

# **AGILE BUSINESS**

## **BODY OF KNOWLEDGE**

**Agile Business Body of Knowledge** (ABBoK) Drafted by the International Institute for Agile Business Certification (IIABC.org)

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Overview of the knowledge required to obtain the following certificates:





Maximizing Value



Facilitating the Process

## **TABLE OF CONTENTS**

WHY WAS THE AGILE BUSINESS BODY OF KNOWLEDGE DRAFTED?	3
AGILE	3
THE FOUR VALUES	3
THE TWELVE PRINCIPLES	4
WHEN TO USE AGILE AND WHEN NOT TO USE AGILE	4
THE REVERSED IRON TRIANGLE	5
STARTING AN AGILE PROJECT OR TEAM	5
REQUIRED PREPARATION	5
DRAFTING A VISION	6
DRAFTING THE INITIAL PRODUCT BACKLOG	7
SCRUM	7
EMPIRICISM	7
VALUES	8
RESPONSIBILITIES	8
Product Owner	8
Developers	8
Scrum Master	9
THE SPRINT	9
Sprint Planning	10
Daily Scrum	11
Review	11
Retrospective	12
Product Backlog Refinement	12
ARTEFACTS	13
Product Backlog	13
Sprint Backlog	13
Increment	13
Definition of Done	14
Keeping Track of Progress	14
KANBAN	14
GENERAL PRACTICE 1: VISUALIZE THE WORKFLOW	14
GENERAL PRACTICE 2: LIMIT WORK IN PROGRESS	15
GENERAL PRACTICE 3: MANAGE FLOW	15
GENERAL PRACTICE 4: MAKE POLICIES EXPLICIT	16
GENERAL PRACTICE 5: IMPLEMENT FEEDBACK LOOPS	16
GENERAL PRACTICE 6: IMPROVE COLLABORATIVELY	17
DEEEDENCES	17

## WHY WAS THE AGILE BUSINESS BODY OF KNOWLEDGE DRAFTED?

The Agile Business Body of Knowledge was drafted by the International Institute for Agile Business Certification (IIABC.org). This Body of Knowledge is unique in the following:

- 1. iiabc.org is focused on the use of Agile within the entirety of the organization
- 2. While other certification entities focus on a specific framework in their documentation, the IIABC gives an overview of (i) Agile as a whole and (ii) specifically Scrum and Kanban. Through this focus you will be able to gain an overview of the use of Agile within the entire organization because:
  - a. Knowledge of the Agile values and principles gives a general direction by which to form the creation of an Agile mindset;
  - b. Knowledge of Scrum and Kanban gives the insights needed to structure both project-based and operational work.

The theories described in this Body of Knowledge were for the most part developed by key figures in the Agile movement. IIABC does not claim to be the original source. However, the theory is presented in a unique way by combining Agile, Scrum and Kanban, benefiting the reader.

## AGILE

The Agile philosophy was created out of a necessity for organizations to be able to quickly adapt to a fast changing world. Only those organizations that adapt stay relevant and are able to survive. The philosophy was also borne from frustrations that arose from old fashioned organizational structures and project management methods. Because of this in 2001 a number of new values and principles were written down in the Agile Manifesto. These values and principles increasingly form the foundation of Agile organizations.

#### The four values

The following four values are adapted from the Agile Manifesto, so their applicability goes beyond IT organizations.

Agile teams value:

- Individuals and interactions over processes and tools
- **Delivered increments** over comprehensive documentation or plans
- Customer collaboration over contract negotiation
- Responding to change over following a plan

Of course, value can exist in the things mentioned in the latter half of these sentences, but in Agile organizations the focus lies on the left side.

