how scope is explored and captured during facilitated workshops is important. This
description will fulfil the Scope Management Plan role.

In addition to meetings, descriptions of facilitated workshops should be provided if the technique is not
common practice at the organization. Similarly a description of Moscow prioritization, planning sessions
and backlog grooming will make up the Requirements Management Plan.

5.2. Collect Requirements

**PMI Definition:** Defining and documenting the stakeholder needs to meet the project objectives.

**Simplified Definition:** Gathering the list of things to do before the project can be deemed done.

There can sometimes be confusion around collecting requirements between agile and traditional
approaches, but it can be avoided. Agile projects recognize that it is unlikely to be possible to gather all
the requirements accurately up front. Instead it is more likely that the true requirements will evolve
over the course of the project as functionality is built and evaluated by the business.

So, while it is appropriate to gather requirements early in the project, it is not safe to assume that this
will be the end of the process, instead perhaps 50-70% of the requirements can be determined up front,
the remainder will evolve and be uncovered throughout the project.

Facilitated workshops are specifically mentioned in the PMBOK v5 Guide as a technique to use when
collecting requirements so it can be useful to restate the endorsement of this approach when running
agile projects in a PMBOK environment. Prototypes are also mentioned so early exploration is generally
accepted. Agile projects just tend to take these approaches further through the lifecycle.

An output from this process is Requirements Documentation which in an agile project will take the form
of the Prioritized Requirements List.

5.3 Define Scope

The process of developing a detailed description of the project and product. This will likely be refined as
the project progresses; a process termed “Progressive Elaboration” in the PMBOK v5 Guide.

Inputs to the process include the Requirements Documentation which will be the candidate story list
that comprise the Prioritized Requirements List. The Tools and Techniques listed for use during this
process include Expert Judgement and Facilitated Workshops, but for an agile project prioritization
techniques should also be employed.

A detailed description of project and product might be an unrealistic early goal for an agile project since
these projects are often in domains characterised by high requirements uncertainty and/or high
technology risk uncertainty.

Instead of “Define Scope” happening as a single activity, agile projects establish the framework for scope
management (Prioritized Requirements List, business prioritisation) and set up the structure for
frequent reviews and revisions to manage project scope. This change in philosophy should be explained in the Project Charter, Scope Management Plan and communicated frequently at the early project kick-off meetings to make sure everyone understands and is in agreement.

5.4 Create WBS
PMI Definition: The process of subdividing deliverables into smaller, more manageable components. A WBS is a deliverable-oriented hierarchical decomposition of work.

Simplified Definition: Breaking the project down into simpler and simpler steps until a project can be discussed, understood and estimated at a granular level.

While it is possible to create a traditional style WBS for agile projects the Prioritized Requirements List and Delivery Plans contain the same information in an easier to refactor (make changes to) format. Most WBS tools are difficult to refactor (make changes to) and given agile projects accept that requirements are likely to change, using a tool that is quite difficult to make whole-scale changes to can lead to a lot of time being spent on updating deliverables that could be better used delivering business functionality.

Inputs to the process are listed in the PMBOK v5 Guide as the Project Scope Document and Requirements Documentation. These will be the user story list in the form of the Prioritized Requirements list that is typically managed in a tool.

5.5 Validate Scope
The process of formalizing acceptance of the completed project deliverables. Validating Scope focuses on checking all the work is done correctly and passes quality assurance criteria.

This is best done frequently and not focussed on a testing phase towards the end of the project. This way if issues are found they can be corrected closer to their source with less knock-on impact. Agile teams look for functional acceptance as they go, although system, integration and regression testing will happen throughout the project.

Viewing demonstrations and evaluating increments of the final solution as they are developed are important validation techniques for agile projects. Software projects are especially affected by the “Cost of Change Curve” where the later a change or defect is discovered the more timely and costly it is to correct. This is why agile projects aim to validate scope early.

5.6 Control Scope
This is the process of monitoring the status of the project, the product scope and managing changes to the scope baseline. It is concerned with balancing changes requests against project delivery to maximize business value.

The PMBOK v5 Guide acknowledges that “change is inevitable” and that a change control process is mandatory. Agile projects emphasise processes to actively manage scope against the backlog of required functionality.
The term “Control Scope” may offend some agile purists who argue scope should be managed not controlled as changes are not necessarily bad since they may bring competitive advantage. However nor are changes usually free since there is a cost of even analysing change requests that do not proceed further.

So, the process is a Benefit vs. Cost trade-off exercise that aims to maximise responsiveness and value delivery to the business while maintaining enough stability to allow sustainable development. So, approved change requests are added to the Prioritized Requirements List of remaining work.

