IIBA® International Institute of Business Analysis™

The Agile Extension to the BABOK® Guide

November 2011 Draft for Public Review

The Agile Extension to the BABOK® Guide is a collaborative effort by the International Institute of Business Analysis and the Agile Alliance.

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International Institute of Business Analysis, Toronto, Ontario, Canada

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Introduction to the Agile Extension

chapter 1

1.1 What is the Agile Extension to the BABOK® Guide?

The Agile Extension to the BABOK® Guide describes business analysis areas of knowledge, their associated activities and tasks, and the skills necessary to be effective in their execution within the framework of agile software development.

The purpose of the *Agile Extension* is to act as a business analysis primer for agile software development methodologies and provide business analysis practitioners with:

- an introduction to agile practices for business analysis,
- an overview of business analysis techniques for agile practitioners,
- a set of definitions of typical working practices used by business analysts working on agile projects, and
- an overview of the new and changed roles, skills, and competencies for business analysis.

The *Agile Extension* is of value to business analysts new to agile, as well as those experienced in agile methodologies. Both groups, and all those in between, will find helpful information such as an introduction to the practice of business analysis in an agile context, the mapping of existing business analysis techniques to agile practices, and inclusion of techniques that are specific to the practice of business analysis in the agile world.

As the *Agile Extension* highlights, any member of an agile team may engage in the process of business analysis. To that end, each person on an agile team will benefit from having a set of practices and tools in which they can select from while working in any one of the different flavors of agile.

In the *Agile Extension*, we have called particular attention to the mind-set a business analysis practitioner must have in order to effectively contribute to delivery of ongoing value to stakeholders. We have also

described a number of techniques not found in the existing *BABOK ®* *Guide,* and expanded on others that needed to be described in greater detail. Many of the approaches described here, and the mind-set we describe, will prove valuable to business analysis in any methodology and environment. Business analysts should always work to ensure that requirements are aligned with organizational goals and objectives and that all stakeholders have a shared understanding of those goals, objectives, and requirements. They must also work to manage risks and validate that the requirements, if delivered, will create real value for stakeholders. Agile methodologies can help us find new ways to do these things that support continuous delivery of working software, but the responsibility to do these things is inherent to the profession of business analysis.

1.2 What does Agile Mean for Business Analysis?

Much like other methodologies, business analysis is central to the success of agile projects. Business analysis is necessary to enable a diverse group of customers to speak with a single voice. This work may be done by one of more members of an agile team.

In the agile world, software requirements are developed through continual exploration of the business need. Requirements are gathered and refined through an iterative process of planning, defining acceptance criteria, prioritizing, developing, and reviewing the results. Throughout the iterative planning and analysis of requirements, business analysis practitioners must constantly ensure that the features requested by the users align with the product's business goals, especially as the business goals evolve and change over time.

Agile business analysis is primarily about increasing the delivering of business value to the sponsors and customers of the project/product being developed. Agile business analysis aligns with the values and principles of the Agile Manifesto (www.agilemanifesto.org):

- We value individuals and interactions over processes and tools.
- Our highest priority is to satisfy our customer through early and continuous delivery of valuable software.
- Working software is the primary measure of progress.

Agile business analysis is about ensuring the right information is available to the development team in the right level of detail at the right time so they can build the right product.

The techniques of business analysis do not change dramatically in the agile environment. However, the timing and how they are used do change. Artifacts such as personas, data models, story maps, and business rules continue to be employed, but are kept as light-weight as possible. Low-fidelity artifacts, such as diagrams, maps, and lists, provide more value to an agile project than long, textual requirement descriptions or specifications. Low-fidelity artifacts are developed for the sole purpose of building the software for a specific iteration and only need to be intelligible to the team during the course of the iteration. Long-lived artifacts, on the other hand, are intended to be utilized beyond the scope of development. Long-lived artifacts may include the business case, charter, and documentation that is used to communicate what the software does and why it does it.

Agile offers the opportunity for business analysis to benefit from the frequent feedback provided by the business. By reviewing the results of successive iterations with the business stakeholders, analysts have the opportunity to

- refine the product's requirements to ensure they maintain cohesion with the business needs for the product, and
- identify and mitigate risk early in the project.

For the most part, in agile projects, high risk items are addressed in early iterations. This allows the team to mitigate issues and the possible rework required if risk items are not addressed until later in the project. Facilitating risk discovery and assisting the team in retaining focused on effective risk mitigation is central to the analyst's role on an agile team.

Iterative development processes provide opportunities for increased efficiencies in the work of business analysis. In waterfall projects, requirements are developed in their entirety prior to the development phase. As risk elements are uncovered and business needs evolve, certain requirements may change or be eliminated outright; making the work effort put into those requirements wasted. By providing just-in-time requirements, there is less rework of requirements because only the requirements required for the current release are defined in detail and developed.

1.3 What does Agile Mean for Business Analysts?

The early stages of agile's evolution frequently relied on a single individual being able to make all the decisions regarding the development of the software. As agile projects grow in size and breadth, and become adopted by larger and more diverse organizations, the role of business analyst has become a vital contributor. The analyst plays a defining role in creating a single vision for the product out of a diverse set of needs and wishes from multiple stakeholders.

The Agile Manifesto uses the term "developers" to describe the team who work on building the product. This is a cross-functional team of skilled individuals who bring a variety of expertise to bear on the process of building a software product. The skills that developers require to do this include business analysis, technical design, programming in various languages and tools, testing, UI design, technical writing, architecture and whatever else is needed to produce working software. Working software is a product which is in the production environment delivering value for our customers.

There are a variety of ways a business analyst can be engaged on an Agile project:

- In some projects a dedicated business analyst role is unnecessary. This is not to say that business analysis is not conducted during the course of the project, only that it may be done by any member, or members, of the overall development team.
- In more complex environments the analyst might be the facilitator, bringing divergent business stakeholders together and helping them speak with a single voice so the project team are not confused by contradictory and conflicting perspectives.
- The analyst might act as the product owner/customer representative where they are empowered by the business to make decisions on product features and priority.
- The analyst could act as a surrogate product owner, in situations where the business product owner not available.
- The analyst might act as the second in command to a business product owner with limited availability.
- An analyst could take the role of business coach in an environment where the business product owner is competent and committed, but has limited IT project experience and the rest of the development team are lacking in domain knowledge.

Irrespective of job titles, business analysis is about ensuring the project is able to deliver the maximum value for customers and adapting to the evolving business needs.

The techniques utilized in agile methodologies do not represent a major shift for business analysts. They continue to utilize many of the tools and techniques defined in *A Guide to the Business Analysis Body of Knowledge® (BABOK® Guide)*. What has changed is the timing and the usage of these techniques. The rigors and demands of agile projects also require business analysts to utilize and develop skills that they may not have previously exercised at a high level. In an agile environment, the success of the business analyst relies increasingly on such interpersonal skills as communication, facilitation, coaching and negotiation. These skills are certainly central to the success of an analyst in any environment; however, due to the inter-connectedness of agile teams, if these skills are not being effectively utilized, the number of requests that can be adequately understand and prioritized decreases, resulting in fewer items making it into the solution implementation for a given release.

Analysts are required to approach requirements from a 360 degree perspective. They are required to work with the business sponsor on a strategic level, and define how the proposed product or feature aligns with the organizations portfolio and strategy. They must then work with the business and project team to break this vision down into requirements that support effective and accurate estimation. In an agile project this is done for each iterative release, as opposed to the single requirements phase that exists in plan-driven methodologies. The analyst delivers just-in-time, detailed requirements to the development team so they can build only what is required for a specific iteration.

Business analysts play a key role in facilitating a shared understanding of the business need for the project with all stakeholders. It is the role of the business analyst to ensure there is a shared, agreed upon vision for the product across the entire delivery team. In the agile environment, understanding and synthesizing perspectives alongside the ability to hold successful conversations replace the need for formal, detailed, long term artifacts such as requirement documents.

One of the key elements for a business analyst working in an agile environment is the ability to use feedback to drive change. It is incumbent on the analyst to constantly review requirements with the

business stakeholders and ensure that any shifts in business needs are accurately reflected in future iterations of the product.

1.4 What makes a Business Analyst Successful on an Agile Team?

The very nature of agile methodologies requires all team members to be operating at a very high level of competency, skill, and effectiveness. This is especially true for business analysts. To be productive on an agile team, business analysts have to be on top of their game. On successful agile teams, the business analyst is an integral component of the delivery team. They are active participants, if not the actual facilitators of planning, analyzing, testing, and demonstrating activities.

The business analyst plays a central role in ensuring that the product roadmap clearly defines the product's strategic alignment to the business need. The analyst holds shared responsibility in defining the strategic criteria for completion of the project. This requires the analyst to exercise an extremely high level of skill in communication, facilitation, and negotiation. They require the ability to listen to and understand feedback from all stakeholders and use this feedback to drive the changes required to the requirements and priorities of the project.

Business Analysis in Agile Life-cycles

chapter 2

Agile is a term used to describe a number of iterative development methodologies that have developed over time. Common traits amongst agile methodologies include frequent product releases, high levels of real-time collaboration within the project team and with customers, reduced time intensive documentation, and regular, recurring assessments of value and risk to allow for change. It is important to note that though all agile methodologies are iterative, not all iterative methodologies are agile. Agile methodologies are a subset of iterative software development. A few examples of agile methodologies include Scrum, Extreme Programming (XP), Kanban, Crystal, Dynamic Systems Development Method (DSDM), Feature Driven Development, and Adaptive Software Development, to name a few. Each methodology has its own unique set of characteristics that allow teams to select a certain methodology that best suits the project at hand. It is common for project teams to blend characteristics from more than one agile methodology based on unique team composition, skills, experience, operating environment, and other factors.

In order to effectively manage, elicit, analyze, document, communicate, and validate requirements, business analysts must be able to understand the characteristics of the specific agile methodology they are working with. While we describe a few of the predominant agile methodologies in this *Agile Extension*, before starting an agile project it is important to spend some time researching the various methodologies and what is different about each.

2.1 Scrum

Scrum is one of the most predominant agile process frameworks in use today. In the Scrum framework, work on a project is performed in a series of iterations, called sprints, which generally last from 2 to 4 weeks. At the end of each sprint, the team must produce working software of a high enough quality that it could potentially be shipped or otherwise delivered to a customer. Within the Scrum framework

there are four formal meetings, known as ceremonies: sprint planning, the daily scrum, sprint reviews, and sprint retrospectives.

2.1.1 Backlogs

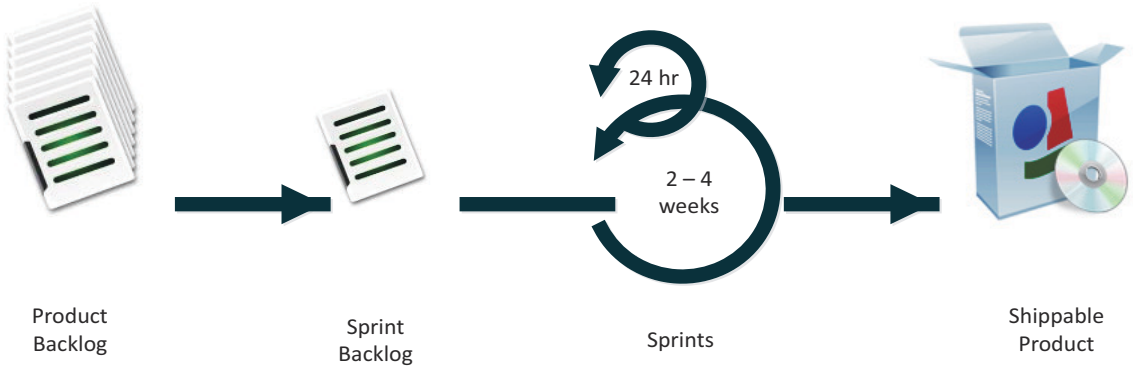
In the Scrum framework a product backlog lists all of the requirements for a solution, including both customer and technical requirements. The backlog serves as a wish list for the product. As the team collaborates with the customer for the project, the backlog is populated to keep track of each request. This backlog is constantly prioritized, such that at any given time it can be used to identify high priority requests for the solution being developed. At the beginning of each sprint, in the sprint planning ceremony, the team reviews the prioritized product backlog and identifies the highest-priority items that can be completed within the sprint period. The selected items are then placed on a sprint backlog. The sprint backlog outlines the sprint's goals and the set of tasks required to achieve those goals.

2.1.2 Sprint Planning and Execution

During the sprint, the team refines their understanding of the selected items and works to ensure that they are completed within defined time limit of the sprint. As sprints are executed, the team meets once per day (referred to as the daily scrum meeting) to briefly discuss what they are working on and identify any blockers that may prevent them from completing their work. At the end of the sprint, the team delivers working and tested software that fully implements the selected backlog items. The sprint is then closed off with a customer, or sprint, review and a retrospective. During the customer review, a demonstration of the software is provided and the customer provides feedback. During the retrospective, the team meets and collaborates to find ways to improve both the product and their processes used to deliver the product. Both the customer review and the retrospective may identify addition items that feed into the product backlog. These items are then used to re prioritize the product backlog for the next sprint planning session.

The following illustration demonstrates a typical scrum life-cycle.

FIGURE 2.1 Scrum Life-cycle



2.1.3 Roles and Responsibilities

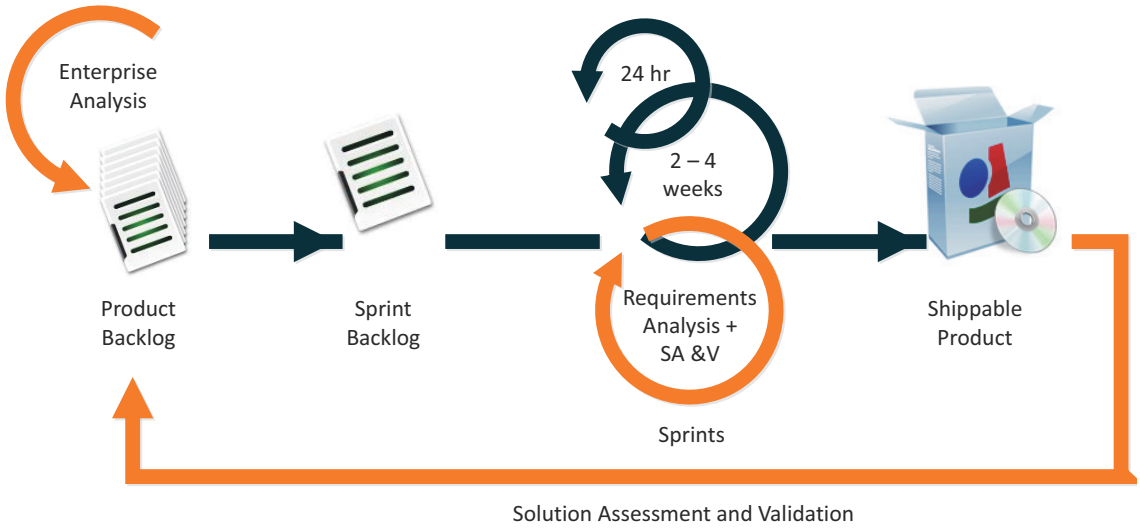
In Scrum, there are three roles:

- Product Owner. The product owner is responsible for maintaining the list of work to be performed and performing most business analysis activities. It is important to note that the product owner is not necessarily a business analyst, rather the individual on the team most responsible for what has been considered traditional business analysis activities.
- Scrum Master. The scrum master is responsible for managing the Scrum process and managing any blockers that may prevent the team from accomplishing work.
- The Team. The team is responsible for developing and delivering the product.

2.1.4 Business Analysis in Scrum

Scrum does not address business analysis activities in detail and many of these activities occur as implicit steps in the scrum framework. The following illustration shows the typical scrum life cycle with business analysis techniques superimposed.

FIGURE 2.2 Business Analysis in Scrum



The building and maintenance of the product backlog is a significant business analysis activity that falls explicitly outside the scope of the scrum framework (although other methodologies have addressed this). The backlog is built through a combination of enterprise analysis work (identifying gaps and new capabilities required to accomplish organizational goals, and defining their value to the organization) and solution assessment and validation (identifying ways in which the existing solution can be enhanced to better deliver business value).

Within a sprint, business analysis activities focus on defining the requirements for the backlog items being worked on and the acceptance criteria for those items. This method is frequently referred to as just-in-time requirements gathering; developing only what is required for the current sprint and only done to the level of detail required to enable the team to build the product and acceptance criteria. In traditional methods, requirements documentation is frequently used as the documentation for the solution. In Scrum, as in most other agile methods, documentation is created after the product is built to capture the team's knowledge, not define an expected or desired outcome. Most frequently the backlog documentation created during each sprint serves as sufficient documentation for the project.

2.1.5 Techniques

Backlog Management: Backlog management is the primary method of handling both requirements prioritization and change management in most agile methods. An alternative to backlog management is a kanban board (see "The Kanban Board" on page 15).

Retrospectives: Retrospectives are a common practice used by agile teams seeking to improve their ways of working. Business analysts should look for feedback on the requirements they provide to the team and how and when those requirements are provided in order to find ways to improve their processes.

2.2 Extreme Programming (XP)

Extreme Programing (XP) began being used by development teams in the mid-1990s. Like other agile methodologies, XP is iterative in nature and provides small releases at the end of each iteration. XP's primary focus is on the technical aspects of agile software development and is based on 12 practices in four categories:

TABLE 2.1 Extreme Programming Categories

Fine Scale Feedback	Continuous Process	Shared Understanding	Programmer Welfare
• Pair Programming • Planning Game • Test Driven Development • Whole Team Testing	• Continuous Integration • Re-factoring • Small Releases • Coding Standards	• Collective Code Ownership • Simple Design • System Metaphor	• Sustainable Pace

2.2.1 User Stories

XP uses the concept of user stories as a central mechanism to define requirements. User stories are similar to the concept of the product backlog found in Scrum. They are created by users of the system to define features and functionality to be included in the solution. User stories do not contain great detail and are used to

- prioritize work into iterations,
- identify risk associated with a request,
- estimate the effort required to deliver the request, and

- establish a conversation between the team and the product owner around the subject of the real business need, in order to create a common understanding of what has to be done

2.2.2 Release Planning and Execution

XP relies on three levels of planning:

- release planning,
- iteration planning, and
- and daily planning.

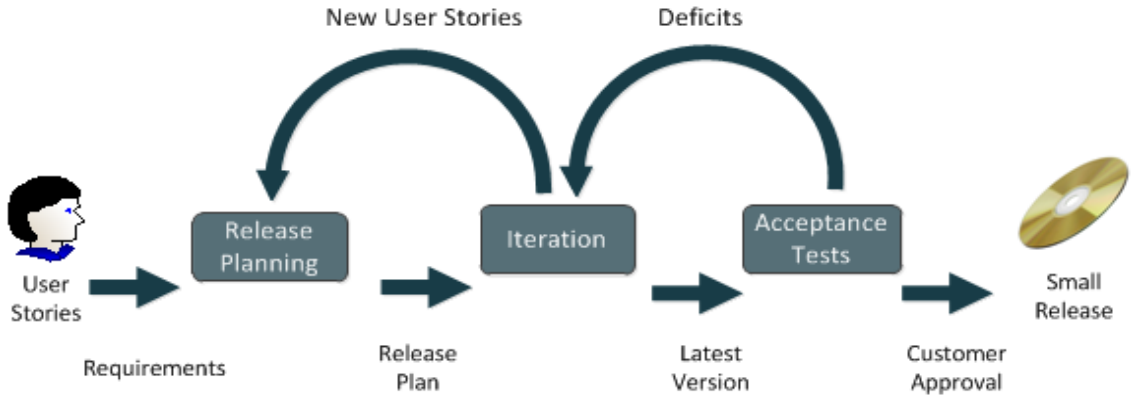
A release plan identifies the next set of usable feature that could make up a release. There are often several iterations worth of work because the product is release-ready. Iteration planning serves to plan each incremental iteration that will ultimately result in a releasable product. Finally, in daily planning the team plans out each day's activities to ensure the team is on schedule and identify risks that may have arisen.