#### The twelve principles

The four values have led to twelve principles. These values and principles together form the guidelines for Agile organizations and teams. Again, these principles have been adapted to better

suit a broader implementation:

- 1. A satisfied customer is always the highest priority
- 2. Scope change is always welcome, even late in projects
- 3. Deliver finished work in short cycles
- 4. Work together on a daily basis in multidisciplinary teams
- 5. Projects are done by motivated employees, who get the support and trust they need
- 6. Face-to-face communication is the most effective way of communicating
- 7. Completed work is the most important indicator of progress
- 8. Look for a constant and sustainable innovation pace
- 9. Pay constant attention to high quality
- 10. Simplicity is key. Minimize efforts that yield little value
- 11. The best ideas arise from self-organizing teams with a high level of autonomy
- 12. Improve collaboration and expertise by scheduling recurring moments of reflection

Many Agile frameworks are based on the abovementioned principles. This Body of Knowledge focusses on two of these frameworks: Scrum and Kanban.

## When to use Agile and when not to use Agile

Working Agile is no cure-all and should not be tried if the context is not right. This table shows which organizational context is right for Agile.

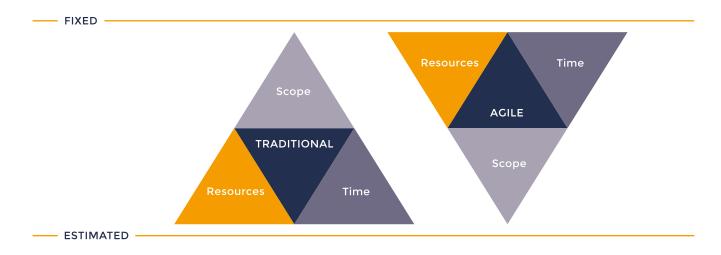
ASPECT	FAVORABLE FOR AGILE	UNFAVORABLE FOR AGILE
Market situation	Client wishes change often and/ or technological developments are quick	The surroundings of an organization are stable
Customer involvement	Customer collaboration and regular evaluation moments are desirable	Client wishes are stable, or clients are not inclined to collaborate
Type of innovation issues	Complex challenges in the organization, without a clear-cut solution or a clear scope	The road toward the future is clear, and detailed planning and predictions can be made with confidence
Ability to split work	Work in the project portfolio can be split into smaller independent parts	Only a complete end product can be tested by customers
Making mistakes	Mistakes can be made as long as the organization learns from them	Mistakes have catastrophic consequences for the organization
Organizational culture	There is not a lot of bureaucracy and the organization is open to multidisciplinary teams working autonomously	There is a lot of bureaucracy, teams work in their own silos and the work they do needs to be controlled completely

## The reversed iron triangle

The concept of the iron triangle was conceived in traditional project management. The triangle shows how the factors of scope, time and resources interact. Putting a limit on one of these factors directly impacts one or more of the other factors. For example, limiting the resources (people) intended for a project leads to a decrease in scope or an increase in amount of time needed to complete the project.

- **Scope**: the work to be delivered
- **Time**: a planning showing what work will be delivered when
- **Resources**: people and budget needed to deliver the work

Traditionally the scope is set at the beginning of a project, so time and resources can be estimated. Nowadays the complexity of most projects has increased dramatically, due to this complexity it becomes undesirable or even impossible to set a scope at the beginning of a project. That is why Agile organizations turn the iron triangle upside down: time and resources are set, and the scope is estimated. Based on new insights during the project, the scope is constantly optimized.



## STARTING AN AGILE PROJECT OR TEAM

## Required preparation

Before starting with an Agile project or team, certain conditions need to be met. Bellow you can find a list of items that need to be prepared. The items on this list are not needed in every situation but give a clear set of requirements that are not mentioned in the standard Agile frameworks.

Preparations to start an Agile project or team	Yes/No	
Is there a sponsor and a budget for the project or team?		
Is a team selected with all required expertise to deliver the project without		
having to depend on other teams or individuals?		
Has everybody received the required training for the relevant Agile framework?		
Is the team able to function as a self-organizing team?		
Is there a space available where the team can work face-to-face?		

Are there clear work policies? (Eg. the relevant Agile framework, meetings,	
roles, clear Backlog items, tools, Definition of Done, team values etc.)	
Is there a clear vision about the value the team will deliver?	
Is there an initial Backlog, composed with the input of stakeholders and the Developers?	
Are the Backlog items clear, small, estimated, testable and prioritized based on value?	