It works by taking the plans, work performance data (velocity metrics), remaining work plans and change requests as inputs. Then using estimation and variance analysis determines the impacts of the change requests. The business sponsor can then make an informed decision on whether to accept the change. In the course of an agile project this would result in a new item being added into the Prioritized Requirements List.

By accepting a new feature or change into the prioritized list of remaining work the sponsor is accepting the impact on lower priority work. It may now be delayed or pushed out of viable scope for this project. Using these techniques agile projects are particularly well suited to time critical or budget constrained projects where hard limits are set and proactive, frequent review cycles used to actively manage scope.

### 6 Project Time Management

#### 6.1 Plan Schedule Management

Establishing the policies, procedures and documentation for planning executing and controlling the project schedule. This is where on an agile project the schedule based processes such as timeboxed iterations and Delivery Plans are explained.
6.2 Define Activities
The process of identifying and documenting the activities that must be performed to produce the project deliverables. The activities provide the basis for estimating, scheduling, executing, and monitoring and controlling the project work.

The PMBOK V5 guide lists “Rolling Wave Planning” as an approved technique which is a strong enabler for using agile’s iterative planning approaches. Activities can be referenced as Stories for a system’s functional and non-functional requirements.

Other project work (procurement, documentation, training, etc.) may also be referenced as Stories and tracked and managed via the Prioritized Requirements List. So, to meet the Define Activities process project functionality can be broken into Epics and Stories ready for estimation and prioritisation.

The PMBOK v5 Guide lists an Activity List as an output from the Define Activity process. On an agile project this would be the Prioritized Requirements List.

6.3 Sequence Activities
PMI Definition: The process of identifying and documenting the relationship among the activities then sequencing using logical relationships potentially with lead and lag time.

Simplified Definition: Determining the sequence in which to undertake the work (as far as is practical).

Sequencing in agile projects is more dynamic and frequent than in traditional projects. A Delivery Plan is created to provide structure and focus for the various iterations, but is revisited often based on business feedback from the evolving system, velocity data, and retrospective findings. Of course agile projects still sequence activities upfront, but the scope of this initial sequencing will most likely be less static and then will be refined as the project progresses.

Agile methods often use the INVEST mnemonic to help remind participants the characteristics of good requirements. The ‘I’ of INVEST stands for Independent, requirements should be structured to reduce dependencies on other requirements to allow easier movement in the backlog of work and selection of items for a timeboxed iteration. While some dependencies are inevitable, by keeping requirements as independent as possible the (re)sequencing of activities remains viable throughout the project.

Also, with the advent object oriented programming languages components are now much more atomic and loosely coupled, enabling portions of the system to be built independently and activities re-sequenced. This was not as easy to accommodate in previous procedural programming languages that sought to decompose large complex problems into smaller and smaller subroutines of work. These hierarchical structures worked well for reducing complexity but lead to development that was hard to re-sequence – a challenge if the business priorities changed.

6.4 Estimate Activity Resources
PMI Definition: The process of estimating the type and quantities of resources (material, people, equipment, etc) required for the activities.
**Simplified Definition:** Deciding who/what will be needed to complete each task.

This process of deciding what roles are required for the project applies to agile projects too. Initially projects may be assigned a team or asked what resources will be required. From a review of the project objectives, stakeholder goals, budget and timeline goals a first approximation of the likely resource requirements can be determined.

As the project progresses and features and user stories are identified, skills and ability to meet the project goals can be checked against the current team’s skills. Gaps emerging may indicate different roles are required. Likewise, velocity and quality metrics may provide insights into team role requirements as the project progresses.

### 6.5 Estimate Activity Durations

This is the process of determining approximate durations to complete the work activities with estimated resources.

Activity estimation is usually done at a story level on agile projects. Approaches like Planning Poker have strong links to Wideband Delphi estimation techniques and fit well with the group based, iterative, consensus seeking principles employed on agile projects.

Initially all the stories will not be identified, nor will reliable velocity figures be available. At the start of an agile project more traditional estimation approaches are used, then as iterations demonstrate true development rates, a shift in emphasis to more of the team based estimation approaches can be safely made. Non development tasks can be estimated using traditional approaches and added to the story estimates.

### 6.6 Develop Schedule

**PMI Definition:** The process of creating a schedule from analysing the activity sequences, durations, resource requirements and schedule constraints.