In XP, release plans are used to track and describe what features or functionality is to be delivered in each product release. The release plan is similar to the concept of the sprint backlog in the scrum framework. Iteration planning meetings are then used as a vehicle for team collaboration in planning the coming iteration. As the team works to schedule the release, the user stories are ordered based on the most important features to the customer, ensuring that the most important features are always delivered first. On a just-in-time basis, stories are decomposed into their granular functional requirements in a technique known as story decomposition. Then, through story elaboration, the team identifies the detailed design and acceptance criteria for the story.

While an iteration is underway, XP is also similar to Scrum in that it utilizes daily meetings as the key communication vehicle for the team, called the daily stand-up. This daily stand-up meeting is used to facilitate daily planning activities and review progress since the prior day's stand-up. In practice, teams employing the XP methodology frequently combine such elements as cadence, roles, and ceremonies (such as sprint planning and sprint reviews) from the scrum framework.

The following diagram provides an overview of the XP model.

FIGURE 2.3 Extreme Programming Model



2.2.3 Roles and Responsibilities

In Extreme Programing there are three key roles.

- Customer. The customer creates and prioritizes the user stories and preforms risk analysis.
- Developer. The developer communicates directly with the customer and builds only what is necessary to deliver on each iteration.
- Tracker. The tracker keeps track of the schedule and the metrics.

2.2.4 Business Analysis in XP

While XP does focus on value driven development, it does not explicitly address business analysis activities. XP relies on the fundamental assumption that the customer role is filled by a small number of people who know what the most valuable features will be. When XP is applied at a larger scale, or with customers who do not have a clear vision of the incremental value of features, a business analyst adds significant value in facilitating and negotiating with stakeholders to reach a shared understanding of what the most valuable deliverables will be. A business analyst can also contribute by facilitating story mapping, a technique in which a graphical representation of stories along a time continuum is created. The story map is used to identify risks and dependencies amongst and between

the user stories to optimize the value delivered by each incremental story implementation.

In traditional XP, the user stories are created and managed directly by the user. This can lead to unfiltered requirements that are at risk for constraining a solution without consideration for root cause or applicability to other customer groups. Business analysis skills can be used to ensure underlying problems are being addressed in a way that works for most, if not all, of the stakeholders on the project, as well as ensure thorough acceptance criteria have been collected for each user story. On projects where there is a dedicated business analyst, this person may act as a broker or filter for the user stories that are generated by the customer, often performing the story decomposition and elaboration activities.

2.2.5 Techniques

User Stories: User stories identify which roles the story provides value and therefore identify the stakeholders who can elaborate on that value.

Story Mapping: Story maps show relationships between user stories and larger activities that the user must be able to accomplish.

Story Decomposition: Epics, features, or minimally marketable features (MMF) tie groups of user stories together into larger packages that can be discussed with stakeholders.

Story Elaboration: Defines the detailed design and acceptance criteria for a user story on a just-in-time / just-enough basis.

2.3 Kanban

Scrum and XP are frameworks that define sets of roles, ceremonies, and practices for produce delivery. In the context of software development, Kanban is a methodology for managing the flow of work to allow for evolutionary change. With roots in the Theory of Constraints and lean product development, Kanban has four key principles:

- visualize the work,
- limit work in process,
- focus on flow, and
- continually improve.

Unlike the other agile frameworks that we have discussed, Kanban development does not require fixed iterations. Work moves through the development process as a continuous flow of activity. A key feature of Kanban is to limit the amount of work underway at any one time. In this methodology the team only works on a fixed number of items at any one time and work may only begin on a new item when it is required to maintain flow downstream and after the previous item has been completed.

2.3.1 Queues

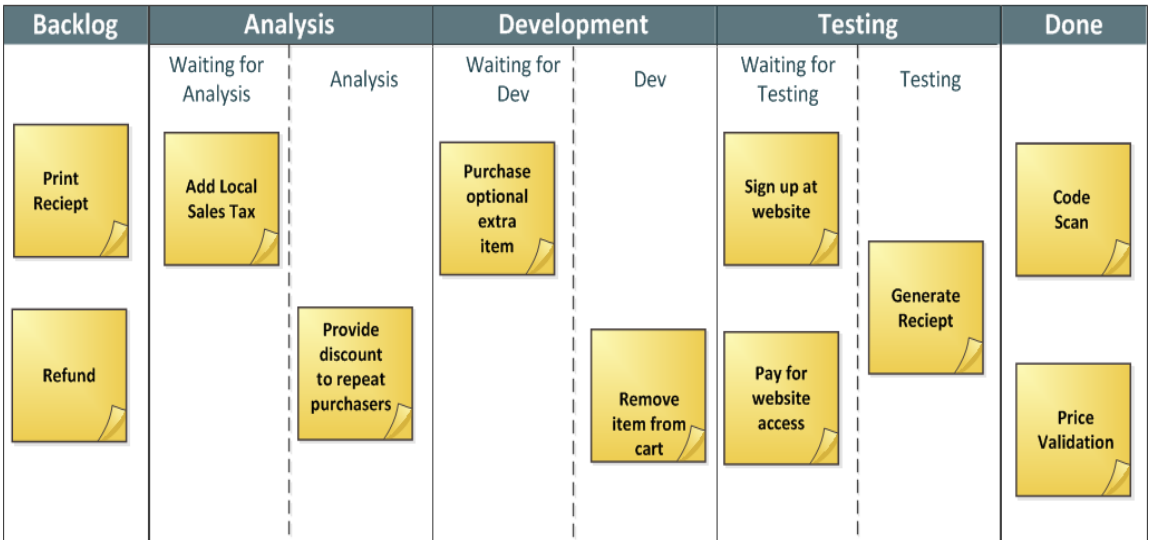
Kanban relies on the use of work queues to manage the flow of activities that must take place to deliver a working product. The format and content for work queues is less prescriptive in this methodology than others we have looked at, only noting that it should describe the work to be completed ordered in relative priority to deliver the product. For this reason, the Kanban methodology is often combined with methods such as Scrum, where the backlog is used as the implementation for the queue. When a new feature request is received, it is assessed for relative priority and urgency and then placed into the queue in its relative position, maintaining the order by priority.

Analogous to the Scrum technique of grooming the product backlog, Kanban describes a technique called grooming the queue. Grooming the queue is a periodic exercise where the project team scopes the features waiting in the queue to see if they are too large or out of scope for the upcoming release. For items that are too large to be completed before a planned release date, the project team will break the item down (decomposes it) into smaller chunks of work, deciding which will be included in the release and which will not. The team then reassesses the priority of the items in the queue and reorders them as needed to maintain a continuous, prioritized flow of work.

2.3.2 The Kanban Board

The term kanban actually translates to signboard or billboard, and it refers to the kanban board used by teams to manage their work. In keeping with the principle to visualize the work, the kanban board is a visual depiction of the flow of work through the software development process. The following illustration shows an example of a typical kanban board.

FIGURE 2.4 **Typical Kanban Board**



The goal of a Kanban system is to allow workloads to be driven by demand, or priority, to create a continuous flow of work that avoids bottlenecks at any one point in the process. This method limits the amount of work in progress by working on one thing at a time until it is completed before starting the next task. When a bottleneck occurs, it is expected that the entire team will come together to remove the blockage to help keep work moving through the flow. The kanban board enables the team to manage the flow of work, identifying potential blockages and ensuring that the next item in the queue is always ready and waiting to be worked on. Following this method also exposes opportunities for process improvement by making it possible to easily see where delays are occurring in the development process.

2.3.3 Roles & Responsibilities

Kanban does not include defined, mandated roles or business analysis methods. Like any agile method, it does strive to break down work such that individual work items can be implemented in a relatively short period of time. The Kanban method also attempts to bring the project team together by increasing communication and collaboration, enabling the team to work together as a collective and cohesive unit.

2.3.4 Business Analysis in Kanban

Business analysis, like all activities in the Kanban method, occurs in a constant and continuous flow through the life of a project. In order to maintain a prioritized queue of work, business analysis techniques are

used to elicit new product features. Requirements analysis methods are then used to prioritize the requirements based on business value, while also continuously using standard business analysis techniques for scoping the product and managing the queue of requirements.

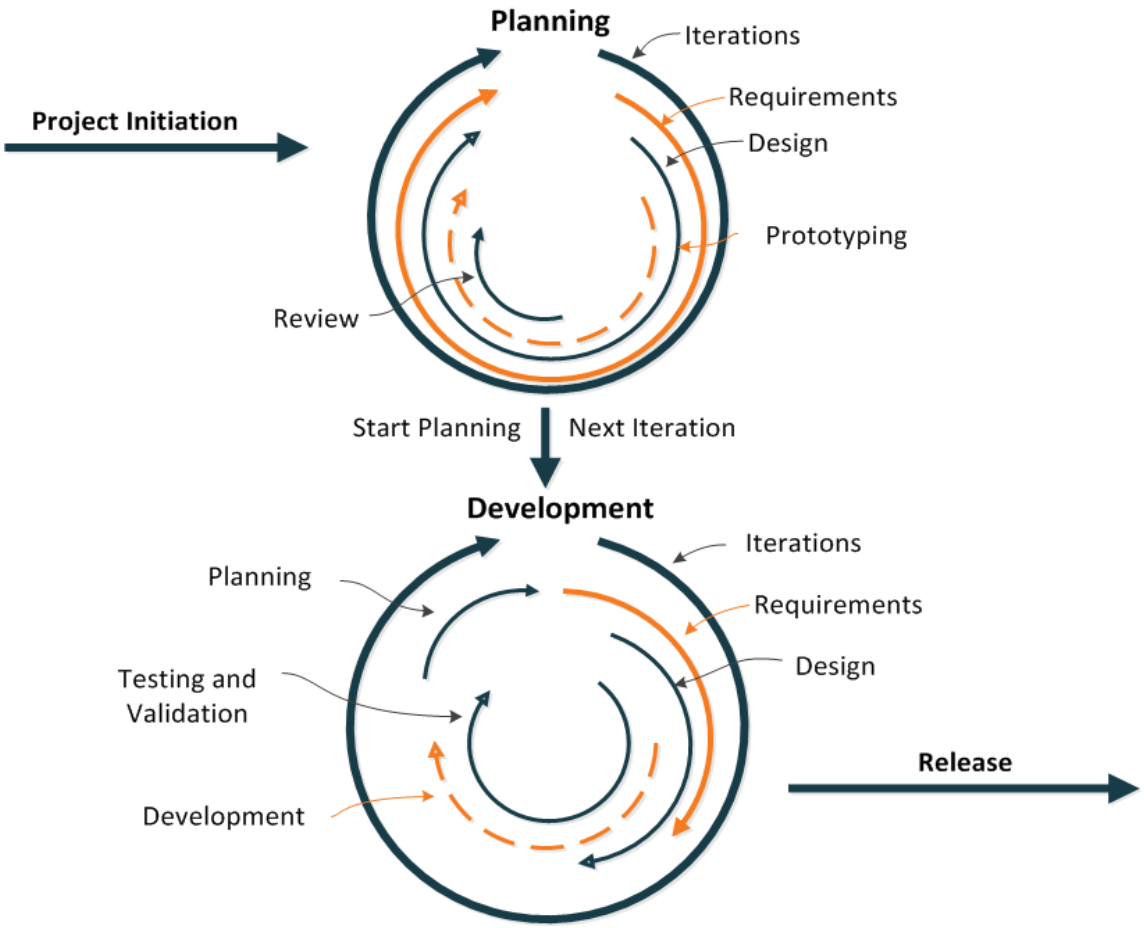
When planning and managing tasks in the Kanban method, Service Level Agreements (or SLA's) are used to maintain the estimates for how long a feature or chunk of work will take to be completed. In Kanban, this estimate includes the planning and analysis activities that take place before software development begins. This method forces a business analyst to focus on planning and monitoring activities, enabling constant revision and refinement of estimates as each new request enters the analysis portion of the cycle.

In a Kanban project, the business analyst only begins to define requirements for a new work item when the queue steps forward. At that point the development team begins to work on one of the completed requirements, while the business analysis begins collecting requirements for the next item in the queue. A particularly efficient business analyst may be able to define requirements for a system far faster than those requirements can be developed and tested, while a less efficient business analyst will not. By openly and visibly managing the work of the project team, these inefficiencies will surface as process improvement opportunities. This will help to mitigate the risk related to the timing of business analysis activities, enabling the business analyst to manage the risk early in the process.

2.4 Comparison of Agile Life-cycles

Despite possessing unique characteristics and differentiators, agile methodologies and frameworks generally share some common traits. These common characteristics are illustrated below in a depiction of a generic agile life cycle.

FIGURE 2.5 Generic Agile Life-cycle



Regardless of the agile methodology used, successful agile projects follow the consistent planning rhythm or cadence of Strategy, Release, Iteration, Daily, and Continuous (see “Agile Levels of Planning” on page 20). This cadence is combined with the notion of frequent and flexible release schedules that allow for high customer involvement with rapid feedback and frequent product assessments.

The following table provides a summary comparison of two major agile frameworks that have been outlined in this chapter, Scrum and XP.

TABLE 2.2 Comparison of Agile Life-cycles

Characteristic	Scrum	XP
Types of Projects	All	<20 People; Non-Life-Critical Functions
Prioritization Values	Customer-Driven	Customer-Driven
Level of Documentation	Anything of value	As little as possible
• Typical Management Docs	Burndown Chart	Task list
• Typical Requirements Docs	Product Backlog, Sprint Backlog	Feature Cards
• Typical Architecture Docs		Architecture ModelClass-Responsibility-Collaboration (CRC) Cards
• Typical Test Docs		
Models/Architecture	High-Level Models Prototyping	SketchesClass-Responsibility-Collaboration (CRC) Cards

The Kanban method, often used to supplement frameworks such as Scrum or XP, describes its own rhythm or cadence of work progression. Kanban fails to prescribe roles and responsibilities for project team members or to recommend specific documentation needs for the process. This makes Kanban a common contender for blended methodologies. It is important to note that it is very common for project teams to blend characteristics of two or more agile frameworks and methodologies to create a best fit for their team and organizational context.

2.4.1 Selecting an Agile Methodology or Framework

With the variety of agile methodologies available, the question arises, how do teams choose which methodology best suites their project? The following questions are examples of high-level questions that can help guide this choice.

- From how many stakeholders do you need to elicit requirements?
- Where are these stakeholders located? Will they be at the same site as the project team?
- Will your software application be integrated with other systems? If so, how many and how soon?
- Are there any cultural or organizational constraints that will limit the number or frequency of product releases the team can make?

The answers to these fundamental questions will help to guide the choice of agile methodology that should be used. In turn, the chosen flavor of agile will drive the management of stakeholders, the tempo of work, the duration of work, documentation, analysis, and other aspects of the business analyst's work on a project.

While we provide some insight into several methods within this chapter, there are many agile methodologies and frameworks available to choose from. We strongly recommend that you research these agile frameworks and many others to help you understand how they are different and the pros and cons of each implementation. This will help your team to best understand which will fit project team needs most appropriately.

2.5 Agile Levels of Planning

Due to the fluid, dynamic nature of agile methodologies, it is important to understand when and how to apply different planning techniques and the appropriate level of detail for each level of planning. It is important to note that many of the techniques used in an agile environment are similar to traditional techniques, what is different is how and when analysts apply these techniques. Just-in-time and just enough requirements that are consistently validated by the business are central to the analyst's role in agile methodologies.

When undergoing planning exercises in the agile world it is helpful to consider how the analyst's role differs from traditional development methodologies. In agile the role of the analyst is central to the value of the project. The analyst holds a key role in maximizing value by facilitating the interactions with all the project stakeholders. Exceptionally high communication, facilitation, and negotiation skills are an import set of tools for analysts in the agile environment.

2.5.1 Agile Levels of Planning

As mentioned in the previous section, *Comparison of Agile Life-cycles* (see “Comparison of Agile Life-cycles” on page 18), successful agile projects follow a consistent planning rhythm or cadence of strategy, release, iteration, daily, and continuous. Through the cadence, the requirements for the project are progressively elaborated to an appropriate level of detail. At each step stable concepts are captured, context is captured, and learning opportunities are identified. One of the keys to agile is to perform a sufficient level of analysis at each

planning level. Too much analysis up front can result in creation of documents that are subject to change, require the business user to explain their needs multiple times, and may not be necessary to achieve the goals of the project. Too little analysis up front can result in irresponsible commitments, rework, and a lack of focus on customer value.

2.5.1.1 Strategy

Projects and product development efforts start with a vision of the business direction or need. The vision includes the what, why, and success criteria for the effort. The vision is often associated with a roadmap. The roadmap includes the high-level scope and may include an initial architecture. In addition to activities such as establishing a vision, scope, and roadmap, the strategy work on an agile project includes the initial creation of a feature request list. For example, in Scrum this entails seeding the initial requests in a product backlog or, in XP, user stores. This is analogous to pre-project elicitation of basic stakeholder requirements that are used to facilitate discussions on scoping and phasing in non-agile projects.

At a strategic level, the person who owns the product or is leading the initiative helps the delivery team to

- understand the context of the solution needed,
- identify the steps to realize the vision,
- prioritize the work,
- assess the technical impact on the roadmap, and
- facilitate obtaining estimates for the releases.

Much like any project, strong enterprise business analysis skills are required to effectively plan a strategy for an agile project. In some ways, you could argue that these skills become more important in agile methodologies. This is because without direction based on business value and a clearly defined scope and audience, agile projects are at risk for delivering incremental features that never come together to create end-to-end value for any one customer group. Without a roadmap and success criteria for the product, agile projects could conceivably go on forever, possibly wasting time, money, and other resources in the process.

2.5.1.2 Release

Release planning is the phase where the person who owns the product groups activities and allocates them to teams. Teams work on defining enough detail to responsibly commit to some range of scope for the release. Teams should release when the benefits of delivery outweigh the costs associated with release. The release is defined by a date, strategic theme, and planned feature set. Release dates can be linked to events, like conferences or compliance requirement. In the release planning phase the scope is fixed and the prioritized list of feature requests, such as a product backlog, is used as the basis for planning.

2.5.1.3 Iteration

Many agile teams work in fixed time windows called sprints or iterations. An iteration planning event is held at the start of each iteration. Prior to that iteration planning meeting, the items in the feature request list that are being considered for the iteration need to be sufficiently understood, thus enabling the team to responsibly make a commitment. In Scrum this is known as grooming the backlog. In continuous flow models, like Kanban, the feature request list is still groomed before it is committed, but the planning cadence is based on demand, not on a defined time period. On some teams, the customer or owner of the product collaborates with the delivery team to groom the request list prior to iteration planning, while other teams use low-fidelity specifications developed during specification workshops held prior to iteration planning. This work is comprised of requirement communication and analysis, with additional elicitation and documentation as needed.

In iteration planning, the work that will be performed in the sprint is identified, estimated, reviewed, and committed to. The delivery team meets with the customer or the owner of the product to understand the requirements and acceptance criteria, and to gain clarity on specifications. This is analogous to the work a traditional business analyst performs to communication requirements to stakeholders. During iteration planning, the delivery team may also estimate the effort required to deliver the desired features. This estimation is used when committing to the iteration. At the end of iteration planning, the delivery team commits to delivering an increment of working, tested, deployable code.

After an iteration has been completed, an iteration review or product demonstration is held. The product demonstration meeting is similar

to light-weight user acceptance testing and is generally limited to a maximum of 4 hours.