## Drafting a vision

It is important that both project teams and operational teams have the greater goal in mind. A clear and sensible vision leads to intrinsic motivation and thus to better results and more satisfaction among team members. A clear vision additionally brings focus and eases self-organization.

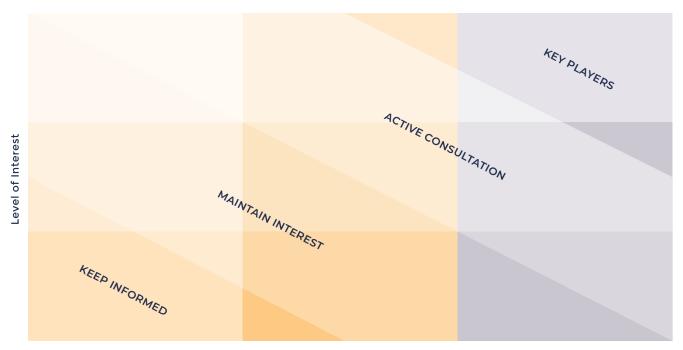
VISION  What is the purpose of the produc What is the positive impact of the	et? product?		
TARGET GROUP  What market is targeted by this product?  Who are the target customers and users?	NEEDS OF THE TARGET GROUP  What problem does the product solve?  What advantage does the product give?	PRODUCT  What parts does the product consist of?  Why is this product unique? Is our organization able to deliver this product?	GOALS  How will this product deliver value to the organization?  What are the business goals?
COMPETITORS  Who are our main competitors?  What are their strengths and weaknesses?	REVENUES  How can we market and monetize the product?	COSTS  What costs are involved to: 1. Develop the product 2. Sell the product 3. Service the product	CHANNELS  How are we going to market and sell the product?  Are these existing channels?

A vision document consists of the following:

- The vision in one sentence: explain what positive impact the team will have. In other words: what is the goal of the team collaboration?
- The target group: who will benefit from the project?
- Needs of the target group: what needs of the target group are met by the team? Does it solve an existing problem?
- The product: what are the three to five unique characteristics of the end result the team will deliver?
- Competitors: who are our competitors and what are their strengths and weaknesses?
- Revenues: how will the product be marketed and how will we monetize the product?
- Costs: what are the estimated costs to reach the desired results?
- Channels: where will the product be sold? Do these channels already exist?

A vision can be set by a Product Owner, a whole team or by stakeholders. The best and most supported visions are created by as many stakeholders as possible, as early as possible.

The matrix below can be used to specify how different types of stakeholders should be involved with the project or the team.



Level of Influence

## **Drafting the initial Product Backlog**

It is important Agile teams start by drafting an initial Backlog. In Scrum this is called the Product Backlog, in Kanban a list is used that can contain both project and operational items.

The vision is the starting point and framework used to draft the initial Backlog. Based on the vision the most important stakeholders and the Agile team give their input which leads to the initial Backlog. The initial Backlog contains enough items for the Agile team to start delivering customer value. In Scrum it is the Product Owner's responsibility to draft and maintain the Product Backlog. In Kanban it is up to the team to decide who is responsible.

## SCRUM

Scrum is a framework designed to solve complex adaptive problems productively and creatively. Scrum helps deliver products and projects with optimal customer value.

Scrum is described in the Scrum Guide. It describes the values, roles, meetings and artifacts from a software development perspective. The IIABC Body of Knowledge describes Scrum from a non-IT perspective.

#### **Empiricism**

Scrum is based on empiricism. Empiricism states (i) knowledge arises from experience and (ii) choices must be made based on knowledge. Scrum implements empiricism by using transparency, inspection and adaptation.

Transparency is achieved by:

- 1. Always using the same roles, meetings and artifacts. This leads to everybody speaking the same 'language' so everybody understands each other.
- 2. Always giving insight in the status of work through the Product and the Sprint Backlog.
- 3. Always working with a collective Definition of Done, so it is clear for everyone when something is finished.