**Simplified Definition:** Determine how long the project will take.

Agile projects still need Schedules and Plans. They may change, driven by business requests, or project feedback; but plans should exist. The format of agile plans may surprise some stakeholders. Instead of a network diagram, a prioritised backlog in the form of the Prioritized Requirements List may be the preferred tool for illustrating and managing the sequence of project activities. Due to the dynamic nature of many software projects, tools and deliverables that are easy to change (refactor) are preferred over harder to maintain network diagrams and WBS diagrams.

In reality developing the schedule is an iterative process that continues throughout the project as work progresses. Many of the inputs and outputs listed in the PMBOK v5 Guide have simple agile alternatives. The Activity List and Activity Attributes are replaced by the stories in the Prioritized Requirements story metadata (priority, dependencies, etc.)
Tools and Techniques like Schedule Network Analysis and Critical Path Method are replaced by Story Mapping exercises that also factor in practicality and usefulness of releases.

6.7 Control Schedule

**PMI Definition:** The process of monitoring the status of the project to update project progress and manage changes to the schedule baseline.

**Simplified Definition:** Monitor the progress and check validity of plans.

Using velocity metrics, learning’s from retrospectives, and business feedback from demo’s; the upcoming release and iteration plans are adapted to incorporate the mid-course adjustments to align the project with stakeholder objectives.

These changes may include reprioritization of the Prioritized Requirements List, changes to how the team works, or adjusting the engagement model with the business. As the project progresses more emphasis is placed on emerging velocity trends as an indicator to final likely completion dates than any upfront estimates.

The Performance Reviews and Variance Analysis techniques described in the PMBOK v5 Guide can take the form of Retrospectives, Velocity Analysis and Cycle Time analysis on agile projects. Outputs from the Control Schedule process will take the form of updated Delivery Plans.

7 Project Cost Management

**Figure 12 - Project Cost Management Overview**

7.1 Plan Cost Management

**PMI Definition:** The process that establishes the polices, procedures and documentation for planning, managing, executing and controlling project costs.

**Simplified Definition:** Deciding and describing how project costs will be managed.

The Plan Cost Management process produces a Cost Management Plan document that is generally part of the Project Management Plan. For large projects it can be its own document. The process takes as inputs the Scope Baseline as a WBS and Schedule Baseline along with other information pertaining to risks, historical financials, etc. From these inputs using tools and techniques like expert judgement and
meetings the Cost management plan is produced that describes how costs will be tracked and managed. This includes the approaches to tracking costs and calculating Estimates At Completion (EAC).

On an agile project techniques for tracking progress via points of work delivered vs. points of work remaining and velocity should be described in the Cost Management Plan. These measures can be translated to traditional earned value metrics if stakeholders wish as described here, or kept as agile alternatives.

7.2 Estimate Costs

**PMI Definition:** The process of developing an approximation of the money required to complete the project activities.

**Simplified Definition:** Estimate the costs involved in the project.

Initial project cost estimates on an agile project are as difficult to create and as low in accuracy as traditional projects. Upfront, before the team has proven their ability to turn requirements into tested features, it is difficult to estimate the production speed and therefore estimated costs for the project.

However, as the project progresses and velocity, quality, and change rate metrics become more reliable, then estimating the final costs (EAC) on agile projects becomes easier and more reliable than on traditional projects.

The Tools and Techniques listed in the PMBOK v5 Guide for cost estimation include parametric estimating (calculation based) and Bottom-up estimating (aggregating granular units). These techniques are used on agile projects too but people may not immediately make the connection. Assigning and counting story points is a form of Parametric Estimating. Using team based approaches like Wideband Delphi and Planning Poker are collaborative, peer reviewed forms of Bottom-up estimation.

7.3 Determine Budget

**PMI Definition:** The process of aggregating the estimated costs of the project activities or work packages to establish an authorized cost baseline.

**Simple Definition:** Add up all the estimated costs to create project total.

This is the process of adding all the individual component costs together to create an overall budget. Initially it is unlikely that all the candidate features or stories for the project will be identified in an agile project. So merely adding the estimates for the known stories together will give an estimate that is unreasonably low. So initial estimates can be based more on traditional estimation approaches (like expert judgement, comparison to other systems, etc.) or calculated from Timeboxed project burn projections if a fixed end date must be met.
Where the PMBOK v5 guide called for Activity Cost Estimates as an input, this is where an agile project would use the Story Estimates.

### 7.4 Control Costs

**PMI Definition:** The process of monitoring the status of the project to update the project budget and managing changes to the cost baseline.