During the product demonstration

- the delivery team demonstrates how the code that was developed meets the acceptance criteria,
- the owner of the product determines which items on the feature list have been completed in the iteration,
- any new requests that arise from the customer as a result of viewing the latest product are added, and
- the owner of the product and delivery team review the state of the business, the market, and the technology, and re-prioritize the feature request list for the next iteration.

After the iteration review meeting, the process starts up again. While a working product is the expected output of each iteration, many agile teams will wait to release a product until several iterations worth of work have been completed. The team must determine the appropriate trade-off point between the cost to deliver the latest product and the amount of new or improved functionality that will be delivered to the customer base. Iterations proceed until enough features have been done to complete or release a product.

2.5.1.4 Daily

Agile teams perform daily team meetings to coordinate the work. The daily meeting is usually a fifteen minute meeting designed to clarify the state of the work.

During the daily meeting the team

- gets a global snapshot of the project,
- discovers any new dependencies,
- addresses any personal needs of committed individuals, and
- adjusts the work plan to meet the needs of the day and ensure the team can deliver on the Iteration commitment.

Frequently the dialogue held during these meeting uncovers items that lack of clarity or require further analysis. The team then identifies a plan for dealing with these impediments to the project. This often entails assigning someone to do further business analysis work for elicitation and analysis on the impacted requirements.

2.5.1.5 Continuous

There are many dynamic activities, efforts, and challenges that arise during the planning phases of agile projects. Here are some guiding principles that those conducting business analyst may find helpful, not only during the planning phase, but through the agile project's life cycle.

- Start with value and keep the team true to value. It is vital that the individual holding the business analysis role is paying close attention to the project's business value.
- Low-fidelity artifacts serve as an enabler of business value by creating context and generating shared understanding. However, they do not replace, or even take precedence over effective collaboration and conversation.
- Business analysis is about facilitating discussion and understanding. Business analysts typically do not possess the depth of understanding about the business as does the business sponsor, or as much about technology as the technology team.
- Operate in the best interest of the business over time. Responsibly balance value and capacity.
- Identify and communicate competing concerns and gaps in understanding between the business and technology. Ensure that common understanding is reached.
- Resources are limited and valuable. Always assist in maximizing effort over time.
- Assist the team to action. Effectively communicate what is required when taking the next steps. Ensure that feedback is clearly understood and acted on by the team.
- Deliver incrementally and iteratively. Do the smallest, simplest thing that could possibly work. Iterate to reach minimal value. Progressively elaborate in small pieces while testing assumptions and articulating clear acceptance criteria.
- Produce the smallest amount of documentation that meets the needs of the team and deliver it at the latest responsible moment.

Knowledge Areas

chapter 3

The following areas of knowledge represent a selection of popular agile business analysis techniques identified through the development of the *Agile BABOK® Extension*. Many of the business analysis techniques described in the *BABOK® Guide* continue to be usable in an agile context, as well, and other techniques not listed here may prove to be useful and applicable in a particular situation.

3.1 Mapping Techniques to Knowledge Areas

3.1.1 Business Analysis Planning and Monitoring

Business Analysis Planning and Monitoring (Chapter 2 of the *BABOK® Guide*) describes the work required for a business analyst to determine the activities that will be required to perform business analysis through the life cycle of a project. In agile development, most planning is deferred until work on an activity is ready to begin, but some degree of up-front planning is usually required.

.1 Plan Business Analysis Approach (2.1)

Agile methodologies fall into the general category of change-driven approaches, as described in the *BABOK® Guide*. Some business analysis work will generally be performed up front to define a vision for the project, but detailed analysis will be performed as-needed. If it is unclear what problems the software is supposed to solve, or there are several stakeholder groups with conflicting interests, it may be necessary to do business analysis work prior to the beginning of a project to reach agreement on the vision for the product.

Techniques

Backlog Management: Backlog management is the primary method of handling both requirements prioritization and change management in

most agile methods. An alternative to backlog management is a kanban board (described under "Kanban" on page 11).

Planning Workshop: Business analysts participate in planning workshops to determine the business analysis effort and activities to support a team objective.

Real Options: Real option analysis may help determine when business analysis needs to be conducted to investigate a particular business issue.

Retrospectives: The feedback from prior retrospectives should be considered when selecting the approach.

.2 Conduct Stakeholder Analysis (2.2)

Stakeholders may be challenged by the rapid, iterative development found in an agile project and the need to be on call whenever information is needed by the team. What is the impact of the agile cadence on the stakeholder? How does progressive elaboration impact the expectations of the stakeholder? Can the stakeholder participate in updating the processes, interactions, and products specifications during the course of the project?

Techniques

Collaborative Games: Many collaborative games can be used to understand the perspectives of various stakeholder groups.

Personas: Personas can help the analyst or development team by enabling them to better visualize the needs of groups who do not have a representative present.

.3 Plan Business Analysis Activities (2.3)

Business analysis activities are planned as needed, usually at the start of each iteration or when a new work item is ready for analysis. There is less of a focus on formal documentation (although it still can be required to meet statutory or regulatory requirements, or to capture knowledge developed during the analysis and development process) and more focus on progressive elaboration of documentation throughout the life of the project. Also, much of the elaboration is replaced by interactions and ceremony so these outcomes need to be accomplished with activities addressed in the communication plan.

Techniques

Planning Workshop: Decisions regarding business analysis activities will usually be made during a planning workshop.

.4 Plan Business Analysis Communication (2.4)

During development, formal communication of requirements is generally replaced with ad-hoc informal discussions and modelling. Some deliverables are replaced by specific interactions or ceremonies. By definition, these interactions and ceremonies require real-time participation by the business analyst. Formal documentation may be developed following development of the software to ensure knowledge retention by the organization or to meet regulatory requirements.

Techniques

Personas: These may prove useful in assessing the likely communication needs of specific stakeholder groups.

.5 Plan Requirements Management Process (2.5)

In agile methods, requirements management is focused on ensuring that the intake of new work by the team matches the priorities of the stakeholders and/or sponsor, and delivers value to the business. Agile approaches stress the importance of welcoming changing requirements. This means that the ordering of work items that are ready for development may be changed at any time.

Techniques

Backlog Management: Most agile methods use backlog management to determine which requirements are ready to be worked on by the development team.

.6 Manage Business Analysis Performance (2.6)

This activity will be performed on an ongoing basis as the business analyst learns to work effectively with stakeholders and the development team. As everyone involved better understands how to work together to deliver value, the business analysis process, methods, or techniques in use may need to change. Effective business analysis

performance will result in limited rework of the requirements documentation, effective prioritization and scoping of requirements, and clear communication of need to the development team.

Techniques

Retrospectives: Retrospectives are a common practice used by agile teams seeking to improve their ways of working. Business analysts should look for feedback on the requirements they provide to the team and how and when those requirements are provided in order to find ways to improve their processes.

Value Stream Mapping: Value stream mapping can be useful in assessing how business analysis activities are contributing to the delivery of value to the customer and identifying activities that may not be adding value.

3.1.2 Elicitation

Elicitation (Chapter 3 of the *BABOK® Guide*) describes how business analysts work with stakeholders to identify and understand their needs and concerns, and understand the environment in which they work. Effective elicitation ensures that the stakeholders' actual underlying needs are understood, rather than stated or superficial desires. Elicitation is ongoing throughout the project and performed in conjunction with analysis activities (as compared to traditional approaches, where it is possible to perform elicitation as a distinct activity or phase).

.1 Prepare for Elicitation (3.1)

Preparing for elicitation changes during the life of the project. Early on, it is done by the business analyst to coordinate supporting materials and schedule resources to define the high-level requirements. As the project progresses, work is coordinated by prioritization of the backlog. Stakeholders work directly with the developers, when possible, to elaborate requirements. Where this is not possible, the business analyst must act as a proxy. This task requires the scheduling of resources and the coordination of inputs to align with the progressive elaboration of the backlog.

Techniques

Personas: Personas may provide insight into the particular needs of a stakeholder or the techniques that will be most effective in understanding those needs.

User Story: A user story will identify the role for whom the story provides value (and therefore identify the stakeholders who can elaborate on that value).

.2 Conduct Elicitation Activity (3.2)

Elicitation activities are conducted on a frequent basis throughout the project, possibly even daily. Early on, elicitation is performed to define high-level requirements or a vision for the product. As the project progress, stakeholders interact with the development team directly during iteration planning and development. The intent of all elicitation activities is to generate just enough detail to ensure that the work at hand is performed correctly.

Techniques

Behaviour Driven Development: Stakeholders may find it easier to articulate their needs by providing examples rather than through abstract models.

Collaborative Games: Collaborative games encourage participants in an elicitation activity to collaborate in building a joint understanding of a problem or a solution.

Note: As mentioned above, analysis is usually performed during elicitation sessions. Most of the techniques found in the *Agile Extension*, as well as many of the techniques in the *BABOK® Guide*, are suitable for this purpose.

.3 Document Elicitation Results (3.3)

A major value of documentation is that it can be used for long-term knowledge retention. Agile methods aim to minimize the time between the development of requirements and their implementation in software, reducing the overall value of that documentation to the team. Records of elicitation activities should be kept to ensure that key decisions can be understood at a later date, or to ensure that regulatory or governance requirements are met.

Techniques

Lightweight Documentation: See this section for guidelines on developing documentation. In most cases, there will not be separate documentation of the elicitation and analysis work.

.4 Confirm Elicitation Results (3.4)

This will be performed by the team during iteration planning, during the development iteration, and at customer acceptance. The customer may change their mind about some specific element of a story after seeing the result. This feedback becomes an input into the conduct elicitation activity.

Techniques

Acceptance and Evaluation Criteria Definition: Elicitation outcomes will frequently be captured in the form of acceptance criteria that will be used by the team to verify that the software meets stakeholder needs.

3.1.3 Requirements Management and Communication

Requirements Management and Communication (Chapter 4 of the *BABOK® Guide*) describes how business analysts manage conflicts, issues, and changes in order to ensure that stakeholders and the project team remain in agreement on the solution scope, how requirements are communicated to stakeholders, and how knowledge gained by the business analyst is maintained for future use.

.1 Manage Solution Scope and Requirements (4.1)

As agile projects unfold, the scope is defined with increasing specificity. The specific details of the scope can be found in the solution backlog. Based on the level of elaboration, the solution backlog itself may vary in its own level of detail. It should also be considered that the sponsor may decide to terminate the project should they decide that further efforts will not provide an acceptable return of business value.

Techniques

Backlog Management: Most agile teams use the product backlog to manage both solution scope and requirements.

.2 Manage Requirements Traceability (4.2)

On agile projects, everything is connected back to the strategic themes, epics, and stories that are used to define the project. This is maintained by the product owner or the business analyst.

Techniques

Story Mapping: Story maps show relationships between user stories and larger activities that the user must be able to accomplish.

.3 Maintain Requirements for Reuse (4.3)

In mature agile organizations, this happens much the same way as it does in traditional efforts. The difference is in the way that requirements are documented at the end of the project. Often, the source code itself is written to be self-documenting.

Techniques

Acceptance and Evaluation Criteria Definition: The acceptance tests and criteria developed during the project are maintained to validate any future changes to the software.

.4 Prepare Requirements Package (4.4)

This is handled through scenarios, use cases, acceptance tests, and mock-ups and models associated with the themes, epics, and stories used to define the project. This is an ongoing activity through the life of the development of the solution. The specific techniques used will depend upon the approach chosen at the beginning of the project, and will change based on the emergent understanding of what works best in the context of the project.

Story Decomposition: Epics, features, or minimally marketable features (MMF) tie groups of user stories together into larger packages that can be discussed with stakeholders.

.5 Communicate Requirements (4.5)

Requirements are communicated to developers in release planning meetings where themes and stories are reviewed and selected for release. They are discussed in more detail in iteration planning

meetings where the models and specifications are selected and discussed among the team and the product owner. In these iteration planning meetings, risks are also reviewed and discussed.

Planning Workshop: See this technique for further details.

3.1.4 Enterprise Analysis

Enterprise Analysis (Chapter 5 in the *BABOK® Guide*) describes how business analysts identify a business need, refine and clarify the definition of that need, and define a solution scope that can feasibly be implemented by the business. This knowledge area describes problem definition and analysis, business case development, feasibility studies, and the definition of solution scope. Enterprise analysis is about identifying the business need, opportunity or problem to be solved and deciding on the appropriate approach to addressing the need.

.1 Define Business Need (5.1)

No significant changes.

Techniques

Business Capability Analysis: A business need will usually correspond to the development of a new capability or the enhancement of an existing capability.

Collaborative Games: Some collaborative games can be useful in exposing unmet business needs.

.2 Assess Capability Gaps (5.2)

No significant changes.

Techniques

Business Capability Analysis: This can be used to understand what shortcomings exist in an existing capability.

.3 Determine Solution Approach (5.3)

Agile development is a solution approach. It may be selected in order to provide a faster delivery of value than traditional methods, or

because the problem area needs to be explored. It also supports incremental delivery so the solution approach can be evolved over the course of the project. This approach allows a different bargain to be struck with the business regarding determining the solution.

Techniques

Purpose Alignment Model: The purpose alignment model can provide guidance regarding the best solution approach to take for a given business need.

.4 Define Solution Scope (5.4)

The scope of agile projects evolves during the course of the project as the team learns more about ways to solve the problem and the customer preferences for a solution. The scope is defined in higher-level abstractions (such as themes and epics) and is detailed as the project evolves.

Business Capability Analysis: The scope of the project should be related to the business capabilities it is creating or enhancing.

Story Decomposition: Epics and features can serve as the basis for defining the scope.

Story Mapping: A story map can be used to see the relationship between the various stories delivered by the project.

.5 Define Business Case (5.5)

The business case for agile projects is typically based on achieving a specific business outcome within a specified cost and time. The business case is revisited frequently as the team learns what it can deliver, how well it meets the real (not perceived) needs, and whether the business outcome can be achieved within the specified cost and time.

Business Capability Analysis: Defines the customer and organizational value associated with a business case.

Kano Analysis: Identifies which product features are likely to have the greatest market impact.

Purpose Alignment Model: Identifies what kind of investment is likely to generate the greatest value for the organization.

Real Options: Allows assessment of when investment needs to be made in order to ensure value is obtained.

3.1.5 Requirements Analysis

Requirements Analysis (Chapter 6 in the *BABOK® Guide*) describes how business analysts prioritize and progressively elaborate stakeholder and solution requirements in order to enable the project team to implement a solution that will meet the needs of the sponsoring organization and stakeholders. It involves analyzing stakeholder needs to define solutions that meet those needs, assessing the current state of the business to identify and recommend improvements, and the verification and validation of the resulting requirements.

.1 Prioritize Requirements (6.1)

In agile, requirements are progressively elaborated. Throughout the elicitation task, elicitation results are progressively broken down and elaborated. At each point of elaboration the constituent parts need to be evaluated and prioritized based on business value contribution and risk burn-down. In agile, this is not a one-time up front activity. This happens throughout the life of the project on all remaining work and new work brought in from learning about the product.

Techniques

Backlog Management: Backlog management is the standard method of prioritizing requirements in many agile methodologies. The backlog can be re-prioritized whenever business needs change or are better understood.

Kano Analysis: Kano analysis can provide insight into the relative importance of features to a user group.

Planning Workshop: Prioritization normally takes place during a planning workshop.

Note: also see the expanded treatment of MoSCoW Prioritization.

.2 Organize Requirements (6.2)

In agile, it is important to organize requirements to minimize dependencies between feature sets. This reduces complexity and risk and improves testability at the business level value. Since requirements are progressively elaborated, this big block architecture results in the solution architecture from a business standpoint. Requirements should be organized around business value and not technical implementations. Only within component teams, where the business value arises from delivering enabling technology, is it appropriate to depict technical requirements. Even then, these requirements need to be prioritized and filtered based on risk burn down and business value contribution. Story maps within epics are a method of implementing organize requirements.

Techniques

Story Decomposition: Individual stories may be organized around an epic or feature.

Story Mapping: Story mapping also shows how individual stories are related to or support one another.

.3 Specify and Model Requirements (6.3)

At different levels of elaboration there are different methods for specifying and modelling requirements. The approach should support progressive elaboration, be adaptable to change based on learning, and not cause the team to select solutions too early. It should also ensure that intent and intended business value is communicated consistently through the elaboration. Agile teams tend to use stories and tasks at the lowest level of decomposition. These stories and tasks can be supported by detailed documentation and use cases. It is becoming increasingly common for acceptance tests to be produced as part of specifying and modelling the requirements.

Techniques

Behaviour Driven Development: Concrete examples of functionality may help stakeholders better specify and understand their needs, or deal with specific scenarios that are of greater value.

Storyboarding: Used to describe user interface (UI) functionality and behaviour.

Note: also see the expanded treatment of User Story in this extension.

.4 Define Assumptions and Constraints (6.4)

On agile projects, this is handled through a risk management approach that treats risks as stories within themes. Risk mitigation activities are re-prioritized along with stories and burned down and re-prioritized as they stories are performed. This is typically produced by the business analyst and project manager along with the team, prioritized by the product owner, and performed by the team.

User Story: User stories can also be used to track assumptions or constraints (particularly the latter), although it needs to be clear to the team and stakeholders that these are separate from the stories planned for development.

.5 Verify Requirements (6.5)

Requirements are verified by the team during the project. Through retrospectives and operations reviews, the team may decide to modify the level of detail to requirements or the method of specifying and modelling requirements to improve the performance of the team. Verification of requirements usually is done through direct stakeholder interaction with the team as the software is developed.

.6 Validate Requirements (6.6)

Requirements are verified throughout the development and delivery of the solution through continual involvement of the product owner and customer. This happens at release planning, iteration planning, during development, and at customer acceptance.

3.1.6 Solution Assessment and Validation

Solution Assessment and Validation (Chapter 7 of the *BABOK® Guide*) describes how business analysts assess proposed solutions to determine which solution best fits the business need, identify gaps and shortcomings in solutions, and determine necessary work-a-rounds or changes to the solution. It also describes how business analysts assess deployed solutions to see how well they met the original need so that the sponsoring organization can assess the performance and effectiveness of the solution.

.1 Assess Proposed Solution (7.1)

In agile projects, this task is likely to be performed repeatedly as the solution is built. One of the benefits of agile is that the solution can be assessed over time. Some solution decisions must be made up front. Agile facilitates the concept of real options where design decisions can be deferred until the last responsible moments. Detailed understanding of the business need is unfolding at the same time as the team's understanding of how to solve the problem is developing. With effective agile architecture and design, the cost of redoing things that have already been developed is relatively low. Assessing the proposed solution doesn't become a checkpoint on the project but an ongoing assessment against the business case and current status of the project.

Techniques

Real Options: Allows for assessment of aspects of the solution to determine when decisions have to be made regarding a particular proposal.

.2 Allocate Requirements (7.2)

On agile projects, this is done by allocating requirements into feature themes and components. Agile teams are small teams and this allocation shapes the design of the delivery organization itself. Feature teams form around the feature themes and component teams supporting cross-feature theme requirements.

Techniques

Story Decomposition: Breaks down high-level epics and features into smaller supporting stories, which can be allocated to different components (including process or organizational changes).

.3 Assess Organizational Readiness (7.3)

The organizational readiness assessment occurs on agile projects in much the same way as it does in traditional projects. The difference is that the release cadence can be more frequent. A significant area to define in agile projects is how often the organization can absorb releases. Organizational readiness should include not just the end-user/customer of the release but the supporting organization as well (for example, support, training, sales, marketing, and accounting).

.4 Define Transition Requirements (7.4)

The determination of transition requirements occurs in an agile project much as it does in a traditional project. The ability to deliver value incrementally opens up new possibilities for transition. Unlike a monolithic release, the organizational impact can be smaller but more frequent. Since the cost of development per unit is lower, temporary integration into existing systems can be developed and make the need for running parallel systems less significant.