Inspection and adaptation are guaranteed by:

- 1. Inspecting, and if needed adapting the Sprint Backlog during the Daily Scrum so the progress towards the Sprint Goal is guaranteed.
- 2. Inspecting the increment and adapting the Product Backlog if necessary during the Sprint Review in order to achieve maximum customer value.
- 3. Inspecting the process, the relations of the team and the resources during the Sprint Retrospective, and adapting them if necessary.

#### **Values**

There are five Scrum values:

- Commitment: the team commits itself 100% to realize its vision
- Courage: the team has courage to work on complicated issues and has the courage to make mistakes
- Focus: everyone is focused on the tasks needed to reach the Sprint Goal
- Openness: both the stakeholders and the Scrum Team are open about the work to be done and the challenges they are going to encounter
- Respect: the team members respect each other as capable and independent people

#### Responsibilities

The Scrum Team consists of a Product Owner, a Scrum Master and the Developers. A Scrum Team is self-organizing and preferably multidisciplinary. The team consists of a maximum of 10 people.

#### **Product Owner**

The goal of the Product Owner is to maximize the customer value the Scrum Team delivers. Every project has one single Product Owner who has the mandate to set the priorities regarding the work that will be delivered.

The Product Owner is responsible for managing the Product Backlog. The Product Owner can delegate certain tasks to the Developers but remains responsible. The Product Owner's tasks consist of:

- Determining and communicating about the Product Goal
- Clearly describing Product Backlog items
- Prioritizing items on the Product Backlog
- Ensuring the Product Backlog is clear, transparent and understandable for everyone
- Ensuring the Developers understand the Product Backlog items

## **Developers**

The Developers are responsible for delivering all the Product Backlog items selected for the Sprint.

#### The Developers:

- Have a high level of autonomy and are self-organizing
- Estimate Product Backlog items and therefore determine the amount of effort needed to do the work
- Decide how much work is selected for the next Sprint
- Are as a whole accountable for the results

#### Scrum Master

The Scrum Master ensures everyone knows the theory, ceremonies, rules and values of the Scrum framework. The Scrum Master is the servant leader of the Scrum Team. Moreover, the Scrum Master makes sure that the stakeholders and others outside of the Scrum Team understand Scrum. The Scrum Master strives for optimal cooperation in the Scrum Team so it can deliver maximal customer value.

## The Scrum Master helps the Product Owner with:

- Making sure the project goals and the project scope are known by the Scrum Team
- Effective Product Backlog management
- Teaching the Scrum Team about the need to have clear and well written Product Backlog items
- Understanding product and project planning in an empirical environment
- Prioritizing the Product Backlog
- Understanding agility
- Facilitating meetings, when needed or on request

#### The Scrum Master helps the Scrum Team with:

- Operating as a multidisciplinary and self-organizing team
- Removing impediments
- Being successful in an organization that does not understand Scrum (yet)
- Facilitating meetings, when needed or on request

## The Scrum Master helps the organization with:

- Coaching the organization in their adoption of Scrum
- Teaching employees and stakeholders about Scrum and empirical product development
- Implementing improvements in the organization, so productivity of the Scrum Teams increases
- Collaborating with other Scrum Masters, to improve the effectivity of Scrum in the organization

#### The Sprint

The Sprint is a set period (the timebox is between one week and one month) wherein a finished potentially usable increment of a project is delivered. A project consists of multiple Sprints.

#### A Sprint:

- Starts directly after the last Sprint was finished
- Always takes the same amount of time within the same project

- Consists of all the work necessary to achieve the Product Goal including Sprint Planning, Daily Scrum, project activities, the Sprint Review and the Sprint Retrospective
- Always has a specific Sprint Goal

## During the Sprint:

- No changes can be made in project activities that may endanger the Sprint Goal
- The highest attention is always given to delivering the highest quality
- The scope can be clarified and changed after consultation with the Project Owner

Sprints longer than one month are undesirable because complexity grows and risks increase. Clear Sprints lead to predictability and due to the constant inspection and adaptation during the Daily Scrum the Sprint Goal will be reached. Furthermore, financial risks are limited by delivering big projects in smaller increments.