**Simplified Definition:** Monitor, record and analyze the project spend and forecasts.

The PMBOK guide describes Earned Value Management, To-Complete Performance index (TCPI) and Variance Analysis as techniques to help control costs. These approaches can also be used on agile projects but are more commonly replaced by evaluating progress from each iteration along with change rates and defect densities to determine how feasible the remaining estimates are.

If traditional performance indexes are still required proxies for Schedule Performance Index (SPI), Cost Performance Index (CPI) and To-Complete Performance Index (TCPI) can be easily calculated/derived.

- **SPI** = Completed Feature Points / Planned Feature Points
- **CPI** = Planned Costs / Actual Costs
- **TCPI** = Value of work remaining / Funds remaining

Outputs from this process include Work Performance Measurements which in the case of an agile project would be in the form of Velocity data and backlog size. As a result of analyzing the financial performance change requests to increase or reduce scope may be made and budget forecasts updated.

### 8 Project Quality Management

**Figure 13 - Project Quality Management Overview**

#### 8.1 Plan Quality Management

**PMBOK Definition:** The process of identifying the quality requirements and/or standards for the project and documenting how the project will demonstrate compliance.

**Simplified Definition:** Deciding and defining how quality will be managed.

Agile projects typically have more frequent quality and review steps built in throughout the project. There is no attempt to “test quality in” towards the end of the project, instead small increments are reviewed frequently throughout the lifecycle. QA resources are encouraged to take part in story
creation workshops and as developers are considering “How are we going to develop that?” the QA representatives are thinking “How are we going to test that?” Both developers and QA people will likely have questions for the business representatives around the specifics of requirements.

The PMBOK v5 Guide lists the Scope Baseline as input to the Plan Quality process, this will take the form of the Prioritized Requirements List in an agile project. Often test cases and test data accompany user stories to provide examples and illustrate required behaviour. Agile projects planning to use Test Driven Design or automated testing should explain the tools and approaches in the resultant Quality management Plan.

8.2 Perform Quality Assurance

**PMBOK Definition:** The process of auditing the quality requirements and the results from quality control measurements to ensure appropriate quality standards and operational definitions are used.

**Simplified Definition:** Checking that the QA process is being applied.

Before performing quality checks and inspections on the project we need to check the QA process is appropriate. This is because inspecting something with a faulty instrument might miss defects that or present or show false positives. So first check the process is good and that it is being followed.

On an agile project QA should happen alongside development, so it is important to structure team work so QA staff attend requirements gathering sessions. Retrospectives regularly check on the effectiveness of the QA process. They look for the root cause of issues then suggest and trial new approaches to improve quality. Subsequent retrospectives evaluate any trial processes to determine if they are working and should be continued or new adjusting or should be dropped from use. Through these frequent inspect and adapt cycles the team’s processes including QA processes and monitored and optimized throughout the project.

8.3 Control Quality

**PMBOK Definition:** The process of monitoring and recording the results of executing the quality activities to assess performance and recommend necessary changes.

**Simplified Definition:** Doing the QA work.

This is the process of performing quality assurance on the emerging product or service. Since agile projects take a small batch size approach to a project and ‘slice’ it into small vertical portions of the final solution it is possible to evaluate increments of the emerging solution as they are developed.

This is in contrast to a large batch size, traditional approach where all the requirements are captured at once and then all the analysis for the project is done at once and then the design, etc. In these large batch flow scenarios quality assurance during the project has to be done on interim artifacts (requirements specs, models, designs, etc.) and not on the final deliverable. This delays testing the final implemented solution until relatively late in the project making corrections more costly.
For software projects developed using agile methods it is common to use automated testing tools and to build suites of test scripts. These tests scripts are then run automatically as development proceeds to repeatedly regression test the system to ensure new development does not adversely impact features already developed. Since development proceeds in business value and risk order, by the end of the project the most valuable and risky portions of a system have received the most testing.

9 Project Human Resources Management

9.1 Plan Human Resource Management

PMBOK Definition: The process of identifying and documenting project roles, responsibilities, and required skills, reporting relationships, and creating a staffing management plan.

Simplified Definition: Deciding and defining who will be required on the project. What roles, skills, etc.

The process of planning human resource management for an agile project remains the same, but the emphasis changes slightly. We still need teams of smart, co-operative people, agile methods tend to promote servant leadership and empowered teams more than traditional projects and this needs reflecting in the HR plan.

The approaches that will be used on the project are less directing than traditional command-and-control projects. Team members are encouraged to “wear many hats” with less specialization and team members are empowered to step up and undertake roles without official assignment. This aligns more with a Douglas McGregor Theory Y of motivated employees rather than a directing style, Theory X approach.