Techniques

User Story: User stories can be used for the planning of transition requirements and are prioritized and/or ordered in the same fashion as other stories.

.5 Validate Solution (7.5)

Validation of a solution happens as an ongoing effort in an agile project. Within each iteration, the customer is provided detailed feedback on the current requirements. At the completion of each iteration cycle, the product owner facilitates alignment with the customer need and continued alignment with the business case.

.6 Evaluate Solution Performance (7.6)

Upon release, the product owner facilitates understanding how well the solution meets the needs of the customer and identifies new opportunities for improvement and to create additional value for the business. The incremental nature of the backlog allows new, higher value items discovered during this evaluation to enter into the existing backlog ahead of existing items. This is an additional way that agile shortens time to value.

Techniques

Business Capability Analysis: Allows business analysts and stakeholders to understand the importance and relative performance of a business capability.

Value Stream Mapping: Used to identify those aspects of the solution that add value for customers and those which are non-value added. This assessment becomes the basis for ongoing improvement efforts.

3.1.7 Business Analysis Techniques Mapped to Agile Business Analysis Guidelines

The following table maps techniques as described in the *BABOK® Guide* to the guidelines for agile business analysis presented in this document.

TABLE 3.3 Business Analysis Techniques Mapped to Agile Business Analysis Guidelines

Business Analysis Technique	BABOK v.2 Chapter	See the Whole	Think as a Customer	Get Real with Examples	Analyze to Determine What is Valuable	Understand What is Doable	Stimulate Collaboration & Improvement	Avoid Waste
Acceptance & Evaluation criteria definition	9.1		●	●	●			●
Base lining	4.1.5.2		●		●			●
Benchmarking	9.2	●						●
Brainstorming	9.3						●	
Business Rule Analysis	9.4	●	●	●				●
Checklists	6.5.5.2			●				●
Coverage Matrix	4.2.5.1	●						●
Data Dictionary and Glossary	9.5	●		●				●
Data Flow Diagrams	9.6	●		●				●
Data Modeling	9.7	●		●				●
Decision Analysis	9.8			●		●		●
Document Analysis	9.9	●		●				●
Estimation	9.10				●	●		●
Feasibility Analysis	5.3.5.2				●	●		●
Focus Groups	9.11		●	●	●			
Force Field Analysis	7.3.5.2	●					●	
Functional Decomposition	9.12		●	●		●		●
Interface Analysis	9.13		●	●		●		●
Interviews	9.14		●				●	

Business Analysis Technique	BABOK v.2 Chapter	See the Whole	Think as a Customer	Get Real with Examples	Analyze to Determine What is Valuable	Understand What is Doable	Stimulate Collaboration & Improvement	Avoid Waste
Lessons Learned Process	9.15	●					●	
Metrics and Key Performance Indicators	9.16	●			●		●	●
MoSCOW Analysis	6.1.5.2				●	●		
Non-functional Requirements Analysis	9.17		●	●				●
Observation	9.18	●	●	●			●	
Organization Modeling	9.19	●			●			●
Problem or Vision Statement	5.4.5.2	●	●		●			●
Problem Tracking	9.20	●	●	●	●			●
Process Modeling	9.21	●		●				●
Prototyping	9.22		●	●		●	●	●
RACI Matrix	2.2.5.2	●		●				
Requirements Documentation	4.4.5.1							●
Requirements for Vendor Selection	4.4.5.2							●
Requirements Workshops	9.23	●	●	●	●	●	●	
Risk Analysis	9.24	●		●	●	●		●
Root Cause Analysis	9.25	●		●			●	●
Scenarios and Use Cases	9.26	●	●	●				●
Scope Modeling	9.27	●	●	●		●		●
Sequence Diagrams	9.28	●		●				●
Signoff	4.1.5.3							●
Stakeholder Map	2.2.5.3	●		●				●

Business Analysis Technique	BABOK v.2 Chapter	See the Whole	Think as a Customer	Get Real with Examples	Analyze to Determine What is Valuable	Understand What is Doable	Stimulate Collaboration & Improvement	Avoid Waste
State Diagrams	9.29	●		●				●
Structured Walkthrough	9.30	●	●	●	●		●	
Survey/ Questionnaire	9.31	●	●		●			●
SWOT Analysis	9.32	●	●		●			
Timeboxing/ Budgeting	6.1.5.3				●	●		
User Stories	9.33	●	●	●				●
Variance Analysis	2.6.5.2	●					●	●
Vendor Assessment	9.34			●				●
Voting	6.1.5.4				●	●	●	

Techniques

chapter 4

4.1 A Context for Agile Business Analysis

This chapter of the *Agile Extension to the BABOK® Guide* provides analysts with skills and tools that will assist them in excelling in the agile world. In order for the techniques and skills presented in this section to be applied with success, there are some foundational principles that are required to be understood. These principles break down into a number of practical techniques that can be used by practitioners when they undertake business analysis on agile projects.

The principles that guide successful business analysis can be categorized into two distinct frameworks: discovery and delivery.

The discovery framework deals with the what's and the why's of the product. Effective discovery is formulated by three underlying principles:

- See The Whole,
- Think as a Customer, and
- Analyze to Determine What is Valuable.

The delivery framework deals with the how's and the when's of the product. Effective delivery is formulated by four underlying principles:

- Get Real Using Examples,
- Understand What is Doable,
- Stimulate Collaboration & Continuous Improvement, and
- Avoid Waste.

The following section, Agile Extension Techniques, explores each principle in depth and provides techniques to support the application of these principles.

4.1 Guidelines for Agile Business Analysis

The following 7 guidelines for practicing business analysis inside an agile context, are based on the values and principles of the Agile Manifesto and the principles of Lean. Together, these guidelines embody the discipline of agile business analysis. These guidelines provide valuable context when applying the various techniques described in this chapter.

- In an agile context, business analysis views the entire system of people, process, and technology to find where true value lies and to help organizations maximizes the likelihood of delivering a valuable and valued solution.
- Agile analysis pays special attention to the voice of the customer to understand their values and expectations.
- To confirm what is valuable, it is common to use concrete examples to both elicit and validate product needs.
- Technology stakeholders are empowered by effectively analyzed needs. It helps them determine how much work they can deliver at any given point in time, identify product requirements options, and provide recommendations to business partners on solutions.
- Facilitative techniques enable efficient and effective collaboration and accelerate a team's ability to define and deliver products. Trust and safety are integral to healthy team's and allows them to transparently identify improvement opportunities. Improving both product and process is imperative; therefore agile teams continually seek to always get better.
- Always be on the lookout for, and avoid, anything wasteful.

Adopting these guidelines requires leveraging, extending, and adapting foundational business analysis techniques. “Business Analysis Techniques Mapped to Agile Business Analysis Guidelines” on page 39 for a matrix of business analysis techniques that may apply in an agile context.

4.1 A Note on Agile Extension Techniques

Agile business analysis is still in a relatively early phase of development. As such, the techniques used by business analysts to support agile teams are also in a state of flux. We believe that the

techniques described here have proven value in supporting agile business analysis, but we do not claim that this list is all-inclusive or in any way canonical. The techniques here were selected based on the experiences of the team members, and represent both expansions to existing content in the *BABOK® Guide* and new techniques not described in the current version. Future versions of the *Agile Extension* will likely include new techniques, and it is also possible that some of the techniques listed here will be removed.

In addition, many of the techniques listed here may prove useful to business analysis practitioners who are not working on agile teams.

4.1 See The Whole

See the Whole is a concept that describes the need to look at a problem or opportunity in the context of the big picture, focusing on the business context and why a project is being undertaken. It describes not just what a system is, but how it will be used. It is important to assess how the solution achieves something of value for its recipients. The value context for the solution is created by understanding both the solution and the stakeholders, and then articulating who they are and how they will find value in the solution.

On agile projects there is a high risk of getting mired in the details on each iteration. When developing the business case for a solution and performing iteration and release planning activities, it is important to maintain the fidelity of the context. By doing so, the context guides the next level of elaboration. By thinking about the strategic outcome for the solution, the delivery team moves from order takers to a group that delivers business value with less code bloat, scope creep, and never-ending project time lines. Seeing the whole creates situation, appropriate context and a shared understanding of the business problem that needs to be solved, which in turn will guide decision making.

The following sections describe commonly used techniques.

- Business Capability Analysis
- Personas
- Value Stream Mapping

4.1.1 Business Capability Analysis

.1 Purpose

Provide a framework for product scoping and release planning by: generating a shared understanding of the outcomes of a business or product, identifying alignment with a strategy and specific performance gaps, and providing a scope and prioritization filter that is stable and low friction to maintain over time.

.2 Description

Business capabilities describe the ability of a business to act on or transform something that helps achieve a business goal or objective. Many product development efforts are an attempt to improve the performance of a business capability or to deliver a new business capability. Business capability analysis is the analysis of the performance and risk associated with a set of business capabilities to identify specific performance gaps and to prioritize these based on business value and risk.

.3 Elements

Capabilities

Capabilities are the abilities in a business to perform or transform something. Capabilities should describe the purpose or outcome of the performance or transformation, not how the performance or transformation is performed. It describes the what, as opposed to the how. For example, sending a fax is not a capability; notifying the customer is the capability.

Using Capabilities

A model of Business and Customer Value: Business value is something that increases or protects revenue, reduces or prevents cost, improves service, achieves compliance, or positions the company for the future in alignment with the business strategy. Not all capabilities have the same level of value. For example, while distributing payroll to employees is important to a company, it is likely neither of high business nor customer value. In other words, this may not be a capability that adds value for the company to build and maintain internally. There are various tools that can be used to make

business and customer value explicit in a capability assessment. In addition to these tools, balanced scorecards can be used as a model of business value.

Performance Expectations

Since capabilities identify the abilities required to perform or transform something, capabilities can be assessed to identify explicit performance expectations. When a capability is targeted for improvement, a specific performance gap can be identified. While the performance of every capability can be improved, the performance gap is the difference between the current performance and the desired performance given the business strategy.

Risk Model

Risks in the performance of the capability fall into the following categories:

- business risk,
- technology risk,
- organizational risk, and
- market risk.

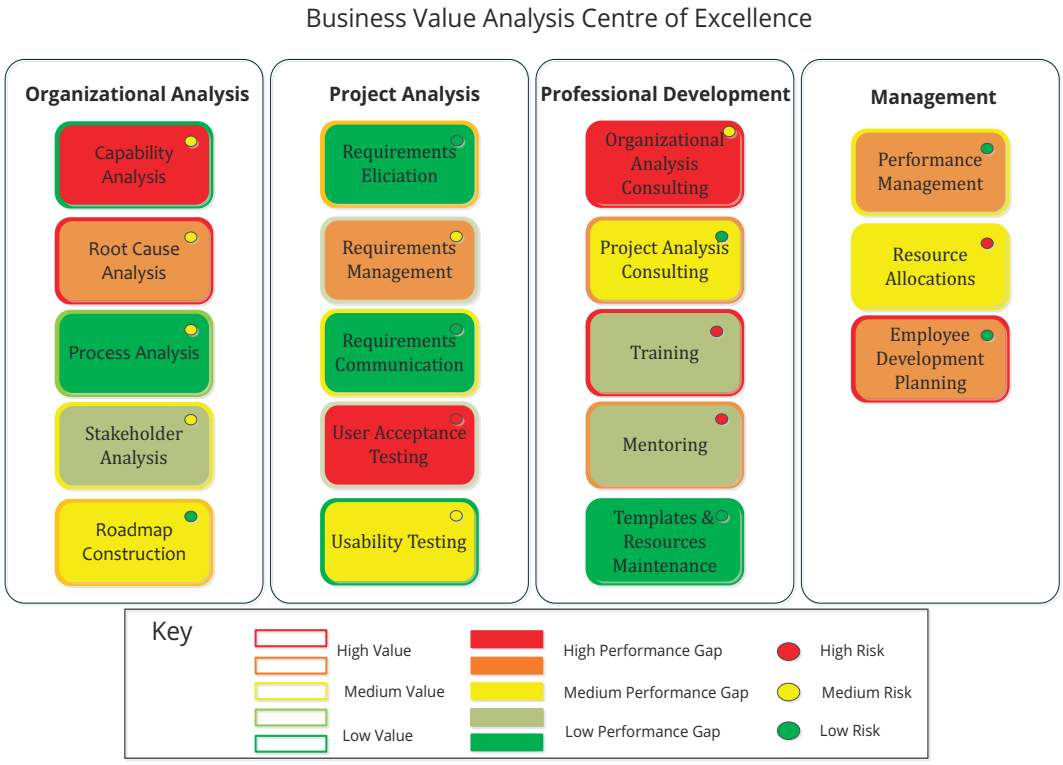
Strategic Planning

Business capabilities for the current state and future state of an organization can be used to determine where that organization needs to go in order to accomplish their business strategy and imperatives. As a result of performing a business capability assessment, there is generally a set of recommendations or proposals for solutions that need to be put in place. This information forms the basis of a product roadmap and serves as a guide for release planning.

Capability Maps

Frequently, organizations use capability maps to provide a graphic view of elements involved in business capability analysis. The following illustration demonstrates one element of a capability map that would be part of a larger capabilities grid.

FIGURE 4.6 Sample Capability Map



.4 Usage Considerations

Capability analysis is useful when an organization changes its business focus or strategy, or there is more demand for change than there is capacity to deliver. When the demand outweighs the capacity to deliver, a large undifferentiated backlog of changes or improvement requests can result. Capability analysis helps to identify those improvement requests that will advance the strategic goals of the business. Upon completion of a project effort, the capability analysis can be updated to reflect improvements in performance and to identify the next most important capability performance gap to focus on.

The outcomes of a capability analysis serve as long-lived artifacts that represent a common view of the business. This can be used to generate shared understanding and align efforts. When the business strategy changes or customer desires evolve, this model can be used to rapidly re-prioritize the list of wants for a solution (for example, re-prioritizing the backlog).

Advantages

- The advantages of capability analysis are that they result in a shared articulation of outcomes, strategy, and performance. These help create very focused and aligned initiatives. The model works very well with agile teams but it also helps identify opportunities that are not technology based, including process, talent, and data improvements.
- The capability analysis helps align these initiatives across multiple aspects of the organization.

Disadvantages

- This model requires an organization to agree to collaborate on this model.
- When this model is created unilaterally or in a vacuum it fails to deliver on the goals of alignment and shared understanding.
- The model also requires a broad, cross-functional collaboration in defining the capability model and the value framework.

Implications for Agile

Agile methodologies create a framework that facilitates frequent re-assessment of business needs and value. The direction of the business and the gaps required for the business to meet its objectives must be revisited for each release planning session, which generally occurs every 2-4 weeks in most agile life cycles. This means that an agile project team must maintain a constant view of the business capabilities that are required for the business to be successful, particularly those that are in scope for the product being delivered.

Business Value: See Kano, Purpose Alignment, Balanced Scorecard, Moscow.

4.1.2 Personas

.1 Purpose

User centered design practices often use personas as a powerful and simple tool to help design software that users will enjoy and benefit from.

.2 Description

Personas are fictional characters or archetypes that exemplify the way that typical users interact with a product. They are often used in agile methods to understand value from the perspective of a particular customer and allow a team that may not have direct access to a customer representative to better understand their needs. Work can then focus on the features of greatest value to a particular persona.

.3 Elements

A persona should be described as though they are a real person. Personas may provide a name, personality, family, work background, skill level, preferences, behavior patterns, and personal attitudes. It is also a good practice to include a picture and write a short "day in the life" narrative that helps the team visualize the user.

.4 Usage Considerations

Use personas when you want to get a deeper understanding of key stakeholders than one generally gets from a traditional role or actor description. Personas help drive products that are fit for purpose and highly usable, because they are patterned after the subtle qualities of real people that will interact with the systems and how they do their job.

If the data is available, using demographic (or anthropomorphic) data about the intended user population is a good way to start building personas. However in some cases it is necessary to be creative and invent personas based on little more than a few dry facts about the intended end users. In either case, a representative pool of personas should be identified. Depending on the size of the prospective user base and diversity of that population, the personas identified may range from a small handful to a dozen or more.

Personas are then ranked to identify a few key targets that will realize the most benefit from the system design. When design considerations are made, the impact they will have on the targeted personas should be taken into consideration.

"A frequent mistake is to design for someone who is close to the product but is not the actual user… the IT manager who purchased the product will rarely be the one to actually use it." (Cooper, 1999)

Advantages

- Personas help team members share a specific, consistent understanding of various audience groups. Data about the groups can be put in a proper context and can be understood and remembered in coherent stories.
- Proposed solutions can be guided by how well they meet the needs of individual user personas. Features can be prioritized based on how well they address the needs of one or more personas.
- Provide a human "face" so as to focus empathy on the persons represented by the demographics.

Disadvantages

- Personas are fictional so there is often a tendency to create personas that embody traits that are common to most users, but in doing so creating a generic user that is not distinct or realistic. This can lead to software that is designed to be everything to everyone.
- Personas may not be a good substitute for a real user, if they are available. Personas can distance a team from a user community.

4.1.3 Value Stream Mapping

.1 Purpose

Value stream mapping (also known as material and information flow mapping) provides a complete, fact-based, time-series representation of the stream of activities required to deliver a product or service to the customer (internal or external). It is used to identify areas of potential improvement in an end-to-end process.

.2 Description

Value stream represents the flow of material and information required to bring a product and/or service from raw material to the customer. Value stream map (VSM) is a graphical representation that captures a snapshot of the value stream.

The two main types of value stream map that are widely used are:

- Current State Value Stream Map: Depicts a value stream as it is applied by those who are responsible for carrying it. It is

usually used as a starting point for analysis of an existing process to identify improvement opportunities.

- Future State Value Stream Map: Derived from the current state and it shows what the value stream will look like after the implementation of the improvements.

In an agile environment, this diagram is usually simple and drawn on a whiteboard. It can be used to help re-engineer business processes to optimize use of software. It can also be used to re-engineer and tune the software development process itself, for example, to reduce lead time from product discover to release.

.3 Elements

The following is a broad description for one approach to building a value stream map.

Prepare

- Gather cross-functional team. In the agile world this should include people with business domain knowledge and technical team members (such as developers, testers, and architects). Often someone acting as the business analyst will facilitate the session.
- Assign a value stream map owner. Ideally this is someone who has a deep understanding of the current process.
- Select a product, a product family, or a service, and define the scope of the value stream map.
- In the context of agile projects, value stream mapping looks at the flow of information needed to complete a business process from end-to-end and the hand-offs between roles and/or organizational units in that process.

Create Current State

The current value stream map can be captured following these steps:

- Observe or simulate value stream. Follow a product (or product family) path by starting at the end closest to the customer and record the process working your way backwards to the beginning. Simulating the value stream can be done in different ways. Team members might start with the steps they are responsible for, or it can be achieved in a group workshop with the cross functional team.

- Draw the value stream map.
- Capture the information flow. The information that is vital for the value stream to function. Information flow includes (but not limited to) things such as orders, schedules, inventory time, changeover time, cycle time, and number of operators involved.
- Build a model that shows each step in the flow with hand-offs and sequence. To assist in the analysis needed to identify opportunities for improvement in the process, ensure that you include time/cost values onto the steps in the process. These time values may be estimated, if needed. The more details available, the easier it is to identify improvement opportunities.
- Validate the value stream map. The initial draft of the current value stream map must be validated before proceeding to the improvement phase. Team members can use direct observation of the work place for this purpose.

Analyze Current State

The current value stream map can be analyzed as described in Root Cause analysis of the *BABOK® Guide (9.25 Root Cause Analysis)* to identify value added steps (such as transformation processes) from those that are non-value added (such as excessive inventories).