Only the Product Owner can cancel a Sprint prematurely. The Product Owner can decide to cancel the Sprint if the Sprint Goal has become obsolete. Because of the short cyclical nature of Scrum, Sprint cancellations are rare. If a Sprint is cancelled, delivered Product Backlog items are inspected. The Product Owner can decide to release these delivered items. Items that were not finished are returned to the Product Backlog. Cancelling a Sprint is a costly matter because of the lost time, and the unwanted overhead related to the needed coordination when a cancelation occurs.

## **Sprint Planning**

Every Sprint starts with the Sprint Planning. During the Sprint Planning the Scrum Team makes a plan to deliver the work selected for that Sprint. The Scrum Master makes sure the meeting takes place and all the participants understand the goal of the meeting.

#### A Sprint Planning:

- Has a maximum timebox of 8 hours for a Sprint of one month
- Answers the question "why is this Sprint valuable?"
- Answers the question: "What will we deliver this Sprint?"
- Answers the question: "How will we deliver the selected work?"

#### The Sprint Planning answers three questions:

- Question 1: "Why Is This Sprint Valuable?"
  - o The Product Owner indicates how the product or service can gain even more value during the upcoming Sprint. The entire Scrum Team then works on formulating a Sprint Goal to communicate this value with the Stakeholders.
- Question 2: "What will we deliver this Sprint?"
  - o The Developers estimate how much work they can deliver, based on the available resources and past results of the team. The Developers decide how much work they select for the Sprint.
  - o The whole Sprint Team collaborates during the Sprint Planning, so the selected work is understood by the entire team.

- Question 3: "How will we deliver the selected work?"
  - o As soon as the Sprint Goal is set, and the Product Backlog items are selected the Developers decide how they will finish the items during the Sprint.
  - o The Sprint Goal, the selected Product Backlog items, together with the plan to store these items is called the Sprint Backlog.
  - o Not all Product Backlog items need to be decomposed in tasks of one day or less by the end of the meeting as long as there is enough work to start the Sprint.
  - o The Developers are responsible for the Sprint Backlog.
  - o If the Developers have selected too little or too much work, they can adapt the selected Product Backlog items after consulting with the Product Owner.
  - o The Developers can invite experts to the meeting in order to make a plan for the Sprint.

### The Sprint Goal

The Sprint Goal describes the purpose of the Sprint. The Sprint Goal is met by delivering the Product Backlog items selected for this goal. The Sprint Goal gives the Developers direction and focus while giving them enough flexibility to decide how to do the work, as long as the delivery is consistent with the Sprint Goal.

## **Daily Scrum**

The Daily Scrum is a meeting of the Developers. The Daily Scrum has a timebox of 15 minutes and takes place every day the Developers are working on the project. The Scrum Master coaches the Developers so the Daily Scrum does not take longer than the 15 minute timebox. During the Daily Scrum the Developers make a plan for the next 24 hours. They also discuss the work done since the previous Daily Scrum. This leads to optimized collaboration and results.

#### The Daily Scrum:

- Takes place each day at the same time and in the same place
- Is meant to keep track of Sprint Backlog and the progress towards the Sprint Goal
- Maximizes the chance the Developers reach the Sprint Goal
- Does not have a described format. It is up to the Developers to decide how they conduct the meeting, as long as the focus lies on the progress towards the Sprint Goal
- Has to take place. It is the responsibility of the Scrum Master to make sure the meeting occurs. The only mandatory attendance are the Developers, the Scrum Master's attendance is not mandatory. If others attend, they have to make sure not to disturb the meeting.
- Improves communication, makes other meetings unnecessary, identifies impediments, helps fast decision making and improves the level of knowledge of the Developers.