Physical co-location and the removal of barriers to face-to-face communications are also common work place recommendations. When planning how to recruit and manage agile project teams these factors need to be considered.

9.2 Acquire Project Team

PMBOK Definition: The process of confirming human resource availability and obtaining the team necessary to complete project assignments.
**Simplified Definition:** Obtaining agreement to the required people for the project.

Agile projects work well with strong matrix and projectized environments where a dedicated team can work on a project with fewer interruptions. When acquiring and establishing agile project team environments it is recommended to avoid part-time resources since much information is transferred via face-to-face communications which does not work well when people are absent or engaged on other work.

Also, because agile is popular for problem solving, knowledge worker type projects that are often creating novel designs there may be little tangible product to touch and see. In these domains that are primarily focussed on manipulating information stabled teams, co-location and face-to-face communications are popular techniques. When acquiring team members these characteristics of work and people’s suitability for working this way need to be assessed.

A technique often used on agile projects if for team members to interview potential new team members to assess their suitability and team fit. From this perspective the Acquire Project Team activity moves from a project manager one doing most of the work to one were the PM pre-screens candidates for suitability but then team members make the final selection.

**9.3 Develop Project Team**

**PMBOK Definition:** The process of improving the competencies, team interaction, and the overall team environment to enhance project performance.

**Simplified Definition:** Providing training, mentoring, and support for the team.

Agile teams are encouraged to self-organize, schedule their own local work, and take ownership for problems and solutions wherever possible. For some organizations this may come naturally, for others it will be a big transition that requires training and senior management encouragement.

Consensus based approaches like the use of Planning Poker for estimation, and reflection and adaptation approaches such as Retrospectives are encouraged. When new ideas are suggested a trial for one iteration and then a review before accepting or dismissing can be helpful. This way successful process adaptations can be quickly tried and proven while unsuccessful trials can be learned from and discontinued.

Techniques commonly found in use on agile projects impact how teams develop. Pair programming where two people work together on problem solving and performing real-time reviews on work are very effective quality assurance techniques, but require some changes in thinking and behaviour for some people. Similarly Test Driven Development (TDD) that calls for tests to be written before commencing work can yield great results but require team development to introduce.
9.4 Manage Project Team

**PMBOK Definition:** The process of tracking team member performance, providing feedback, resolving issues, and managing changes to optimize project performance.

**Simplified Definition:** Day to day management of the team.

The PMBOK v5 Guide presents some great ideas in this section for team management and promotion. It focuses on understanding individual goals and trying to provide opportunities for people to progress in these directions. Agile methods provide many opportunities for team members to try new roles and approaches.

Due to the shorter release cycles if someone wants to try a, say, QA role this could be done over a one month or two month period much easier than on traditional project that is not scheduled to do the full spectrum of QA work until much later in the project. Biologists interested in genetics study mayflies because their lifecycle is just weeks. Agile methods give equally short time periods for experimentation and feedback to team members that most people find more rewarding and responsive.

When managing teams that are problem solving and require high levels cooperation to be successful it is beneficial to track performance at a team level rather than an individual level. If productivity were measured individually for instance people would try hard to make their statistics look good in comparison to their peers so they appear valuable. This does not incent people to help others, load balance work or share improvements they discover – all things organizations should be rewarding.

Instead to promote collaboration and knowledge sharing performance is measured at the whole team level. Agile projects track velocity (amount of completed work) for the whole team and not for individuals. This way people are incented to help others and share good ideas, improving performance of the whole team not just themselves.

## 10 Project Communications Management

![Diagram of project communications management](image)

### Figure 15 - Project Communications Management Overview

### 10.1 Plan Communications Management

**PMBOK Definition:** The process of gathering and analyzing project stakeholder information and requirements to develop an appropriate communications approach for the project

**Simple Version:** Recording the project communication requirements and approaches that will be used.
Agile projects demo functionality frequently and delivers functionality regularly resulting in higher project visibility for most stakeholders. People get to see what is going on more frequently, there are no long periods of “analysis” or “design” where it is difficult for external stakeholders to understand what is going on. This all makes planning communications for the project easier; many pieces of information will be surfaced because of the process followed.

However it is important to stress the importance of attending demonstrations and planning meetings. With an increased reliance on face-to-face interaction attendance is critical. Where face-to-face communications are not possible more traditional communications will be required. Techniques like Persona Modeling can be used to create a persistent reminder of absent stakeholders or groups.