The non-value added steps can be analyzed further to determine which ones are necessary (such as meeting regulatory requirements) and which ones are unnecessary (such as excessive paperwork).

Create Future State

The future state value stream map can be drawn as follows:

- Identify improvement areas. Unnecessary non-value added steps are the source of waste and, as such, they can be eliminated. Team members can mark these areas (such as reducing lead time) on the current value stream map.
- Capture the future state value stream map. Draw the value stream map that shows what the value stream will look like after you have eliminated the waste (unnecessary wait time, excessive administrative paperwork, high inventories).

Once the future state is captured it will be used as the target state of the improvement initiative.

Implement Process Improvement

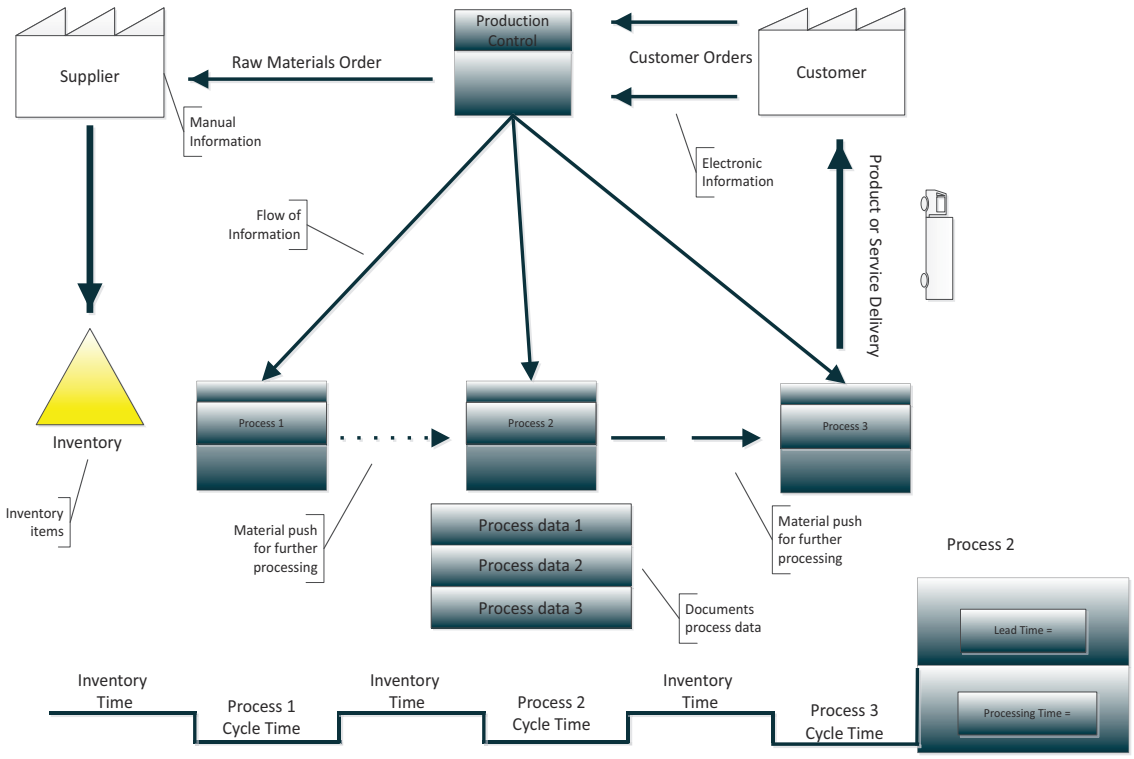
- Identify supporting material required for implementing the improvement such as training and changeover.
- Implement the improvement following one of the well-known business process methodologies such as, but not limited to, Lean or Six Sigma.

In an agile project, value stream mapping will be most utilized when implementing process improvement. Often the changes to be made in the business process will require changes to or implementation of supporting software products. The requirements for these changes or enhancements become backlog items that feed into an agile initiative.

Once the improvement is made, the future state becomes the current value stream map and it can be used as a starting point for another improvement cycle.

The following is an example of a value stream map.

FIGURE 4.7 Value Stream Map



.4 Usage Considerations

Advantages

- More comprehensive than a process flow diagram.
- Provides a blueprint for implementing improvement.
- Establishes a shared understanding of process wastes and bottlenecks.
- Provides a common visual language for diverse stakeholders.

Disadvantages

- Not easy to construct in comparison with other visual modeling techniques.
- Can look daunting because of all the information captured.
- Mapping paralysis. It is easy to get caught making the value stream map complete and perfect instead of proceeding to the improvement stage.
- Doesn't work well in knowledge based or non-linear work.
- Leads to disruptive or "re-engineering" approach. Doesn't work well with ongoing improvement efforts.

4.1 Think as a Customer

Thinking like a customer is a key component of agile business analysis. The customer is the person who gets value from the product we are building. We start with a high level view of customer goals and progressively decompose these into a more and more detailed understanding of the specific needs that the product must meet.

Agile processes incorporate feedback loops to continuously validate this understanding. As product delivery progresses, the customer and team understanding of the needs will evolve, it is important that these changes influence and define the work of the team going forward.

Agile analysis slices the delivery into the smallest practical increments that deliver business value over the life of the project.

It is important that agile analysis start with a holistic perspective, in order to help the team understand the overall product that needs to be delivered. The team collaborates with the customer to consider the user experience expected.

A goal of analysis to ensure the voice of the customer, especially the end-user, is elicited and expressed in the product.

Backlog items represent work to be done and convey customer thinking, and can be represented through prototypes, user stories, use cases, minimal marketable features, features, epics, or work items.

The following sections describe commonly used techniques.

The techniques listed below are based on user stories:

- Story Decomposition
- Story Elaboration
- Story Mapping
- User Story

A technique for prototyping a user interface and using that to define detailed requirements is

- Storyboarding

4.1.1 Story Decomposition

.1 Purpose

Story decomposition is a derivation of existing requirements analysis techniques such as functional decomposition. In an agile context, stories are often used to represent the work of the team and the requirements (or acceptance criteria) of that work. Story decomposition ensures that the requirements for a product are represented at the appropriate level of detail and are derived from a valuable business objective.

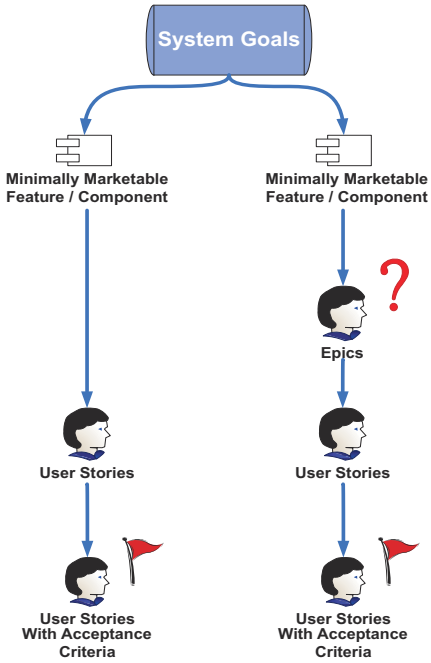
This technique provides a structure for defining the various elements of requirements at progressively smaller levels of granularity, starting with the broad system context and drilling down in multiple levels to eventually define the detailed acceptance criteria for individual user stories.

.2 Description

The most common agile approach to story decomposition can be described as “breadth-before-depth”: start with a very high level picture of what business goals need to be achieved, decompose those

into smaller components that provide increments of valuable functionality (sometimes called minimally marketable feature sets or MMFs), split the components into user stories, and eventually elaborate the user stories with acceptance criteria, see “Story Elaboration” on page 59. A story that is too large or insufficiently understood to elaborate, estimate, or deliver as a story is sometimes called an epic. Epics, when used, are later decomposed into smaller stories.

FIGURE 4.8 Story Decomposition



Different teams apply this technique in different ways. For example, some teams follow the model linearly, as shown in the above diagram, while other teams utilize techniques that work best in their environment. For example, once a team has developed the MMF (sometimes referred to as feature groups), they may employ use cases instead of stories. The analyst’s role here is to focus on dynamic collaboration, facilitation, and communication in getting acceptance for just what is required to develop and deliver the product.

The following table describes the different levels of story decomposition.

TABLE 4.4 Story Decomposition

Level	Description
System Goals	The system goals are the highest level of business requirements. They represent the business drivers for undertaking the project and form the rationale against which all of the detailed level needs are assessed.
MMF/Component	MMF stands for Minimum Marketable Feature. These are logical groupings of functionality and capabilities the delivered product needs to provide to be worth releasing. Often these will form the "themes" for a single release and serve to provide a big-picture context for the product being developed.
Epic	A piece of functionality that enables a user to achieve a clearly identified business objective. Often epics are at the level of elementary business processes---a piece of work undertaken by one person, at one time, in one place that delivers on a specific operational objective.
User Story	Represents a user requirement that is to be implemented in the delivered system. The user story is the most common backlog item used in agile projects. User stories are defined in detail in the Technique chapter.
Acceptance Criteria	Conditions of satisfaction or criteria needed to validate a user story. Can be written as lists of items, specifications, or user acceptance tests (or a combination). Detailed requirements are represented and validated in the acceptance criteria.

.3 Usage Considerations

Story Decomposition is undertaken progressively. One of the most significant differences between agile projects and waterfall projects is in the definition of detailed requirements. In agile projects, the initial analysis activities will identify the goals, MMFs, and most of the epics. The initial set of user stories (probably for the first release of the product) will be done in the project initiation activities. There is a clear understanding that these stories are likely to change and that the teams' understanding of the requirements will evolve over time. Therefore, decomposing to the lowest level of detail is likely to be a wasteful activity early in the project.

Advantages

- This decomposition technique helps avoid the common problem of getting lost in the detail of the user stories and losing the big-picture context.
- It is important that team members keep the project's goals and objectives in mind, and while using the decomposition approach they are able to trace implemented or requested functionality back to the driving business objectives.

- Breaking the product into MMFs and epics helps with release-level planning, provides visibility into the development project, and helps coordinate external program activities such as organizational change management and user training.

Disadvantages

- A common anti-pattern is the temptation to treat story decomposition as a way of reverting to detailed requirements up-front. Ensuring the continued emphasis on just-enough and just-in-time, means knowing when to stop decomposing.

4.1.2 Story Elaboration

.1 Purpose

Story elaboration is a technique used to define the detailed design and acceptance criteria for a user story on a just-in-time/just-enough basis. Story elaboration is an ongoing activity that is part of the development process.

.2 Description

Story elaboration is the lowest level of story decomposition and the process by which the story sentence is into broken down into pieces of work. This is often done by someone on the team who has strong business analysis skills, particularly with facilitation and communication. Story elaboration is the technique through which detailed requirements are elicited and communicated to the project team.

During each release (iteration/sprint), the team that works on a story schedules time to expand on the story to understand the detail. Often (but not always) this is completed in a short workshop with the programmers who will work on the story, the business SME/customer who needs the story, the person who will test the story, and someone acting as a business analyst to facilitate and challenge the story. Typically, story elaboration is undertaken a few days ahead of the development of the story.

Story elaboration is a communication technique that helps ensure the correct product is built. In an agile project, the detailed requirements are produced by story elaboration. However, as opposed to waterfall approaches, and consistent with the just-in-time philosophy of agile,

the detailed requirements defined during story elaboration contain only the requirement details for the piece of work that is to be completed in the coming release.

.3 Elements

The result of story elaboration is a shared understanding among the participants of what the story means and what should be delivered to achieve the “Done” state for this story. The role of the business analyst in developing and communicating dynamic requirements necessitates a high degree of skill in both facilitation and communication.

The outputs of effective story elaboration describe and/or document the tasks that enable the team to successful deliver the upcoming iteration. These outputs may include

- detailed requirements for the upcoming release,
- task definitions and breakdowns,
- examples and scenarios that explain the customer's intent for the story,
- low-fidelity models that clarify the technical or process design (for example, data models, data flow diagrams),
- screen or report mock-ups,
- acceptance criteria (test design specifications) to clarify how the story will be tested, often in the <given><when><then> format of behavior driven development, and
- other artifacts that will be useful in the development and testing of this story.

.4 Usage Considerations

Advantages

- The major advantage of story elaboration is that it avoids wasteful requirements elicitation, and potentially documentation as well. By elaborating on requirements only as they are needed, the team avoids the work of eliciting requirements for features that may never be built or that will need to be changed by the time they are ready for implementation.

Disadvantages

- For those who are relatively new to agile methodologies, it can be difficult to determine the best timing for conduct a story elaboration. If conducted too early, the information may no longer be correct for the given release and will need to be re-elicited. However, when collected too late, it can delay project team progression to development.
- Another challenge to implementing story elaboration is the ability to elicit the appropriate level of detail such that the requirements can be developed, tested, and compared to acceptance criteria.

Timing

Story elaboration should be done on an as-needed, just-in-time basis for stories that have been determined to be in scope for the upcoming release. The project team should not investigate stories for further elaboration if they have not been planned for the release in question, as the information collected may be stale and out of date.

4.1.3 Story Mapping

.1 Purpose

Story mapping provides a visual and physical view of the sequence of activities to be supported by a solution. It uses a two-dimensional grid structure to show sequence and groupings of key aspects of the product on the horizontal dimension, with detail and priority of stories on the vertical dimension.

.2 Description

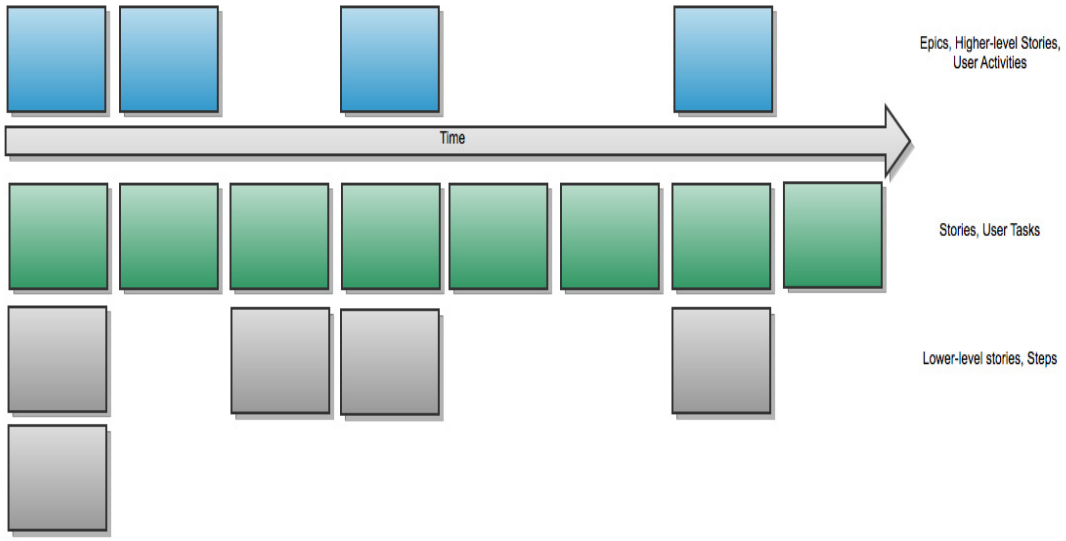
A story map is a tool to assist in creating understanding of product functionality, the flow of usage, and to assist with prioritizing product delivery (such as release planning). It is a decomposition technique that allows for the evolutionary understanding of a product starting with an end-to-end view and drilling down to the detailed user stories.

A story map is designed to be an information radiator, used to visualize a product's requests in the context of usage and priority. The story map is often placed on display for the project team during release planning sessions. By analyzing the story map, the team can more readily identify dependencies generated as a result of the

intended flow through the user stories. The map can also be used for risk assessment and management by examining how the stories will need to work together in the context of delivering business value.

The following illustration is an example of a story map.

FIGURE 4.9 Story Map



.3 Elements

The story map has a central backbone of elements that will make up the product. Above this backbone are the large feature sets (activities) that need to be delivered over the life of the project. The backbone is a sequential set of operator/customer tasks that need to be enabled by the software. Below the backbone are the detailed stories that implement the specific pieces of functionality to enable the tasks to be accomplished.

Process

The process of building a story map can be described as a series of steps.

1. Identify the key activities the product must support, writing each activity on a separate card or adhesive note. Use one color for the activity cards.

2. Sequence these in order of usage, from left to right. While the sequence in which activities will be performed will vary, there will be a common "day-in-the-life-of" sequence which can be used. These activities will normally be too large to implement in a single development iteration.
3. Once the activities are in a logical order, define the individual tasks that make up the activities. These tasks should be a discrete piece of work for someone operating the product. Write each task on a separate card or adhesive note, using a different color from the activities.
4. Place the tasks on a single row in logical, sequential order underneath the activities. Again, there will often not be a strict sequence which must be followed every time, but there will be a common logical order in which tasks are done. This is the sequence of the tasks on the map.
5. Validate the activities and tasks with domain experts and other stakeholders. Ask the question: do they constitute a complete picture of what the product needs to deliver? Update and amend the activities and tasks as needed.
6. Add sub-tasks below the tasks, again using a different color card or adhesive note. These will often cover the alternative ways of undertaking a task or deal with exceptions or potential problems when performing a task. Add these below the task in a top-to-bottom logical order based on user priority. These sub-tasks are at the level of the user story and there will be many of them. Viewing the top row of sub-tasks across the map provides a view of the likely minimum viable product, the set of features which must be delivered for the product to have any value at all to the business. This horizontal view of the user stories provides a logical starting point for release and iteration planning, as the vertIcal position of a user story shows its relative priority in the overall picture.
7. Validate the story map with stakeholders and update it as needed.
8. Keep the story map together to provide a big-picture view of the complete product. Indicate when stories are completed on the story map so overall progress is clearly visible.

.4 Usage Considerations

Advantages

- When the larger context of a product is not accounted for, agile projects can be subject to getting mired in the details with an inability to effectively string components together to create end-to-end business value. Story mapping helps avoid the

common problem of getting lost in the detail of the user stories and the risk of losing the big-picture context.

Disadvantages

- Story mapping can become cumbersome where the product is very large and may require building a number of story maps that cover a large program of work. While story maps illustrate a flow, they do not analyze or illustrate dependencies between requirements (though they can be used to help facilitate that analysis).

4.1.4 User Story

User Stories are described in detail in the *BABOK® Guide (9.33 User Stories).* This information found here reflects and expands on that information in the context of agile development methodologies.

.1 Purpose

A user story represents a small, concise statement of functionality needed to deliver value to a specific stakeholder.

User stories can be used:

- to capture and prioritize user needs,
- as a basis of estimating and planning product delivery,
- as a basis for generating user acceptance tests,
- as a metric for measuring the delivery of value,
- as a unit for tracing related requirements,
- as a basis for additional analysis, and
- as a unit of project management and reporting.

.2 Description

User stories are a planning technique that enables agile teams to track features of value to a customer or end user, and are used as a basis for estimating work. Typically, they are one or more sentences written by the customers, product owners, or business analysts that describe something of value to a stakeholder. User stories provide a mechanism for the product owner to scope, coordinate, and prioritize the increments of user value for development. A story should be short enough to be written on a small paper note card, usually a 3×5 inch

index card or sticky note. Stories may also be recorded in an electronic system.

User stories capture stakeholder needs using short, simple documentation and invite exploration of the requirements through conversations, tests, and/or supplemental requirements representations, as needed. They are concise and easy to change as stakeholder needs are better understood or as those needs evolve.

Some teams make use of other types of stories to catalogue, estimate, plan, and track other work needed to build the product. These stories typically define work needed to enable product development, deployment, and support.

.3 Elements

Title (optional)

The title of the story describes an activity that the user wants to carry out with the system. Typically, it is an active-verb goal phrase, similar to the way use cases are titled.

