



Operational Excellence Consulting

Toolbox: Business fundamentals

Guide : Six Sigma, Pareto, Lean, Agile

What is Six Sigma ?

When you bake a cake, you take a set number of ingredients, combine them in a certain way, bake the mixture, and after a period of time, you get a cake ready to eat.

If you made this cake several times, the outcome may not always be identical.

- Six Sigma is an methodology to improve customer satisfaction by reducing defects (variability) and measures the capability of a process to run error-free work (with a failure rate of 3,4 parts per million or success rate of 99,9997%)

How ?

1. Find valuable or critical processes that cause variation
2. Find what is causing errors or defects
3. Find a solution to reduce errors or defects
4. Standardize the process and measure for monitoring

The steps are also known as the “PDCA cycle” :

1. Planning the change
2. Do the change
3. Check by observing and measuring
4. Act on what you learned

Here are 4 tools for analyzing processes (that are critical or cause variation) :

1. SIPOC is an approach for understanding and structuring a process. This is done by filling in below table.

| Supplier | Input (info/data) | Process | Output | Customer |
|----------|-------------------|---------|---------|----------|
| • | • | • | • | • |
| • | • | • | • | • |
| • | • | • | • | • |
| • | • | • | • | • |
| • | • | • | • | • |

2. The Ishikawa diagram for finding the root cause of an unwanted situation

How ?

– Ask 5 times “why?”

or

– Identify the origin of imperfection by:

1. Putting the possible causes that belong together in major groups
2. Finding the influence and impact of each major group on the identified variation

3. Pareto rule (the 80:20 rule) says that 20% of the effort result in 80 % of the output

How ?

Finding quick wins and concentrating on a part of the problems : 80% of the problems is caused by 20% of the root causes.

4. Process maps in order to visualize a process that are critical or cause variation

How? Using flowchart symbols (sometimes “swim lanes” are used if process is cross-functional):

– Task



– Decision



– Process termination point



– A connection between two processes



– Process flow or direction



When can we say we have reached our goal ?

1. Real time monitoring of the success criteria : We need to ensure that the improvements achieve the project goals so KPIs need to be put in place.

How to find the right Key Performance Indicators ? Brainstorm about :

- What needs to be monitored?
- Who is going to be keeping the process functioning properly?
- How are they going to monitor?
- Where will the monitoring be conducted?
- Where should the plan reside?
- What will be done if the monitoring detects a condition outside of the customer's specifications?

2. Risk analysis

Brainstorm about potential risks and build safety nets for critical processes

3. Training

Training needs to be focused upon the direct needs of the audience. In training you must explain why a change in process is needed (Why it is good for your company?). You must also explain why this change is good for the person being trained. The training must show them the right way to do things. It is best to have highly interactive training where the trainee can actually practice the new skill under the supervision of the trainer.

What is Lean ?

- Relentless effort to systematically reduce and remove waste while improving the flow that is valuable to the customer

Example of waste : Transport, Inventory/Open/unfinished/unused work, Motion, Waiting, Over Production, Over processing, Defects

Reducing, eliminating waste → “low hanging fruits” or “quick wins”

1. Sort: keep things clearly identified
2. Straighten: keep closely the most used items
3. Shine: keep the tools operational, ready to use
4. Standardize: avoid adaptation time
5. Sustain embed in culture

How ?

1. List all activities “Value Stream Mapping”
2. Identify the valuable functions for the customer
3. Identify the waste

What is Agile ?

The Agile Manifesto (agilemanifesto.org) reads: “We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

That is, while there is value in the items on the right, we value the items on the left more”

Key principles of agile development :

1. Focus on something valuable for the customer. Therefore align project, product and team visions to deliver a better product, faster and cheaper.
2. Small batches. Create a flow of valuable parts to customers with iterative delivery of features by smaller, controlled increments.
3. Small integrated teams. Intense collaboration via face-to-face communication and diversified roles on integrated, self-organising, self-disciplined teams.
4. Small, continuous improvements. Teams reflect, learn and adapt to change through rapid feedback and response.

The agile development process is called SCRUM, in which shorter work sessions accomplish a determined amount of tasks. These shorter work sessions are called sprints. The workable product is shown in the sprint demo to the business management.

In a rapid changing environment that is complex and unpredictable, short validation and feedback serves as a fall back. The iterations allows everyone to see what the end result will look like.