Also, because it is acknowledged that requirements are likely to change on agile projects, ongoing engagement and communications from stakeholders is important to encourage throughout the project lifecycle. At Retrospectives and demos ask project stakeholders if they are receiving the information they require. If they are not, understand what they need and begin providing it.

10.2 Manage Communications

**PMBOK Definition:** The process of gathering project information for communications creation, distribution, storage retrieval and ultimate disposition in accordance with the Communications Management Plan.

**Simplified Definition:** Publishing and sending project information to stakeholders.

Project information should be available via “Push” and “Pull” mechanisms. Information like status reports should be “pushed” out to stakeholders and a regular basis (weekly). Information should also be published where people can go and see it if they are ever looking for more details.

Big Visible Charts (information radiators) are large graphs tracking project data (velocity, burn up, burn down, cumulative flow diagrams, defect stats, project budget remaining, etc.) displayed in prominent places so people cannot help but notice them. Online collaboration tools are good ways of publishing information so that people who are remote from the team can visit the site and view the project information.

The concept called “Yesterday’s Weather” refers to the idea that we use experience as an indicator for today’s likely performance. For example if a team completed 30 Story Points last week, using 30 points as a likely estimate for progress this week, probably holds more merit that the 45 points per week estimated at the beginning of the project.

10.3 Control Communications

**PMBOK Definition:** The process monitoring and controlling communications throughout the entire project life cycle to ensure the information needs of the project stakeholders are met.
Simplified Definition: Checking people have the information they need and are happy with the format, detail, frequency and delivery methods.

It is especially important to check people understand the measures and metrics they are receiving if they might be new or in a different format to those they are used to. The iterative nature of agile projects should also be communicated to all stakeholders so they understand how the project will progress and the scope of initial demonstrations.

Good metrics are simple and relevant to the goal, they should fall-out of the process and not be onerous to produce. Value based metrics such as stories developed (and tested) compared to stories remaining meet the criteria of simple and relevant.

The evolving product is the primary measure of progress. agile projects report on what has been built and tested and the true status of the project, missing functionality is what is needed to complete, directed by the business prioritization of features in the backlog. Agile projects also use alternative reporting tools such as cumulative flow diagrams, burn up/down graphs, parking lot diagrams, QA stats, etc to explain important project information.

11 Project Risk Management

Figure 16 - Project Risk Management Overview

The Risk Management processes also cover Opportunity Management. Opportunities are “good risks” that, should they occur, would bring a benefit to the project. Opportunities are to be exploited and made more likely to happen just as Risks are aimed to be avoided or mitigated. The assessment and processing of opportunities follows the same process as risks differentiated with by the goal of trying to make them happen rather than go away.

11.1 Plan Risk Management

PMBOK Definition: The process of defining how to conduct risk management activities for a project.
**Simplified Definition**: Deciding and describing how risk management will be done on this project.

The Plan Risk Management process is where the risk management process for the project is defined. For agile projects typically the team members have better technical domain knowledge than the project manager and so should be more integral in the risk management process. This increased team involvement should be documented in the Risk Management Plan.

Also agile projects are often risk driven, purposefully tackling high risk items early. Teams should plan to review the remaining risks at the end of every timebox. Also, when team members report “impediments to progress” at the daily stand up meetings these may be candidates for potential risks, so the Risk Management Plan should account for this iterative nature of review and potential source of risk identification.

### 11.2 Identify Risks

**PMBOK Definition**: The process of determining which risks may affect the project and documenting their characteristics.

**Simplified Definition**: Identifying the documenting the risks that could impact the project.

All the standard ways of identifying risks still apply to agile projects, but do not reserve this activity for the start of the project. Instead, identify remaining and new risks frequently throughout the project. At retrospectives teams are encouraged to evaluate the evolving system and ask “where are we behind in development? Where are we having the most problems? What concerns us about the remaining development?” These questions might uncover additional project risks. As mentioned in 11.1 impediments raised at daily stand-up meetings may also be candidate risks to consider.

Where a traditional project may perform a task by task risk analysis of its WBS an agile project would review the Prioritized Requirements List looking for items that might involve new untried technology or necessitate working with difficult stakeholders or have some other type of risk associated with them. In the spirit of a proactive, risk-driven approach these requirements would be candidates for moving up into earlier timeboxes to understand/tackle the risks earlier.