Description

There is no mandatory structure for user stories, however, the most popular format includes three components:

- a user role or persona [WHO],
- a necessary action, behaviour, or feature [WHAT], and
- the benefit or business value received by the user when the story is implemented [WHY].

Usage example:

“As a < role>, I need to < behavior > so that < business value >”

An alternative format, preferred by those who practice business analysis in Agile development is:

“In order to < business value >, as a < role >, I need to < behavior >

This canonical format can also be used for stories provided from other product or project constituents. For example:

"As a Security Officer, I need to only allow authorized users to access the xyz functionality so I can insure we enforce abc security directive".

Conversation

User stories serve as a reminder that the team needs to explore and understand the feature described in the story and the value that it will deliver to the customer. The story itself doesn't capture everything there is to know about the customer need, and the information in the story will be supplemented by further modeling as the story is delivered.

Acceptance Criteria

When a user story is well defined and understood, it is accompanied by acceptance criteria. Acceptance criteria define the boundaries of a user story and help product owners, customers, or business analysts to answer what they need to provide value with the product.

Acceptance criteria help developers identify when to stop adding more functionality and to derive tests for verification and validation purposes. Acceptance criteria are typically added just before planning or just in time during development. They can also be developed as a story becomes well understood to enable the development team to verify that the solution will meet the user's needs.

Acceptance criteria are often built shortly prior to or in parallel with the implementation of the user story.

.4 Usage Considerations

Advantages

- Tied to small, implementable, and testable slices of functionality facilitating rapid delivery and frequent customer feedback.
- Easily understandable by stakeholders.
- Can be developed through a variety of elicitation techniques, including but not limited to facilitated workshops, contextual inquiry, and other ethnographic elicitation techniques.
- User stories are simple enough that people can learn to write them in a few minutes, being careful about always deliver business value.

- The process of collaborating on defining and exploring stories builds team commitment and shared understanding of the business domain.
- Stories invite conversation for further decomposition and exploration.

Disadvantages

- This conversational approach can challenge the team, since they do not have all the answers and detailed specifications up front.
- To facilitate estimating, planning, and delivery, many agile teams supplement stories with analysis models (such as a data model, business rules, user acceptance tests, screen mock-ups or prototypes, context diagram, and state diagram)
- Large, chunky stories (epics) can be vague and difficult to use without breaking them down into small stories.
- Stories spawn more stories via decomposition so the information must be organized to ensure it is current and relevant (called pruning or grooming).
- The collection of stories needs to be managed (for example, with backlog management).
- Stories require context or line-of-sight. If the team doesn't trace stories back (through validation) or supplement them with higher-level analysis and vision artifacts, then the team can lose sight of the big picture.
- Some practitioners can be confused amongst user stories, use case, and stories techniques.

4.1.5 Storyboarding

.1 Purpose

Storyboarding is used in conjunction with other techniques such as use cases, user stories, and prototyping to detail visually and textually the key events summing up different interactions of users with the system or business.

Storyboarding serves

- to elicit, elaborate, organize and validate the requirements,
- to communicate to developers what needs to be built,

- to show different variations of the proposed solution, and
- as an input to tests.

.2 Description

Storyboards (also known as dialog map, dialog hierarchy, or navigation flow) use representative images and text to describe a task, a scenario, or a story. It can also be used with prototyping technique to represent parts of the system that are well understood or expensive and unnecessary to produce via formal prototypes.

When used to describe the interaction with the system, the storyboard shows how screens will look and how they will flow from one to another. When used to describe business organization, the storyboard shows the interaction with a business process such as back office.

Storyboards can be developed using white-boards and sticky notes or using CASE tools.

Storyboards are common in many analysis and development methodologies, and are a form of prototyping (see the *BABOK Guide, 9.22 Prototyping)*. However, as agile methods favour the development of working, usable software over throwaway prototypes, storyboarding is a useful tool for understanding how people will actually use the system.

.3 Elements

Storyboards can be created in a workshop environment with relevant stakeholders.

Preparation

1. Identify main scenarios within the scope of the project. This can be driven from use cases or user stories or can be identified in a customer visit or an information-gathering session with experts.

2. Select the scenarios that need to have a storyboard developed. While some scenarios need to be detailed in a storyboard, others are obvious and can be omitted such as alternate scenarios and exceptions.

3. Identify participants and schedule the session.

4. Arrange room and equipment such as flip charts, markers, glue, scissors, rulers, printers, and access to the Internet.

Session

1. Have attendees create illustrations for the storyboards of the selected scenarios.

2. Enhance storyboard illustrations with textual information such as optional interactions, unavailable interactions, further stakeholder requests not associated with the primary scenario, and general notes associated with a specific step.

3. Make sure each storyboard stands on its own by adding required explanations as text.

Wrap up

- At the end of the session, the business analyst reaches consensus on the high level flow of the developed storyboards.

After the workshop, the business analyst might use company templates to formally document the outcome of the session, adding additional elements to the storyboards such as storyboard identification, description, user, trigger, input, output, and issues. The business analyst may also use CASE tools to create representative screens that will be used for later validation.

.4 Usage Considerations

Advantages

- In the early stages of the requirements gathering process, storyboarding can significantly reduce abstractness brought by other techniques such as use cases and user stories.
- Storyboards can be produced quickly and at a very low cost compared to other techniques such as prototypes.
- The intuitive nature of the storyboard encourages stakeholder participation.

Disadvantages

- Different look and feel than the final product.
- Easy to get bogged down on how, rather than why.

4.1 Analyze to Determine What is Valuable

The agile approach is distinct in that value is continuously assessed and prioritized to ensure that the most valuable work is delivered at any point in time, always using the end customer perspective. It is also imperative to question the purpose behind requirements, challenging those requirements that do not support the business goals. Agile practices enable the art of maximizing the amount of work not done, something essential to deliver valuable software early and continuously. The techniques outlined in this section facilitate the valuation of product needs on an on-going basis.

The following sections describe commonly used techniques.

- Backlog Management
- Business Value Definition
- Kano Analysis
- MoSCoW Prioritization
- Purpose Alignment Model

4.1.1 Backlog Management

.1 Purpose

The backlog is a wish list of requests for features to be included in a product, and is the main mechanism for managing requirements on an agile project.

.2 Description

The product backlog, which derived from the Scrum framework is leveraged in many blended agile methodologies, is established at the beginning of a project. The backlog is a fluid document that evolves over the course of the project as more is learned about the product and its customers. The product owner is responsible for ordering the items on the backlog based on business value, feature importance, or other relevant criteria. When managing a backlog, items should be ordered such that the most important items occur at the top of the list and are ordered based on descending priority. In XP, the backlog of feature requests may be managed as a log of user stories. A business analyst may act as the product owner or support the product owner role.

During the release planning sessions, items are selected from the backlog based on factors such as priority, risk, value to the product or customer, and ability to deliver the feature within the given release. At the end of each release, feedback on what was developed may result in new items being added to the backlog, changed priorities, or removed items.

The backlog is sometimes referred to as a portfolio of options that the business can invest in. Other terms used are master story list and prioritized feature list.

.3 Elements

Items in the Backlog

The backlog can contain user stories, use cases, features, functional requirements, as well as items that have been added by the team to support development of the requirements, such as technical infrastructure. To aid in ordering the backlog, items should be expressed in such a way that the business value of the items is clear. Product risk mitigation items may also get added to the backlog as stories or pieces of work to be done.

Appropriate level of detail

Items with high order in the backlog will be developed in near-term releases, so they need to be detailed enough to allow the development team to estimate them with accuracy and be able to decompose them into the tasks needed to develop them. Items with lower priority can remain high-level and less precise until they rise in the order and need to be specified in more detail. Large items in the backlog are sometimes referred to as epics or business value increments, and may be broken down into multiple, more granular items as the backlog is elaborated via story decomposition. Some aspects of the story may be important near-term and others less important. This ability to break stories down in the backlog helps protect the rate of value delivery. For example, adding a new feature may have involved hard-coding something up front and adding a new story to the backlog to add some dynamic configuration ability to the product later.

Estimation Accuracy

Items with high order in the backlog need to be estimated with enough accuracy to use them for planning releases. Items in lower order also

need to be estimated, but with less accuracy since they are often less detailed. Estimates for time to complete items is often maintain within the backlog itself.

Prioritization

Items in the backlog are ordered relative to each other. Ordering can be established using numbering, value points, high/medium/low, or any other prioritization technique. The order of items on the backlog is likely to change over the course of the project, especially as the product evolves and the team receives feedback from the stakeholders and customers. It is important to note that ordering near term items is important, but putting a lot of effort into ordering the backlog far into the future can be a wasteful activity because the farther out backlog items are subject to change.

Managing Changes to the Product Backlog

The backlog is the main mechanism for both managing change to the requirements on an agile project and for controlling scope. When new or changed requirements are identified, they are added to the backlog and ordered relative to the other items. The backlog is also used to track and manage reported defects or bugs. Ordering the entire backlog can be done up front using relative importance designations (based on business value), which allows high-level prioritization without too much getting into the weeds. Since releases and iterations are time-boxed on agile projects, the items lower on the backlog are often not included in a given release. Rigorous ordering of the backlog allows the team to control the scope of the project and releases.

When an item is developed and accepted by the product owner, the item is removed from the backlog and moved to another document such as the release plan or sprint backlog. The product owner role is responsible for managing the backlog, adding and ordering new or changed items, removing completed items, and revising the order on an ongoing basis. This process is sometimes referred to as pruning or grooming the backlog.

.4 Usage Considerations

Advantages

- Since the requirements on the backlog are ordered in importance, the team knows that what they are working on in a

given iteration is high priority and will contribute business value to the product. The person on the team responsible for detailing the requirements can review the backlog and determine if the items that will be developed in an upcoming release require further analysis in order to ready them for development. This process is referred to as building the requirements runway.

- Since each release typically implements a small set of requirements, requirements are analyzed in detail on a just-in-time basis. What the team and the stakeholders learn about the requirements developed during a release can inform the analysis of other requirements in upcoming iterations.

Disadvantages

- Large backlogs may become cumbersome and difficult to manage. Breaking the overall product backlog into backlogs for releases (called release backlogs) can help address this disadvantage. Also, a lack of detail in the stories in the backlog can result in lost information over time.

Timing

The backlog is developed at the beginning of an agile project, but it does not need to be complete at this time since it will continue to evolve throughout the project.

4.1.2 Business Value Definition

In order for a project to deliver value, they must first be able to identify whether a request is actually valuable to the organization. Without a clear understanding of business value, it is possible for the project to deliver something that sounds valuable but is actually not.

A project creates business value when it delivers anything that contributes to an organization's stated primary goals, for example

- increasing or protecting revenue,
- reducing or avoiding costs,
- improving service,
- meeting regulatory or social obligations,
- implementing a marketing strategy, and
- developing staff.

Often projects create options for the business to exploit. For example, the option to sell 1000 items of a product a day.

Business value should be expressed in the form of a model rather than an absolute amount. The evolution of the business value model will develop understanding of why the project is needed. The most important aspect of developing a business value model is the conversation that generates the shared understanding, rather than the model and the numbers that the model produces.

Examples of bad business value statements are:

- This enables straight through processing.
- This will make 1 million dollars.
- This will save 1 million dollars.
- Mr. Big needs this product.

None of these show alignment with the goals of the organization.

An example of a good business value statement is:

This project will generate an additional $20 million in profit. The model is based on the following assumptions:

- We maintain 25% of the sales of existing product XYZ ($150 million a year).
- The total cost of designing, producing, and marketing the product is $7.5 million.
- Our product is first to market.
- We are able to release the product in the spring.

This statement, in model form, conveys understanding of why the project is needed and would likely promote valuable conversation that generates a shared understanding of the project.

4.1.3 Kano Analysis

.1 Purpose

Kano analysis helps an agile team understand which product characteristics or qualities will prove to be a significant differentiator in the marketplace and help to drive customer satisfaction.

.2 Description

Kano analysis is most useful in helping to support agile development for commercial products. It assists in identifying features that will have the greatest impact on customer satisfaction, either because they are exceptionally important or because their absence will cause intense dissatisfaction. This helps the team determine which features are most important to implement before releasing a product to market.

Kano analysis rates product characteristics on two axes:

- the extent to which the feature is implemented in the product, and
- the level of customer satisfaction that will result from any given implementation level.

The resulting graph is plotted on a 2×2 matrix. Based on the resulting profile, the product characteristic should fall into one of three categories:

- threshold characteristics,
- performance characteristics, and
- excitement characteristics.

This analysis can then be used to try and identify characteristics that will give the product a unique position in the marketplace.

.3 Elements

Threshold Characteristics

Threshold characteristics are those that are absolutely necessary for stakeholders to consider adopting a product. Their absence will cause intense dissatisfaction but, as they represent minimum acceptance criteria, their presence will not increase customer satisfaction beyond a certain low level. The challenge with eliciting requirements for these features is that people expect them to be present and so tend not to think about them unless explicitly asked.

Performance Characteristics

Performance characteristics are those for which increases in the delivery of the characteristic produce a fairly linear increase in

satisfaction. They represent the features that customers expect to see in a product (speed, ease of use, etc). Requirements for these types of features are likely to most readily come to mind for the majority of stakeholders.

Excitement Characteristics

Excitement characteristics are those that significantly exceed customer expectations or represent things that the customer did not recognize were possible. Their presence will dramatically increase customer satisfaction over time. As these characteristics are not met by anything currently on the market, stakeholders will not tend to think about requirements that describe them.

.4 Usage Considerations

In order to determine the category to which a characteristic or feature belongs, customers can be surveyed using two forms of a question about the feature: the functional form and the dysfunctional form.

Functional form: How do you feel if this feature or characteristic is present in the product?

Dysfunctional form: How do you feel if this feature or characteristic is absent in the product?

Possible answers to each question form are:

- I like it that way.
- I expect it to be that way.
- I am neutral.
- I can live with it that way.
- I dislike it that way.

Determining the category is based on mapping the answers to both forms of the question to the following grid. The top row represents the answers to the dysfunctional form of the question. The left column represents the answers to the functional form of the question.

TABLE 4.5 Kano Analysis Questions Grid

	Like	Expect	Neutral	Live With	Dislike
Like	Q	E	E	E	P
Expect	R	I	I	I	T
Neutral	R	I	I	I	T
Live With	R	I	I	I	T
Dislike	R	R	R	R	Q

E = Exciters

P = Performance

T = Threshold

I = Indifferent (Does not fit into one of the 3 categories)

Q or R = Questionable or Reversed (the answer doesn't make sense)

This approach is most applicable for consumer products or goods that will be resold, as it focuses on identifying requirements that will encourage widespread use or adoption of a product. The categorization of a particular characteristic tends to shift over time, as customers grow to expect features or characteristics to be present in a product. Exciters eventually become a standard expectation and threshold characteristic (think of the novelty of ATMs when they were first introduced, now customers assume their bank will have ATMs).

4.1.4 MoSCoW Prioritization

.1 Purpose

To identify the most critical set of features or stories that will deliver business value.

.2 Description

MoSCoW is a method to prioritize stories in incremental and iterative methods and is described in the *BABOK® Guide (6.1 Prioritize Requirements)*. MoSCoW provides a way to reach a common understanding on relative importance of delivering a story. All stories

in the backlog are valuable, but often not all of them can be delivered at the same time. MoSCoW provides a mechanism for prioritizing stories in a backlog across multiple releases. Prioritization is important for any software development method, but agile methods cannot succeed without constant and frequent prioritization of work.

MoSCoW gets its name from an acronym formed by the following classifications of priority: Must have, Should have, Could have, and Would like. The letter o is added to make the acronym pronounceable. The classifications are as follows:

- Must Have. These are stories that must be delivered for the current business problem to be addressed. Must cans are thought of as a minimal usable subset.
- Should Have. These are stories that are critical to the success of the release. Should stories are as important as Must stories but may not be time-critical or may have a work around.
- Could Have. These are stories that less critical.
- Would Like. These stories will likely not be included, but might eventually.

.3 Elements

- Product Backlog: A collection of user stories describing the desired functionality of a product.
- Strategy: An understanding of the outcomes for an initiative.
- Customer Preference: Clarity on what is most important to the customer.

.4 Usage Considerations

MoSCoW is useful when trying to prioritize a backlog. Unlike some prioritization methods, this model helps differentiate between a set of useful user stories to those specifically focused on an outcome.

Advantages

- MoSCoW is easy to describe and typically is powerful in prioritizing backlogs.

Disadvantages

- MoSCoW can be subjective. If there is not effective collaboration with the business, this method of prioritization can be inaccurate.

- On a project where a business value increments approach (Minimum Marketable Features) is used, the team should only deliver Must Haves in the increment. MoSCoW is therefore inappropriate.

4.1.5 Purpose Alignment Model

.1 Purpose

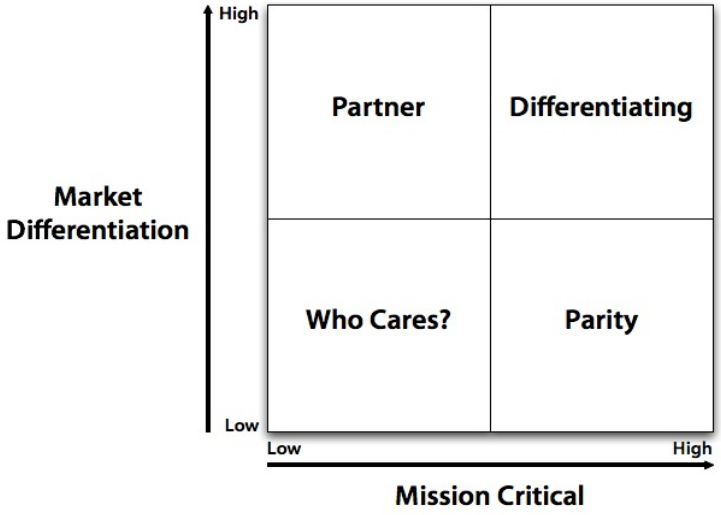
The purpose alignment model is used to assess ideas in the context of customer and business value. From an agile perspective, the model aids in making prioritization decisions and focusing investment on those features or capabilities that are of greatest value to the organization.

.2 Description

The purpose alignment model is used to rate activities, processes, products, or capabilities in two dimensions, and then recommend the best actions to take to improve them based on those ratings. The first dimension is whether or not the activity creates market differentiation, the second dimension is whether or not the activity is critical for the continued functioning of the organization.

The following illustration is an example of an purpose alignment model.

FIGURE 4.10 Purpose Alignment Model



.3 Elements

Differentiating Quadrant

Features, products, or services that both serve to differentiate the organization in the marketplace and are critical to the functioning of the company are part of the differentiating quadrant. These are the things in which the organization should be prepared to invest to offer something that is distinct from competitor offerings. A differentiating activity is one that might be used to advertise the company, that is difficult for competitors to match, or otherwise has significant strategic value, and a unique approach to these activities is likely to be needed.

Parity Quadrant

Things which are mission critical, but not market differentiating, fall into the parity quadrant. That means that it is usually sufficient to be operating on par with other firms in your industry. Many standard functions, such as finance, HR, payroll, and others fall into this quadrant for most organizations. Activities in this quadrant are important but they will not provide an advantage to the firm in relation to competitors and so adoption of best practices is generally sufficient.

Partner Quadrant

Activities that may have unique value to customers, but which are not critical to the functioning of the organization, fall into the partner quadrant. Even though these activities are important to customers or other stakeholders, the organization doesn't need to perform them to survive. That means that the organization is unlikely to have the resources to excel at these activities (as more mission-critical operations will take precedence), while a partner may perform them more effectively.

Who Cares? Quadrant

Finally, activities which are neither mission-critical or help to differentiate the organization in the marketplace fall into the who cares quadrant. As these activities do not add customer value, and the organization can function without performing them, they are prime candidates to be eliminated and the resources reallocated to support more useful work.