#### The Sprint Review

A Sprint Review is organized at the end of the Sprint to inspect the delivered work and, if needed, adapt the Product Backlog based on new insights. During the Sprint Review active collaboration takes place between the Scrum Team and the stakeholders. The Product Owner explains what Product Backlog items are 'done' and if applicable what items are not. The Developers demonstrate the finished items. The Developers also share what went well and what did not go well during the Sprint. The Product Owner shares the Product Backlog and together with the stakeholders decides what are the most valuable next steps for the product or

the project. The Product Owner also shares with the stakeholders when releases can be expected. The Sprint Review is an informal meeting and more than a mere status update. The goal is to give and receive feedback and organize a meaningful collaboration between the Scrum Team and the stakeholders.

#### A Sprint Review:

- Has a maximum timebox of 4 hours for a Sprint of one month
- Has to take place. It is the responsibility of the Scrum Master to make sure the meeting takes place. The Scrum Master makes sure everybody knows the goal of the Sprint Review and also makes sure the meeting does not exceed the timebox.
- Is the only meeting with mandatory attendance of both the Scrum Team and the stakeholders
- Is finished when an agreement is reached about the priorities of the Product Backlog for the next Sprint.

## **The Sprint Retrospective**

The Sprint Retrospective gives the Scrum Team the opportunity to inspect and adapt itself. The goal is to (i) inspect how collaboration, relationships, processes and tools functioned during the last Sprint, to (ii) identify the most important achievements and potential improvements and to (iii) make a plan to implement these improvements. During the Sprint Retrospective the Definition of Done can be inspected and adapted, if necessary.

The Scrum Master makes sure this meeting is positive and productive. The Scrum Master participates in the meeting as a member of the Scrum Team and makes sure the meeting does not take longer than the timebox.

#### The Sprint Retrospective:

- Takes place between the Sprint Review and the Sprint Planning of the next Sprint
- Has a maximum timebox of 3 hours for a Sprint of one month
- Needs to take place. It is the responsibility of the Scrum Master to make sure it takes place
- The Scrum Master makes sure everybody knows the goal of the Sprint Review and also makes sure the meeting does not exceed the timebox.

It is of course allowed for the Scrum Team to implement improvements at any moment during the Sprint, but the Sprint Retrospective gives the team a formal moment to focus on inspection and adaptation.

## **Product Backlog refinement**

Refining the Product Backlog is an ongoing activity during the Sprint. This is the responsibility of the Product Owner, but they can be supported in these tasks.

Product Backlog refinement consists of: (i) adding detail to Product Backlog items or splitting them into smaller items, (ii) prioritizing the Product Backlog and (iii) making sure the Developers estimate Product Backlog items.

It is not mandatory for the whole Scrum Team to attend Product Backlog refinement sessions. The Scrum Team can decide when and how to do Product Backlog refinement.

#### **Artifacts**

Scrum has some artifacts used to maximize the transparency of essential information. Transparent information gives the Scrum Team possibilities to inspect and adapt.

## The Product Backlog

The Product Backlog is a prioritized list of all ideas that can be delivered in the project. The Product Backlog is the sole source of work for the Scrum Team. The Product Owner is responsible for the Product Backlog. This means the Product Owner is responsible for its content, its availability and its prioritization. A Product Backlog is never complete and new work emerges constantly based on new knowledge in a changing environment.

Items on the Product Backlog contain (i) a description, (ii) a prioritized order, (iii) an estimation based on the 'effort' needed to complete the item and (iv) a value. Besides these, Product Backlog items usually contain acceptance criteria. Acceptance criteria are specific requirements that must be met in order to make sure the item is 'done'. Product Backlog items higher on the Product Backlog, and therefore with a higher priority, contain a higher level of detail than items lower on the Product Backlog. Items at the top of the list are elaborated such that they can be selected for the next Sprint in order to be delivered. These items are deemed to be 'ready' for the Sprint.

#### The Product Goal:

The Product Goal describes what the product or service will look like in the future. It gives the Scrum Team a goal to work towards. The Product Backlog expresses that Product Goal by describing the "what" necessary to achieve that goal.

Only after the current Product Goal has been delivered or is no longer considered relevant, can the Scrum Team work on a new Product Goal.