### 11.3 Perform Qualitative Risk Analysis

**PMBOK Definition**: The process of prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and impact.

**Simplified Definition**: Categorizing the risks via Impact and Probability (e.g. Low, Medium, High) and ranking them.

This is the process of considering the severity of risks (and opportunities) by combining the impact and probability estimates. It allows organization to prioritize effort on the most significant and also gauge the cumulative risk score for the project. For agile projects the user stories that are flagged as high risk severity are usually discussed with the Business Ambassador or Business Visionary to see if they can be tackled earlier in the project.
11.4 Perform Quantitative Risk Analysis

**PMBOK Definition:** The process of numerically analyzing the effect of identified risks on overall project objectives.

**Simplified Definition:** Applying some math to the risk scores. (E.g. $80K Impact if occurred and 50% Probability of occurrence, so $40K EMV)

As the name suggests Quantitative Risk Analysis attempts to measure risks and opportunities to create objective scores. This process works equally well for agile projects as it does traditional ones and the only differences seen relating to the iterative nature of agile projects and more frequent reprioritization.

Agile projects develop vertical slices of functionality every timebox that exercise all layers of the architecture. This means technology risk avoidance and mitigation strategies can be trialed early and feedback incorporated into the project plan. When risks are quantified these values can be compared to the expected ROI of requirements in the Prioritized Requirements List. The concept of “Where is the next best dollar spent?” refers to the decision making process used to determine if risks should be reduced or features developed in the next timebox.

11.5 Plan Risk Responses

**PMBOK Definition:** The process of developing options and actions to enhance opportunities and reduce threats to project objectives.

**Simplified Definition:** Deciding what to do to avoid, reduce, transfer or accept the risk and then adding these tasks to the project plan.

High risk stories are fast tracked for early development and risk avoidance/acceptance. So any unknown technologies or interfaces that will be required are candidates for work or proofs-of-concepts in the early iterations.

11.6 Monitor and Control Risks

**PMBOK Definition:** The process of implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness throughout the project.

**Simplified Definition:** Checking on the risks and risk management process. Asking “Do we need to do anything?” and taking action.

Agile projects review risks each timebox as part of the retrospective. Risks are checked to see if their Impact, Probability and resultant Severity values still correct and their risk management actions reprioritized in the Prioritized Requirements List accordingly.

Risk profile graphs that show the burn down of cumulative project risk can be created as information radiators to show how risk is being driven down through proactive risk management. The issues and
impediments raised at Daily Stand-up meetings are scanned to see if any may be risks or turn into risks in the future.

Feedback from the system demonstrations can also provide valuable information on monitoring risks. If the business is not happy with design decisions or request lots of changes then the risk of budget and schedule overruns will escalate. If the business likes what they see and are happy with performance and functionality then perhaps risks can reduce. Having such regular feedback based on real chunks of the system allows for meaningful risk adjustments hard to replicate on traditional projects with long phases of analysis and design.

12 Project Procurement Management

12.1 Plan Procurement Management

PMBOK Definition: The process of documenting project purchasing decisions, specifying the approach, and identifying potential sellers.

Simplified Definition: Writing up, or referencing how the purchasing process will be undertaken.

Since the Plan-Procurements process includes considering the risks involved with each make-or-buy decision, it is important to consider any additional risks an agile approach may bring. For instance an organization following an agile approach engaging with a waterfall based vendor. The stakeholder education process for ensuring all parties understand the approach and closure (“Done”) criteria is important.

Often groups claim to be doing agile (or waterfall) but in fact are not following all the steps and quality assurance processes that generally define these approaches. Don’t take things on face value, plan to investigate and assess the risks.

12.2 Conduct Procurements

PMBOK Definition: The process of obtaining seller responses, selecting a seller, and awarding a contract.

Simplified Definition: Receiving proposals, quotes, etc., selecting the preferred choice and awarding contract.
All the normal selection criteria applies here, but consider the more collaborative and iterative nature of an agile endeavour. If possible, try to locate and speak with the actual people who will be responsible for undertaking the work (not just the sales people) and get a feel for their work practices.

How might iterative development, high rates of change, and retrospective findings be dealt with? Check to make sure procurement groups understand the agile concepts being used. These include iterative development, ideas like “fit for business purpose”, flexing requirements to meet schedule and time constraints, etc.

12.3 Control Procurements

PMBOK Definition: The process of managing procurement relationships, monitoring contract performance, and making changes and corrections as needed.

Simplified Definition: Ongoing account management, any commercial relationship that goes on for a while will likely need management.

For agile projects the nature of the contractual agreement could well be quite different. The DSDM Consortium developed a free contract template that can be of use for organizations looking to incorporate elements such as “re-prioritization”, and “flexing of requirements” with “fitness for business purpose” as opposed to conformance to specification as a target objective.