.4 Usage Considerations

The purpose alignment model is designed for use by for-profit organizations that face competition in the marketplace. Governmental organizations and no-profits may find that market differentiation is not a significant driver for their decisions. Stakeholder or member value, or alignment with the organizational mission may serve as an alternative.

Secondly, the model provides guidance on whether something should be an area of strategic concern but does not provide any guidance on what strategies or decisions might be the correct ones.

Advantages

- One of the key advantages of this model is its simplicity. It can be taught to business sponsors and users in a couple of minutes so that they can critically assess an idea themselves rather than the business analyst do the analysis that may then be challenged.
- The model is easy to use in a facilitated collaborative environment.
- It can be applied all the way up and down the investment decision process. From strategic investment down to an individual feature in a system.
- It is fast and entire backlog can be analyzed in less than an hour.

Disadvantages

- It assumes positive intent in the business strategy. It does not incorporate “spoiler” behaviour by corporations.

4.1 Get Real Using Examples

In agile methodologies, in order to elicit and validate product needs business analysis practitioners use real customer examples to communicate with the team, including the customer. Real examples serve to bridge understanding of the customer's business and how they see the product serving a future state need. Analysis models can be concurrently developed and elaborated using these same examples. Models may be useful for the team but examples are more concrete for the customer. The techniques are used iteratively by alternating between examples and analysis models to explore multiple

dimensions (for example, user role, user actions, data, business rules) of a product need. This is a continuous practice that builds a shared team understanding of product needs useful for both planning and delivery. These techniques engage customers in requirements elicitation, analysis, and validation.

Examples and models should be at a level of granularity that is appropriate for the outcome you seek. When planning the product, models are used to set context and help the team and customer identify scope. These models are more abstract and provide a broad perspective of the problem domain. When delivering the product, the same model can be progressively elaborated and related examples are elicited and specified to launch into a deeper discussion of the dimensions. The examples can be used to derive acceptance criteria, help the developer design the solution, and provide a foundation for functional testing.

The following sections describe commonly used techniques.

- Behaviour Driven Development

4.1.1 Behaviour Driven Development

.1 Purpose

An approach that enhances the communication between business users and the development team.

.2 Description

Traditional business analysis techniques often involve creating analysis models, for example using UML models. In addition to analysis models, agile techniques favour communication using examples which are more concrete for the customer. Many people are uncomfortable with abstractions and prefer to work with real examples.

Examples tend to be additive and can form a specification. They can be used during agile planning and delivery work. As models change, examples can be refined by building on previous examples. In agile, it is helpful to iterate between using examples and analysis models encouraging them to feed off of each other. Progressive elaboration leads to richer exploration of multiple dimensions (for example, user role, user actions, data, business rules) related to the example.

Supplementing product need discussions with examples creates a much more stable set of requirements than using a model alone.

For example, rather than "a company which supports multiple brands for different demographic segments", consider "Disney Corporation which has Disney films for family entertainment, Miramax for more adult audiences, and Marvel for superhero pictures."

In addition, examples feed smoothly into a behaviour/test driven development approach.

.3 Elements

Examples

Examples may also be known as scenarios. Examples should not be artificial or made up. They should be real life business scenarios provided by the business users. Business analysis activities help to facilitate the discovery of the examples and ensure that the set of examples is comprehensive. Not all examples identified will necessarily be within the scope of a development effort.

Behaviour Driven Development

Behaviour driven development provides a simple grammar format that allows real scenarios to be filled in. This takes the form

- GIVEN <a context>
- WHEN <an event>
- THEN <an outcome>

For example, an ATM

- GIVEN: I'm in credit
- WHEN: I request $20
- THEN: I receive $20
- AND: my account balance is reduced by $20
- AND: my card is returned
- GIVEN: I'm in overdrawn
- WHEN: I request $20
- THEN: I receive no money
- AND: my card is returned

Scenarios that are written in a behaviour driven development format specifying events, conditions, and actions are verifiable. They can serve as acceptance criteria for stories [see "Story Elaboration" on page 52] and serve as tests in support of Acceptance Test Driven Development (ATDD) that drive a common understanding of requirements and future product needs.

Testing

There are now a number of software products that will take examples in this format and allow them to be easily converted into automated tests, thus enabling more agile delivery. With a comprehensive set of examples that can be executed as automated tests, business analysis and testing activities can be more tightly coupled.

4.1 Understand What is Doable

As an agile project team plans for delivery, it is important to think about what is pragmatic and doable. The team must balance capacity and demand when they estimate the work to be done to deliver the product. Agile project teams continually review measures, such as team capacity, prior delivery cycle commitments and actuals, and velocity trends to adjust commitments on an on-going basis. This enables the team question what can be delivered given their knowledge of the work-set and to set appropriate expectations and make better estimates. Understanding what is doable occurs throughout any agile delivery cycle, such as release planning, work-ahead analysis, or whenever a team is pulling new backlog items for consideration in a product delivery cycle.

The entire team uses the following techniques as methods to identify and estimate units of work that are decomposed with business value in mind.

The following sections describe commonly used techniques.

- Estimation
- Planning Workshop
- Real Options

4.1.1 Estimation

.1 Purpose

Accurate estimation is critical to an agile team's productivity, reliability, and reputation. By being able to develop accurate estimates of cost, time, and effort, the agile development team has the ability to faithfully commit to a project or work effort.

Estimation is a team activity, and business analysis makes an important contribution by helping the team to better understand the components, characteristics and complexity of the work.

Although estimates are not visible in the final product, they do add significant value to an agile project. Providing credible estimates allows the project team to:

- determine cost and effort,
- establish the priorities of the project, and
- commitment to a schedule.

.2 Description

Estimation is discussed at length in the *BABOK® Guide (9.10 Estimation).* Here, we build on the information in the *BABOK® Guide* and summarize the relative estimation techniques that can be applied in the agile development environment.

Unique to the agile environment, estimating is progressive and occurs in alignment with iterations. No one expects early estimates to be as accurate as latter estimates. Improvement occurs over time as the teams build confidence in their capacity and capabilities.

In addition to the basic approach of estimating based on historical knowledge, agile estimators frequently apply a relative estimating model in which teams develop narratives (stories) that define user needs and benefits. These stories are analyzed by the team and numeric values are applied to each story (story points). Story points can be abstract measurements that provide a numeric value to a story, or story points can be described as ideal developer days (IDDs).

A story point is a number assigned to each story that defines the estimated effort a team will have to apply to the story. Story points are

usually based on what the team knows about the story in four key areas:

- Knowledge: How much information does the team have?
- Complexity: How difficult is the implementation likely to be?
- Volume: How big is the story? How long will it take?
- Uncertainty: What variables and unknown factors might impact the story?

The total number of story points within any given iteration is considered to be the team's velocity, or how much a team can accomplish within the iteration. After several iterations teams will have a better understanding of their actual velocity. This will allow them to make better informed estimates and commitments in subsequent iterations.

There are several ways to get started with story point estimation. The agile estimator can begin with

- a WAG (wide angle guess),
- a given set of resources and a fixed iteration, or
- an estimation of the time required for a single story point, and then extrapolate from their to estimate the work that can be done in an iteration.

.3 Usage Consideration

Advantages

- Relative estimation is a simple, reliable methodology that fits well with agile practices. It is highly adaptive and is likely to become increasingly accurate throughout successive iterations.
- The planning poker technique is a highly collaborative process that is based on consensus and will likely have a positive impact on development teams. It builds upon the wise counsel to "ask the team."

Disadvantages

- Relative estimates are based on historical data and accuracy is dependent upon the similarity of new stories to stories previously delivered. If new stories differ radically from previous stories, it is possible that the accuracy of the estimate may decrease.

- The accuracy of velocity is dependent on the knowledge and experience of the development team. Any changes to team composition will impact velocity and therefore estimates.

4.1.2 Planning Workshop

.1 Purpose

To enable the team to determine what work to perform during an iteration or to deliver a minimum marketable feature (MMF).

.2 Description

A planning workshop is executed when the team needs to arrive at a commitment to some set of functionality that they feel reasonably confident they can complete in the near future. In most agile methods, this is performed at the beginning of each iteration, but may also occur whenever the team is near to completing their backlog of work or that backlog needs to be ordered. In Kanban, the amount of work being performed by the team is limited by restricting the number of work items that can be in any workflow state, not based on iterations. Business analysts can provide value to the team by helping to understand and focus on the iteration objectives, the value associated with a particular MMF, business issues, story decomposition, and bringing the team together to deliver an acceptable outcome. Prior to the workshop, there is usually a pre-planning stage that involves analysis to get a reasonable gauge of the size, scope, and complexity of each backlog item that will be brought to the iteration planning workshop.

In agile development, planning workshops need to be performed on a frequent and regular basis, as the order in which work is meant to be performed is regularly altered and updated. This allows the team and customers to change the priorities of outstanding work to incorporate feedback or changing business needs.

.3 Elements

Estimated and Ordered Product Backlog

Typically based on user stories, it is the main input for the planning meeting.

Team Velocity

Prior velocity (throughput capacity of backlog items) is critical to enabling the team to schedule a realistic amount of work. When using Kanban, work-in-progress (WIP) limits will be used to manage this workload instead.

Iteration Goal or MMF Set

Many teams set an overall goal for the iteration to help guide the selection of features. This is a subset of the release goal. It is an objective that will be met through the implementation of the product backlog.

Requirement Selection

At the beginning of the meeting, based on business value, iteration goal, and team velocity, the highest priority features are typically selected from the release plan by the product owner, product champion, or a customer given decision making authority.

Non-Feature Selection

The backlog can also be composed by non-feature items (elements not related to a product increment) identified as necessary to achieve the iteration goal or deliver an MMF. For example, there can be bugs to be fixed, system or environment set up, research initiatives, management work items, or any other activity that add value to the project.

Task Planning

The team will break the feature and non-feature items down into tasks. Tasks typically range in size from 4 hours to 2 days, with most tasks capable of being delivered within a day. Tasks effort can be estimated in hours for further statistical control.

.4 Usage Considerations

Advantages

- Customer, product owner, and development team can communicate and collaborate frequently about product vision and evolution.

- Customer and product owner can guide the project not just at the start but day by day.
- It's easier to understand, estimate, and plan the scope of small iterations instead of the scope of big releases.
- Plans can be changed in advance based on feedback from incremental delivery of working software.
- Iteration planning can guarantee visibility of the whole project and synchronization between multiple teams.

Disadvantages

- It is necessary to get all people together in order to avoid interruptions and rework, especially when working with distributed or concurrent teams.
- If the whole project is not well understood during the iteration planning workshop, it's possible to result in a suboptimal plan.
- Some approaches consider analysis, design, and planning some activities to be executed in iteration planning workshops, which can be very time consuming for long iterations (3 or 4 weeks), generating complaints from team members even if the event is productive.

4.1.3 Real Options

.1 Purpose

An approach to help people know when to make decisions rather than how. The approach helps you understand whether you have a commitment or an option.

.2 Description

The core concept behind real options is that you should delay making a decision or a commitment in a project until the last responsible moment, when the decision really needs to be made. The real option approach has three simple rules:

- options have value,
- options expire, and
- never commit early unless you know why.

The first and third rule tell you to avoid commitments and keep your options open. The second rule tells you to understand when an option

expires so that you can actively manage whether you chose that option or let it lapse. As there is value in options, you should seek to extend the maturity of the options.

Real options address people's aversion to uncertainty by providing the conditions when a commitment should be made (the option expiry) rather than simply suggesting that they wait.

The most common usage of real options within agile projects is the way in which business investors chose which item to invest in next. Traditionally, investors would prioritize their requirements for an extended period of time. With real options, they would only prioritize until the next investment decision point. On Scrum projects this would be the next sprint planning session. In Kanban, it would be the next time capacity becomes available to work on something new.

Real options support agile business analysis by allowing us to reduce the number of decisions we have to consider at any one time.

.3 Elements

Options and Commitments

- Real options forces you to identify whether you have options or not, and also forces you to identify the commitments you are making.
- The real options material tends to focus on non-IT project related examples, to help people identify them in a general sense rather than specify a list of common options which are learned by rote.

Examples of options include:

- A hotel reservation. An option to stay at the hotel. The option normally expires at 6 p.m. on the day of the stay at which point you are committed to paying for the hotel room.
- A ticket to a conference, sporting event, rock concert or theatre. The option to attend the event expires at the end of the event, or sometimes earlier.
- A travel card. The option to travel on public transport. The option expires in London at about midnight.
- A business card. The option to contact the person who gives you the card. The option expires when the person changes contact details.

Options are things you can chose to do or not do. If you are committed to doing something and there is only one way, then you do not have options.

Some examples of commitments include:

- Often there is a penalty associated with failing to meet a commitment.
- Paying your taxes. Failure to meet this commitment may result in fines or worse.
- Turning up to work on time. Failure to meet this commitment may result in termination of your contract of employment.
- Delivering items you have committed to deliver to other people. Failure to meet this commitment will lead to a bad reputation and may lead to a lawsuit.

Examples of things that are not options.

- Things you cannot do.
- Things you cannot afford.
- Things you cannot do in time.
- Things you cannot buy or sell.
- Things you do not have the tools for.

Options Expiry

Real options forces us to understand when our options expire or when we no longer have a choice. We have an option up to the expiry date but not after it. In financial options, the expiry date of the option is explicitly stated as a series of date/times. In real options, the expiry date is conditional.

Determination of when an option expires is the most important aspect of real options. Without this knowledge, you are blind in your decision process. You either make decisions to soon or too late and you do not know which.

Example

You have the choice to attend a sporting event at 7 p.m.

- The option to attend depends on where you are. Imagine you are at home which is 1 hour away, then your option to attend expires at 6pm. If you leave after 6 p.m., you will be late.

- Imagine you are at work which is 2 hours away, then your option to attend expires at 5 p.m. If you leave after 5 p.m., you will be late.

As options have value, pushing the expiry date back adds value to your project and allows you more flexibility.

Right / Wrong / Uncertain

A rational decision process would order our preference as being right, then uncertain, and finally wrong. Observing people's behaviour though their preference is right, wrong, and then uncertain.

If you ask someone to make a decision later or to not to make the decision now, they are faced with unbounded uncertainty and as a result they are likely to make a decision based on the information they have now. This emotional commitment then makes it harder to change the decision as further information arrives.

Real options suggests using bounded uncertainty. “Make the decision when...” Specify the conditions when the decision should be made.

Specifying the conditions when a commitment should be made allows the decision process to be managed. A senior manager can ask their assistant to monitor the conditions on his behalf.

Another example of this is the checkout at supermarkets. When do they open another checkout? At 6 p.m.? At 7 p.m.? They open a checkout when three people are waiting in the queue. They then publish the fact so that their customers can manage the process for them. They react when customer's complain about the length of the queue and open up another till. When queue levels drop, they close tills again and redeploy staff to replenishing the shelves.

Feature Injection

Feature injection is a collection of traditional business analysis techniques that have been combined to allow a business analyst to perform analysis in a fast and effective manner. This speed then allows investment commitments to be deferred because it reduce the length of time that analysis takes.

The speed of the process is due to following the real option process. The analysis starts with the output and then works back through the

process to the inputs. It then considers how different examples affect the process.

The three steps of the process are

1. Identify the business value which specifies the outputs/outcomes required from the system/process.

2. Inject the features that work out which processes and inputs are required to produce the outputs/outcomes.

3. Break the model which use models identifies all the examples that produce a different behaviour in the system/process.

.4 Usage Considerations

Advantages

- Real options simplify decision making by providing a simple set of principles to follow.
- Real options make decision making fast as you only focus on the immediate decisions and defer prioritization until a later date when complexity is resolved.
- Real options do not tell you how to make decisions, just when which makes them broadly applicable as an approach.
- Real options help us optimize process by forcing us to consider the decision points and the information arrival process (when data arrives and whether it arrives before the decision).

Disadvantages

- Real options can be counter-intuitive as they require us to analyze systems from the outputs to the inputs.
- Real options are not a simple process to be followed by rote. They are a thinking tool that requires practice and study.

4.1 Stimulate Collaboration & Continuous Improvement

Agile practices emphasize the important of continual collaboration between members of the project community. We actively create an environment where all project stakeholders can contribute to the overall project value, ideally in face to face facilitated workshops. The

reality for many projects is that they are distributed in terms of team, time and geography. Facilitation skills, in conjunction with the techniques outlined in this section, enables collaboration for both local and distributed teams. The techniques in this section entail working together in groups to create a shared understanding. This collaborative point of view pervades an agile project, and is not limited to any specific technique.

One of the fundamental principles of all agile methods is the need for continuous improvement, not just of the product under development but of the process used by the team to deliver the product. This is achieved through both structured and unstructured feedback on a continuous basis. For example, the retrospective is an opportunity for the team to examine their processes and product to identify opportunities for improvement. Healthy collaborative teams have the trust and safety necessary to transparently identify opportunities for improvement.

The following sections describe commonly used techniques.

- Collaborative Games
- Retrospectives

4.1.1 Collaborative Games

.1 Purpose

Collaborative games are not used strictly by agile teams, although they are prevalent in agile practices because they emphasize the concepts of teamwork and collaboration, which are highly valued by agile practices. Collaborative games help a group of people promote a common understanding, gain insight into a problem, or inspire new ideas about solving a problem.

.2 Description

Collaborative games refer to many distinct structured techniques, which include rules to keep participants focused on a specific objective. The games are used to help the participants share their knowledge and experience on a given topic, identify hidden assumptions, and explore that knowledge in ways that may not occur during the course of normal interactions. The shared experience of the collaborative game encourages people with different perspectives on a

topic to work together to better understand an issue and develop a shared model of the problem or of potential solutions.

Collaborative games often benefit from the involvement of a neutral facilitator who helps the participants understand the rules of the game and helps to enforce them. The facilitator's job is to keep the game moving forward and to help ensure that all participants play a role.

Collaborative games also usually involve a strong visual or tactile element. Activities like moving sticky notes, scribbling on white boards, assembling things, or drawing pictures help overcome inhibitions, foster creative thinking, and think laterally.

.3 Elements

Purpose

Games always have some defined purpose, typically to develop a better understanding of a problem or to stimulate creative solutions. The participants in the game need to understand that purpose, and the facilitator will help keep them moving toward it.

Process

Games also have a process or rules that they follow to keep the game moving toward its goal. Often, each step in the game is time limited. Games typically have at least three steps:

1. an opening step, where the participants get involved, learn the rules of the game, and start generating ideas,

2. the exploration step, where participants engage with one another and look for connections between their ideas, test those ideas, and experiment with new ones, and

3. a closing step, where the ideas are assessed and participants work out which ideas are likely to be the most useful and productive.

Outcome

Finally, at the end of a collaborative game, the facilitator and participants will work through the results of the game and determine any decisions or actions that need to be taken as a result of what the participants have learned.

.4 Usage Considerations

It is not practical to elaborate on the many collaborative gaming techniques and their usage considerations in this document but the following examples may provide a starting point.

The following chart provides some examples of collaborative games.

TABLE 4.6 Examples of Collaborative Games

Game	Description	Objective
Product Box	Participants construct a box for the product as if it was being sold in a retail store.	Used to help identify features of a product that help drive interest in the marketplace.
Affinity Map	Participants write down features on sticky notes, put them on a wall, and then move them close to other features that appear similar in some way.	Used to help identify related or similar features or themes.
Fishbowl	Participants are divided into two groups. One group of participants speak about a topic, while other participants listen intently and document their observations.	Used to identify hidden assumptions or perspectives.

4.1.2 Retrospectives

.1 Purpose

The most singular objective of a retrospective meeting is for a team to come together in order to reflect on what it has done well, what it could do better, and to reach agreement on how any improvements will be realized. Unique to the agile environment, retrospectives are held at the end of each iteration so that learnings can be quickly embedded in the processes and practices going forward for remainder of the project.