## The Sprint Backlog

The Sprint Backlog consists of:

- The Sprint Goal (the why)
- The Product Backlog items selected for the Sprint (the what)
- A plan to deliver these items in order to reach the Sprint Goal (the how)

#### The Sprint Backlog:

- Provides insight in all the work needed to reach the Sprint Goal
- Contains at least one improvement, identified during the previous Sprint Retrospective
- Can only be changed by the Developers. This is done directly as soon as new insights are gained that lead to more or less work
- Is a real time overview of all the work that the Developers do during the Sprint

## Increment

An increment is the sum of all delivered Product Backlog items during a Sprint combined with the value of all increments of previous Sprints. Every increment brings the team one step closer to the realization of the project goal. The increment (all delivered Product Backlog items) needs to meet the Definition of Done. It is up to the Product Owner to decide if the increment is released or not.

The Scrum Team can deliver multiple Increments during the Sprint and does not have to wait until the Sprint Review.

#### **Definition of Done**

When a Product Backlog item or an Increment is "done" everyone involved should have a shared vision about what it means to be done. The Definition of Done is a list consisting of clear criteria every item on the Product Backlog needs to meet.

#### The Definition of Done:

- Helps the Developers to select the amount of work for the Sprint
- Can (partially) consist of standards, guidelines or conventions of the organization. Or an organization can impose a minimal Definition of Done
- Can be decided by the Scrum Team if the organization does not provide guidance
- When multiple Scrum Teams work on the same project of product, they have the same Definition of Done

#### Keeping track of progress

It is the responsibility of the Product Owner to determine the remaining work necessary for achieving the vision during the Sprint Review. Progress is measured by comparing the currently remaining work with the work remaining at the previous Sprint Review. This information is made transparent for all stakeholders. The Product Owner can use a Burn Down or a Burn Up chart.

The Product Owner monitors the remaining work over multiple Sprints. During the Sprint the Developers monitor its own progress. To get a feeling if the team is on track to reach the Scrum Goal, the remaining work on the Sprint Backlog is calculated. The Developers calculate this at least once before the Daily Scrum.

## KANBAN

Scrum is ideal for projects or product development, but less for organizing operational activities. Kanban is a method that can be used for both project activities and operational activities.

Kanban is a method to define knowledge work (processes or projects), to manage this and to improve. For example, complaint handling at a call center, software development or content creation for a website. Kanban consists of six general practices which will be explained here.

#### General practice 1: Visualize the workflow

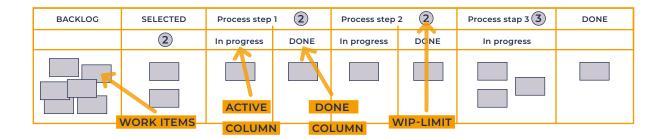
Visualization is an essential component of Kanban. Kanban starts by visualizing the work process (workflow). It is important to visualize the workflow as a team. The team needs to agree on how they do their work.

#### In Kanban:

- The work is visualized on the Kanban board (physical or digital). Each step on a Kanban board

has a 'active' column for items that are being worked on and a column for items that are done.

- Work agreements are transparent and visual
- The team agrees on the amount of information needed per backlog item. Like in Scrum such items contain a description, an estimation and a value.



## General practice 2: Limit Work in Progress

The items that the team is currently working on are called Work in Progress or WIP. Traditionally teams are used to take on new work as soon as possible. When new work arises, managers or project leaders ask the team to take on this new work immediately. This is called a *Push model*, because work is pushed into the system. This leads to work processes becoming overstuffed. The team is busy with so many different items at the same time that the lead time of each individual item increases dramatically. This leads to a sense of loss of control by the team members and few concrete results will be accomplished.