Client directed work within a fixed budget or timeline helps avoid the Change Control hell that can occur with many onerous Change Request processes.

12.4 Close Procurements

PMBOK Definition: The process of completing each project procurement.

Simplified Definition: Agreeing closure, tying up loose ends, getting closure signoff and documentation.

The Close Procurements process involves verification that all the work and deliverables were acceptable. If framed as fit-for-business-purpose, to client or user satisfaction, this can be straight forward. If however, framed as conformance to specification, this can be challenging since for many projects it is difficult to keep the specification up to date with the true business requirement as uncovered by continual customer evaluation and reassessment.

13 Project Stakeholder Management
13.1 Identify Stakeholders

**PMBOK Definition:** The process of identifying all the people or organizations impacted by the project, and documenting relevant information regarding their interests, involvement, and impact on project success.

**Simplified Definition:** Finding all the people involved (including those impacted, need to be consulted, etc.) in the project.

Early in an agile project a fully developed Project Charter may not be available as an input to this process; instead a Project Vision painted in boarder strokes might be available but can be used for the same purpose of identifying stakeholders. For known roles persona modelling and developing persona descriptions can help team members consider system usage from a number of different perspectives.

13.2 Plan Stakeholder Management

**PMBOK Definition:** The process of developing appropriate management strategies to effectively engage stakeholders in project decisions and execution based on the analysis of their needs, interests, and potential impact.

**Simplified Definition:** Planning and recording how people will be engaged on the project.

Agile projects often engage people in different ways than traditional projects. Instead of an intensive, up front requirements gathering phase followed by less business interaction while the team undertakes analysis, design and construction activities, more regular review points are created to demo work done, gather new requirements, and clarify understanding. This may represent an unfamiliar engagement model for many stakeholders and so it should be explained and circulated.

Stakeholder availability is critical to the success of agile projects. If business representation is not available to answer questions and provide feedback on emerging system increments the process with stall and can fail. So the need for frequent business involvement needs to be communicated.

13.3 Manage Stakeholder Engagement

**PMBOK Definition:** The process of communicating and working with stakeholders to meet their needs/expectations, address issues as they occur, and foster appropriate stakeholder engagement in project decisions and activities

**Simplified Definition:** Making sure people are engaged and happy (or as happy as they can be)

Managing stakeholder engagement via frequent two way communications is likely the single most important role for any project manager. Agile projects offer some unique challenges as well as
advantages. Buy-in is needed for the iterative/incremental build approach. Support is also required for the ongoing business involvement, as is trust in letting teams self-organize and pull work from the prioritized backlog.

This all needs explaining and approving with sponsors and business representatives. The team also needs to know what is expected of them, undertaking a variety of roles, often without complete information and to iterate to the true requirements. Getting real buy-in (beyond superficial agreement) can be very difficult and consume a lot of time.

On the other hand, when the business understands that they are in charge of feature prioritization and sequencing, they get to control what gets worked on, and can get real time feedback on progress and function; managing their expectations and communications suddenly gets much easier. The process is transparent and easy to adapt.

When looking for feedback on an increment of work usually “No News” is not good news. Little or no feedback is more likely to mean the business has not properly evaluated an increment rather than the team aced it first time. Managing business participation involvement on an agile project can be tricky since they represent the sponsor/customer group and the PM may have no formal authority over them. However failure to get their involvement will very likely result in problems so it needs to occur.

Techniques such as asking “What would happen if the wrong system is built?” “How do we best overcome these risks?” and publicizing when involvement is required, can help secure the business involvement.

13.4 Control Stakeholder Engagement

PMBOK Definition: The process of controlling overall project stakeholder relationships and adjusting strategies and plans for engaging stakeholders.

Simplified Definition: Doing things to ensure good engagement and fix broken situations

Unlike traditional projects that might do deep-dives into long periods of analysis, design or development; agile projects have frequent checkpoints and reviews. These reviews can take the form of Demo feedback sessions, scheduled retrospectives and daily stand–up meetings. They all serve and frequent barometer checks of stakeholder engagement and satisfaction. If something is wrong it should be discovered quickly.

Finding problems early is half the battle for overcoming them, with short timeboxes, no one should go unhappy for long. Likewise their issues can be analyzed and then corrective measures trailed in subsequent timeboxes. The scientific experimentation model used for product evolution can be used to fix people issues too.
Sometime it is the person and not the process that has a problem. Agile method’s rapid iterations with lots of collaboration and evaluation quickly surface misfits and difficult characters. While dealing with these people is never easy, helping them or removing them early is always preferable.