.2 Description

The retrospective provides an opportunity for all members of the team to reflect on the most recent deliveries. The retrospective should include the whole team especially business stakeholders and users. It is common for the retrospective to be split into two parts. The first part involving the whole team and the second part to discuss technical aspects of the project that only affect part of the team.

The retrospective should be focused on identifying issues with the process. It should identify process improvements, and not be personal

in any sense. A key element of a retrospective is that the team feel safe to discuss any issue that concerns them.

Ideally, retrospectives should be facilitated by an neutral facilitator rather than by a member of the team.

.3 Elements

Preparation

The team prepares ideas from the recent iteration that may be analyzed in the retrospective.

Safety Check

The team must agree, together, to trust each other and to believe that every comment or suggestion is intended for the sole purpose of improving the team's performance.

Identify the Issues

There are many mechanisms to identify issues to discuss. One of the most common is for all team members to write up things that went well, things to improve, and things of interest on post-it notes. Colour coding the notes and applying them to a visual time-line assist in adding understanding to the emerging picture.

Choosing Future Actions.

Once all the ideas have been discussed to the satisfaction of the team, the facilitator asks the team to decide which solutions/improvements they want to focus on next. The team then identifies which improvements will be addressed and assigns responsibility to an individual team member who ensures the solution/improvement is implemented.

.4 Usage Considerations

Advantages

- An excellent way for the team to find a collective voice around opportunities for team improvement.

Disadvantages

- Team members may feel obliged to pretend that they trust each other, even though they do not.
- Retrospectives are only of value if the team acts upon the learning in the session to improve the process.
- Most ideas raised in the retrospective are know to at least one member of the team. A mature team should be addressing issues as they arrive rather than batching them up to be handled in a retrospective.

4.1 Avoid Waste

Agile methods emphasize the delivery of working software to the customer. Business analysis work adds value by ensuring that the needs of the customer are understood and that the team delivers what the customer really needed. Any activity that does not contribute directly to this goal, or that the customer would not be willing to pay for, is waste.

Waste elimination is an issue that has been treated with great emphasis by the agile community. It is a mind-set originated from Lean as the most effective way to increase the profitability of any business. Lean thinking considers a value stream has having two components. Value added activities and muda (the Japanese word for waste). The aim of lean thinking is to remove the muda, or waste, from the value stream. Waste is further sub-divided into two components. Those activities that have value but do not contribute to the final product directly like an architects plan and those activities that do not add value at all. The aim is to remove completely those activities that do add value at all, and minimize those activities that do not contribute to the final product directly. You can start avoiding waste in business analysis by developing and keeping documentation lightweight.

The following principles are helpful when working to identify waste in any business analysis process:

- Avoid producing documentation before somebody else needs it.
- Whenever value is not being delivered to your customers, the waste of waiting occurs. Don't let others be waiting for your job.
- Transporting information between different media types is a cost incursion which adds no value to the product development.

Try to elicit, analyze, specify, and validate requirements with the same models.

- Analysis models should be as simple as possible. Do not include information that is not directly useful to a stakeholder.
- Work-in-progress (WIP), or inventory, is a direct result of overproduction and waiting. They tend to hide problems on the process. If you see it, try to let them flow over the process or eliminate it.
- Work close to the customers and development team because unnecessary motion or work-a-rounds to substitute face-to-face conversations are also waste.
- Keep continuous attention to your technical excellence. Quality defects (such as unclear requirements) result in rework and are the worst waste in the process.

The following sections describe commonly used techniques.

- Lightweight Documentation

4.1.1 Lightweight Documentation

.1 Purpose

Ensure that all documentation produced through business analysis is intended to fulfill an immediate need, has clear value for stakeholders, and does not create unnecessary overhead.

.2 Description

Lightweight documentation is a principle that governs all documentation produced in an agile project. The business analyst should aim to produce as little documentation as possible, all of which should be of value. In traditional development life-cycles, documentation may be used by developers to create software a long time after its initial creation. In agile methodologies, the software is constructed within days of the team agreeing to deliver a set of requirements, and so does not need to include information that the team can remember or agree to during the construction process.

Traditionally, functional specifications include all information that the business analyst knows about the domain problem. The specification may contain extensive description of the context in which the project takes place, and may attempt to train the developer in all aspects of the

domain. The transfer of knowledge is taken out of the specification and is made more effective through face to face conversations or other communication methods.

The context plays an important factor in the amount of documentation required. Some projects are mandated to produce documentation by external entities (for example, regulators). Documentation may also be needed to provide a long-term record of decisions reached by the team or functions implemented in the application. However, this documentation can be written after the software is developed, which ensures that it actually matches what the team delivered.

A general principle with agile is that if a document is valuable enough to be created, it is probably important enough to be automated so that it is part of the living code base. This has lead to the rise of automated acceptance testing and behaviour driven development that allows business analysts to work with quality assurance professionals to create executable specification in the form of examples.

This principle comes directly from the Agile Manifesto which says "Working software over extensive documentation". It is often misinterpreted as meaning no documentation. Instead, documentation should be barely sufficient to meet the needs of the team.

The agile principle has elevated the value of documentation that is produced by the business analyst. The documentation produced by the business analyst should ideally be automated in the form of automated tests or examples.

.3 Usage Considerations

Advantages

- Reduce amount of time spent writing documentation.
- Reduce effort spent reading and reviewing documentation.
- Reduce number of drafts of documents.
- All reviewers can focus on key issues rather than extraneous details.
- Training (knowledge transfer) is done to suit each person rather than using the documentation.
- The documentation lives in the form of automated examples.

Disadvantages

- Producing lightweight documentation may cause conflict with groups who enforce corporate process standards.
- Some may misunderstand the principle as meaning no documentation.
- Some produce documentation that is not sufficient for an external entity.

appendix A Glossary

Acceptance Criteria
Requirements that must be met in order for a solution to be considered acceptable to key stakeholders.

Acceptance Test Driven Development (ATDD)
ATDD is a TDD instance that involves writing one or more tests (or "customer tests") for a customer-centric feature, before the solution has been developed.

Acceptance Testing
See User Acceptance Test.

Agile
Agile refers to a group of principles and practices that promote a disciplined project management process that encourages frequent inspection and adaptation, a leadership philosophy that encourages teamwork, self-organization and accountability, a set of engineering practices intended to allow for rapid delivery of high-quality software, and a business approach that aligns development with customer needs and company goals.
Also see Agile Manifesto, Agile Software Development.

Agile Manifesto
The Agile Manifesto is a statement of the principles that underpin Agile Software Development. It was drafted from February 11th through 13th, 2001.

Agile Retrospective
Retrospectives are a variation of project retrospectives whereby the retrospective workshop is conducted at regular intervals throughout the delivery process, such as after each iteration and/or release.

Agile Software Development
Agile software development refers to a group of software development methodologies based on iterative and incremental development, where requirements and solutions evolve through collaboration between self-organizing cross-functional teams.

Anti-pattern
A commonly used, yet ineffective, process or practice.

Backlog
See Product Backlog.

Backlog Item
An element that belongs to a product backlog. It can be a feature, a bug fix, a document, or any other kind of artifact.

Behavior Driven Development (BDD)
An approach that enhances the communication between business users and the development team by using real examples.

Burndown Chart
Used to track the work remaining over time. Work remaining is the Y axis and time is the X axis. The work remaining should jig up and down and eventually trend downward.
Also see Release Burndown Chart.

Business Value
In management, business value is an informal term that includes all forms of value that determine the health and well-being of the firm in the long-run. In agile development, business value is related to all deliverables that increase/ protect revenue or reduce/avoid costs in a business.

Ceremonies
Controlled processes and documents that constitute events and outputs in any given methodology. A high degree of ceremony frequently implies a high degree of control and traceability. Based on the just-in-time and just-enough model, agile projects generally have a lower degree of ceremony. Agile ceremonies include iteration planning, daily meetings, and retrospectives.

Change Driven Methodology
A software development approach that refers to a group of principles and practices that promote a disciplined project management process that encourages frequent inspection and adaptation, a leadership philosophy that encourages teamwork, self-organization and accountability, a set of engineering best practices intended to allow for rapid delivery of high-quality software, and a business approach that aligns development with customer needs and company goals.

Class-Responsibility-Collaboration (CRC) Cards
A brainstorming tool used in the design of object-oriented software.

Daily Burndown
See Burndown Chart.

Daily Meeting
On each day of a sprint, the team holds daily meetings. Ideally they are held in the morning as they help set the context for the coming day's work. The daily scrum is not used as a problem-solving or issue resolution meeting. Issues that are raised are taken offline and usually dealt with by the relevant sub-group immediately after the daily scrum.

Daily Scrum Meeting
See Daily Meeting.

Daily Standup
See Daily Meeting.

Elicitation
An activity within requirements development that identifies sources for requirements and then uses elicitation techniques (for example, interviews, prototypes, facilitated workshops, documentation studies) to gather requirements from those sources.

Enterprise Analysis
Describes how business analysts identify a business need,
refine and clarify the definition of that need, and define a solution scope that can feasibly be implemented by the business. This knowledge area describes

problem definition and analysis, business case development, feasibility studies, and the definition of solution scope.

Epic

A piece of functionality that enables a user to achieve a clearly identified business objective. Often Epics are at the level of Elementary Business Processes---a piece of work undertaken by one person, at one time, in one place that delivers on a specific operational objective.

Feature Injection

An analysis technique based on real options and Kolb's model of learning. It can be used to efficiently identify the business value, and then determine the minimum set of features necessary to deliver that value.

Iteration Burndown

See Product Burndown Chart.

Just-in-time Requirements

Requirements that define only what is needed for the current iteration and only to the level of detail required for the team to deliver the item.

Lean Development

An agile methodology that is guided by 7 principles: eliminate waste, amplify learning, decide as fast as possible, empower the team, build integrity in, and see the whole.

Minimal Marketable Feature (MMF)

A chunk of functionality that delivers a subset of the customer's requirements, and that is capable of returning value to the customer when released as an independent entity.

Minimal Viable Feature (MVF)

Commonly used with new products.
Also see Minimal Marketable Feature.

On-site Customers

The term used for the individual responsible for the relative priorities for the solution requirements in the Extreme Programming methodology.

Operations Reviews

A time-based process that is used to evaluate milestones and ensure the production environment is monitored and measured.

Pair Programming

A development technique, frequently used in Extreme Programming, where two programmers work together one computer, developing code. Generally one programmer writes the code while the other reviews the code.

Persona

Fictional characters or archetypes that exemplify the way that typical users will interact with a product.

Plan-driven

A software development approach that follows an orderly series of sequential stages. Requirements are agreed upon, design is created and then the code is developed, and tested.

Planning Game

The process used in Extreme Programming to conduct release planning and iteration planning. Both types of planning is broken down into three distinct phases: exploration phase, commitment phase, and steering phase.

Planning Poker
At technique used in relative estimation that uses the entire team to contribute to the estimated work effort. During this group exercise, each member of the team has a set of cards that have story point values on them. The stories are presented and then each team member submits the card that has the value of story points that they feel is how much effort is required to deliver the story. The process is repeated until consensus is reached for each story.

Potentially Shippable Product Increment
Scrum requires that each sprint deliver a potentially shippable product increment. The increment must consist of thoroughly tested code that has been built into an executable, and the user operation of the functionality is documented either in Help files or user documentation.

Product Backlog Item
In Scrum, a product backlog item (PBI, backlog item, or item) is a unit of work small enough to be completed by a team in one sprint. Backlog items are decomposed into one or more tasks.

Product Burndown Chart
In Scrum, the product burndown chart is a "big picture" view of a project's progress. It shows how much work was left to do at the beginning of each sprint. The scope of this chart spans releases; however, a release burndown chart is limited to a single release.
Also see burndown chart.

Product Champion
See Product Owner.

Product Owner
The product owner represents the interests of all stakeholders, defines the features of the product and prioritizes the product backlog.

Product Roadmap
An initial high level project scope and direction. It may include an initial architecture.

Rapid Application Development (RAD)
A generic term referring to any number of lighter-weight approaches, using fourth-generation languages and frameworks (such as web application frameworks), which accelerate the availability of working software.

Rational Unified Process (RUP)
An iterative software development process framework created by the Rational Software Corporation, a division of IBM since 2003.

Relative Estimation
A way of estimating work effort by identifying features/requirements with stories and then assigning story points to each story. The cumulative story points are the amount of effort to estimate the amount of effort required to deliver each story. The story points are then calculated against the team's velocity to create an estimate on how much the team can deliver in a particular iteration.

Release
The transition of an increment of potentially shippable product from the development team into routine use by customers. Releases typically happen when one or more sprints has resulted in the product having enough value to outweigh the cost to deploy it.

Release Burndown Chart
The release burndown chart is a "big picture" view of a release's progress. It shows how much work was left to do at the beginning of each sprint comprising a single release. The scope of this chart is a single release; however, a product burndown chart spans all releases.
Also see Product Burndown Chart.

Release Planning
At the beginning of a project the team will create a high-level release plan. The team cannot possibly know everything up front so a detailed plan is not necessary. The release plan should address: the number and duration of the iterations, how many people or teams should be on this project, the number of releases, the value delivered in each release, the ship date for the releases.

Scrum Master
The Scrum Master is responsible for making sure a Scrum team lives by the values and practices of Scrum. The Scrum Master protects the team by making sure they do not overcommit themselves to what they can achieve during a sprint.

Scrum Team
The Scrum Team builds the product that the customer is going to consume: the software or website, for example. The team in Scrum is "cross-functional" - it includes all the expertise necessary to deliver the potentially shippable product each sprint - and it is "self-organizing", with a very high degree of autonomy and accountability.

Shippable Product
A fully tested unit of code which meets acceptance criteria, that is delivered at the end of an iteration.

Service Level Agreements
Formal agreements that contract level of service and performance.

Solution Assessment and Validation
The set of tasks that are performed in order to ensure that solutions meet the business need and to facilitate their successful implementation. These activities may be performed to assess and validate business processes, organizational structures, outsourcing agreements, software applications, and any other component of the solution.

Spike
An experiment to explore potential solutions or build a partial solution. Spikes are created to figure out answers to tough technical or design problems.

Sprint
An iteration of work during which an increment of product functionality is implemented.

Sprint Backlog
Items selected from the product backlog to be delivered in the current sprint, and their tasks.

Sprint Goal
The Sprint Goal sprint goal is a short description of what the sprint will attempt to achieve.

Sprint Planning Meeting
The Sprint Planning Meeting is attended by the product owner, scrum master, the entire scrum team, and any interested and appropriate management or customer representatives. During the sprint planning meeting the product owner describes the highest priority features to the team. The team asks enough questions during this meeting so that they can go off after the meeting and determine which tasks they will move from the product backlog to the sprint backlog.

Sprint Retrospective
The Sprint Retrospective is the main mechanism for taking the visibility that Scrum provides into areas of potential improvement, and turning it into results.

Sprint Review Meeting
A meeting where the scrum team shows what they accomplished during the sprint. Typically this takes the form of a demo of the new features. Participants in the sprint review typically include the product owner, the scrum team, the scrum master, management, customers, and engineers from other projects. During the sprint review the project is assessed against the sprint goal determined during the Sprint planning meeting. Ideally the team has completed each product backlog item brought into the sprint, but it is more important that they achieve the overall goal of the sprint.

Standup Meeting
See Daily Meeting.

Story
See User Story.

Story Mapping
A Story Map is a tool to assist in creating understanding of product functionality, the flow of usage, and to assist with prioritizing product delivery (such as release planning).

Task Board
The task board shows all the work the team is doing during an iteration. It is updated continuously throughout the iteration – if someone thinks of a new task they write a new card and puts it on the board. Either during or before the daily meeting, estimates are changed (up or down) and cards are moved around the board.

Team Velocity
The rate at which a team can consistently deliver software features per iteration. Typically, it can be estimated by viewing previous sprints, assuming the team composition. and sprint duration are kept constant. It can also be established on a sprint-by-sprint basis, using commitment-based planning.

Theory of Constraints
Developed by Dr. Eli Goldratt, the Theory of Constraints (TOC) holds that every system has at least one constraint limiting it. TOC's goal is to increase efficiencies by identifying and mitigating these constraints.

UML
Unified Modeling Language (UML) is a standardized language used to visually articulate elements of a piece of software.

User Acceptance Criteria
Test cases that users employ to judge whether the delivered system is acceptable. Each acceptance test describes a set of system inputs and expected results.

User Story
A high-level, informal, short description of a solution capability that provides value to a stakeholder. A user story is typically one or two sentences long and provides the minimum information necessary to allow a developer to estimate the work required to implement it.

User Story Mapping
A workflow of a business process that breaks down tasks for each process and represents these tasks based on priority.

Value driven development
A process used to prioritize requirements or backlog items based on business value.

Velocity
See Team Velocity.

Waterfall
A software development approach that follows an orderly series of sequential stages. Requirements are agreed upon, design is created and then the code is developed, and tested.

Whole Team Testing
The concept embraced by may agile methodologies where the entire project team is responsible for quality assurance and testing the code.

appendix B Bibliography

The following works were referenced by contributors to *The Agile Extension to the BABOK® Guide*. In cases where multiple editions of a work were consulted, only the most recent edition is listed.

In addition to the works listed here, many other sources of information on business analysis were consulted by contributors and reviewers or otherwise or influenced the development of *The Agile Extension to the BABOK® Guide*, including articles, white papers, websites, blog postings, online forums, seminars, workshops, and conferences.

With only a very few exceptions, the ideas and concepts found in *The Agile Extension to the BABOK® Guide* were not created originally for or original to it. *The Agile Extension to the BABOK® Guide* is a synthesis of years of research into how agile development methodologies are utilized and methods that can be used to identify potential improvements. The works listed below, themselves build on the thoughts and research of many others.

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appendix C Contributors

IIBA® and The Agile Alliance® would like to thank the following contributors to *The Agile Extension to the BABOK ® Guide*. Without their efforts and commitment *The Agile Extension to the BABOK ® Guide* would not be possible.

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IIBA International Institute of Business Analysis

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The Agile Alliance is a nonprofit organization with global membership, committed to advancing Agile development principles and practices. Agile Alliance supports those who explore and apply Agile principles and practices in order to make the software industry more productive, humane and sustainable. We share our passion to deliver software better everyday.

Agile methods have proven their effectiveness and are transforming the software industry. As agile methods evolve and extend, Agile Alliance fosters a community where organizations and individuals find ways to transition to and advance Agile practices, regardless of methodology.

The Agile Alliance website offers an information hub where members can access a wide variety of resources — an article library, videos, presentations, local user group listings and links to additional agile resources.

Agile Alliance organizes the largest, most diverse and comprehensive agile conferences each year. Conference participants learn from hundreds of sessions spanning the entire agile organization and lifecycle, make business connections, and converse with agile thought leaders, practitioners, and authors.

In addition to these major conferences, Agile Alliance provides financial and organizational support to scores of local, regional and special interest conferences and user groups worldwide.

The Agile Alliance operates on the principles of the Agile Manifesto. http://www.agilemanifesto.org

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The *Agile Extension to the BABOK® Guide* contains descriptions of generally accepted practices and techniques used by those to practice business analysis within an agile development framework. The content has been verified through reviews by practitioners, consultation with recognized experts in the field, and close collaboration between IIBA® and the Agile Alliance®.

The *BABOK® Guide* is recognized around the world as a key tool for the practice of business analysis and has become a widely-accepted standard for the profession, with over 200,000 copies downloaded from the IIBA® website. The *Agile Extension to the BABOK® Guide* builds on the practices found in the *BABOK® Guide*, and describes business analysis areas of knowledge, their associated activities and tasks, and the skills necessary to be effective in their execution within the framework of agile software development.