#### In Kanban:

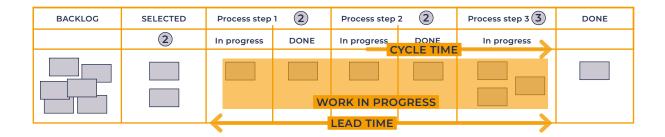
- A *Pull model* is used. Team members pull new work into the process when there is room for new work
- The maximum number of items per process step is determined by a WIP limit. This limit applies to all items in both the active and done column.
- The WIP limit is visualized per process step.
- A rule of thumb to set the WIP limit is the amount of people working on that process step +50%. If 3 people do work in a process step, the WIP limit is 5 (limits are rounded up). This rule can be used as a starting point that can be adapted over time due to gained knowledge.

#### General practice 3: Manage Flow

In Kanban flow is optimized. There is flow in the process when items on the Kanban board are constantly being shifted from step to step. A good flow can be measured with lead time or the delivery time.

## Terms regarding flow:

- **Lead time**: time needed to deliver one item
- **Work in Progress**: the sum of all the work (measured in items, hours, story points etc) currently in the process
- **Cycle time**: the amount of work (measured in items, hours, story points etc) a team delivers per time unit



Work in Progress, Lead time and Cycle time are dependent on each other. Little's Law states that when two of these three variables are known, the third can be estimated.

Little's Law: Lead time = Work in Progress / Cycle time

Sample case: a check out process with one step: checking out. Checking out takes 30 seconds, the Cycle time is 2 customers per minute. When there are 6 people waiting in line, the Work in Progress is 6 customers. Based on Little's Law an estimated Lead time can be given: (Work in Progress/ Cycle time) = (6/2) = 3 minutes.

Kanban teams that have managed the flow can give their stakeholders realistic estimations of Lead times.

## General practice 4: Make policies explicit

Kanban teams improve their productivity and collaboration by making explicit policies. Policies can consist of, for example, WIP limits, the amount of people working on each process step, helping one another when possible, the Definition of Done or when to accept new work.

#### The following applies:

- Do not make too many policies to make sure focus can be maintained on the most important ones
- Make sure the policies are visualized on the Kanban board
- Policies are always maintained, and the team members hold each other accountable
- A Kanban team adapts their policies when needed

#### General practice 5: Implement feedback loops

Kanban teams improve iteratively. This takes shape by introducing daily, weekly and monthly feedback loops. Improvement is a standard topic during these recurring meetings. The only compulsory meeting is the Kanban meeting, the rest can be planned if needed.

## Examples of meetings:

- **Kanban meeting:** needed for daily coordination, makes self-organization possible. This meeting is similar to the Daily Scrum, but only addresses the question whether something is blocking or hindering someone. This meeting lasts about 5 minutes.
- **Strategy review**: to see how the outside world has changed in relation to the processes. Based on these changes products and services can be reconsidered
- **Retrospective meeting:** the same meeting as in Scrum

- **Service delivery meeting**: assess and improve the effectiveness of the product or service
- **Replenishment meeting:** during this meeting the team adds items to the backlog. This meeting is similar to the Sprint Panning in Scrum
- **Delivery planning**: monitoring and planning of big deliveries or other milestones

## General practice 6: Improve collaboratively

Change processes start by having a clear picture with the end goal in mind. They then work purposefully toward that end goal. Kanban does not use a similar long-time planning. Kanban starts with the current situation and uses the knowledge and experiences gained as a starting point.

#### Within Kanban:

- A team strives for continuous improvement in small steps
- Change is continuous and will always be needed
- Change is a bottom-up activity, the self-organizing team is responsible for the change
- Small experiments for process improvement are visualized on the Kanban board. This way improvement efforts are made transparent

## REFERENCES

Anderson, D. J., & Carmichael, A. (2016). Essential Kanban Condensed. Blue Hole Press.

Beck, K., Beedle, M., Van Bennekum, A., Cockburn, A., Cunningham, W., Fowler, M., ... & Kern, J. (2001).

Manifesto for agile software development.

Pichler, R. (2010). Agile product management with scrum: Creating products that customers love. Addison-Wesley Professional.

Sutherland, J., & Schwaber, K. (2013). The scrum guide. The definitive guide to scrum: The rules of the game. Scrum.org, 268.