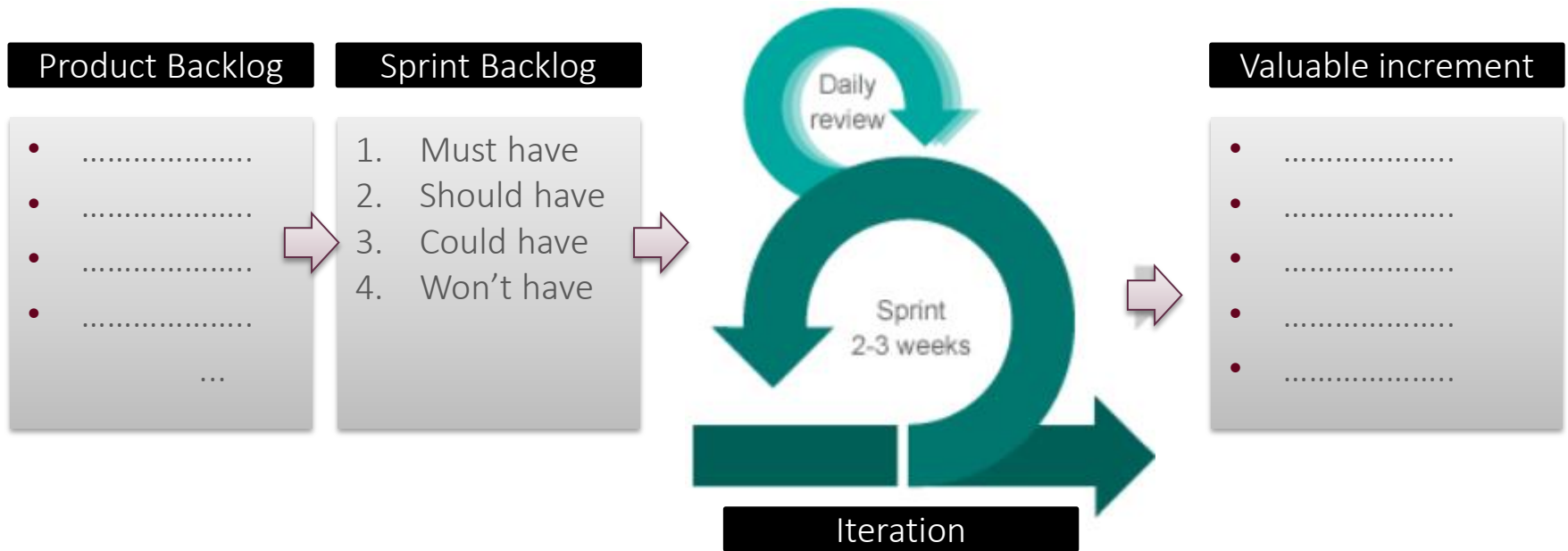
The essence of Agile is the “MoSCoW Prioritization model” :

1. A technique to come to an agreement with your stakeholders on the importance they place on the delivery of each requirement
2. Prioritize to deliver the greatest and most immediate business benefits first
3. Often used with time-boxing where a deadline is fixed so the focus can be on the most important requirements

How ?

Agreement on “Must Have / Should Have / Could Have / Won’t Have ” :

- Must have → Without this requirement, there is no project. Max 60% of the total effort (worst case)
- Should have → Without this requirement, workarounds are costly/difficult. 20 % of the total effort (expected case)
- Could have → Without this requirement, workarounds are cheap/easy. 20 % of the total effort (serves as contingency and when accomplished this is the best case scenario)
- Won’t have this time. 0% of the total effort



Focus on early delivery of real benefits to the customer. Deliver what is possible to deliver on time and just enough to move on.

- Key milestones of agile development for Management team and Development team :
 1. Feasibility study of the solution : what are the benefits?
 2. Foundation : Detailed business case. Baseline for governance, schedule/planning and risk. High level list of requirements (these are called “user stories” for example As a ... I need ... so that...”) and the level of priority.
 3. Iterations : Work breakdown of requirements, estimations for velocity (predictability), piloting, prototyping, implementation. Measure progress with early warning system (however measures drive behaviors). Communication (“it doesn’t happen by itself”).
 4. Post-project: deployment and benefit assessment.
- “Agile principles” has come with some conditions that are need to agree on upfront :

Availability of resources, flexibility of features, MoSCoW prioritization, contingency for uncertainties, contingency for changes (change is inevitable), early delivery of the most valuable part, build final product incrementally (and not built first time perfect), re-assess priorities, co-location, protect team from external influence, availability of business for questions or validations, no detailed project plan (overall high level plan with only details in the next step), clear success criteria of the project (expectations management)