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What do iterative and incremental mean in Agile?
Sensemaking in the Agile Forest
Series Article   By Henny Portman

Sensemaking in the Agile Forest

What do iterative and incremental mean in Agile?[1]

Henny Portman

Introduction

Iterative' and 'incremental' are common terms in agile organizations. Yet many people confuse these terms. I even notice confusion at the Internet. Some well-known examples are:
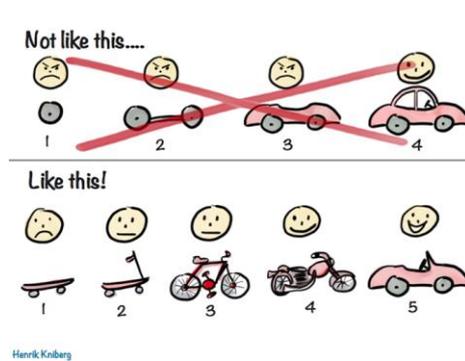
The top figure shows a staged approach, and the bottom figure is used to show an iterative and incremental development approach. The top figure example is correct.

If I look at the bottom figure, I see the following: From step 1 to 2 it's a staged approach. The following steps, from 2 to 3, from 3 to 4 and from 4 to 5 are next iterations (restarts or pivots). The result of step 2 is insufficient and in step 3 a completely new vehicle is developed. And this repeats, so I would say this iterative but not incremental.
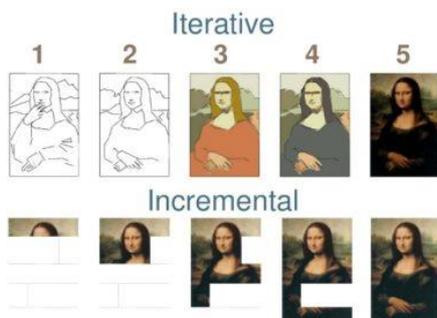
The following Mona Lisa painting figure from Jeff Patton is also a well know one. The bottom row shows a correct example of a staged or incremental delivery.

The top row shows on the one hand five iterations of the Mona Lisa painting and on the other hand you could stop after step 2 or 3, so, it's also an incremental approach.

What do iterative and incremental mean in Agile?

In a nutshell:
- In an iterative process, there is a systematic repetition of small steps.
- In an incremental process, the number or size or functionality of the final product grows step by step.

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Iterative versus incremental, what's the difference?
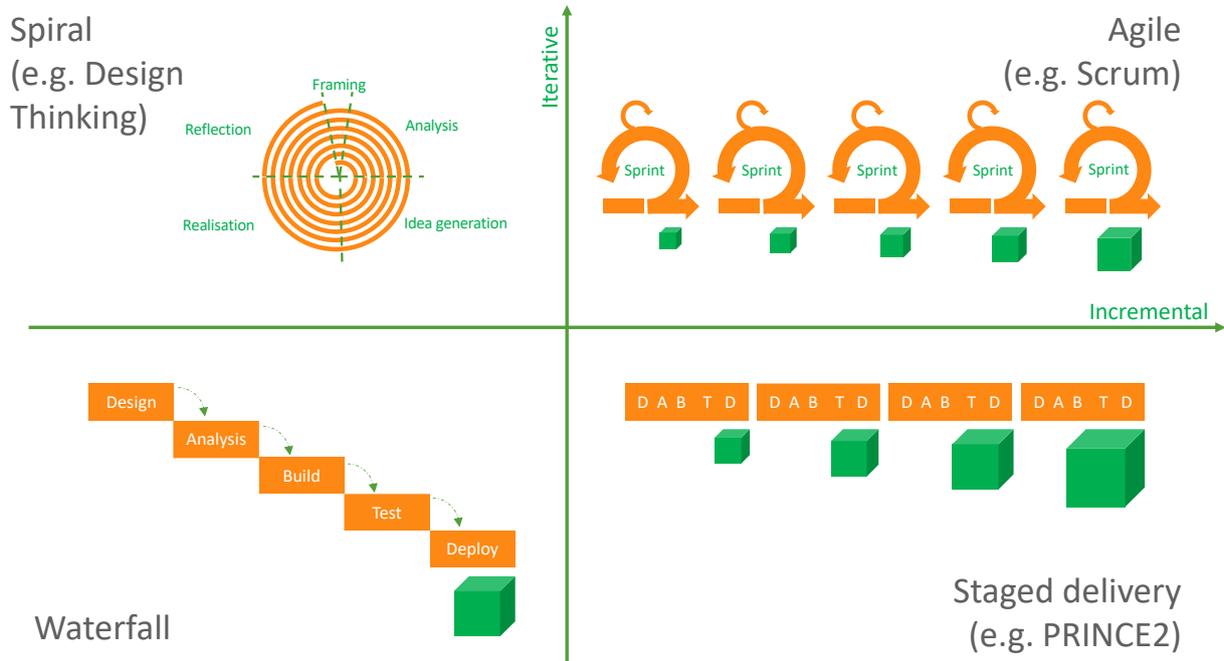
To make it visual, the figure above shows four quadrants representing four approaches. These are created by the two axes. The horizontal line represents the use or non-use of an incremental process. Then the vertical line represents whether or not to use an iterative process.

Not iterative and not incremental

In the bottom left corner, you see the approach where a team works neither iteratively nor incrementally. So, this is typically a 'waterfall' approach. The project team goes through all activities, such as "designing", "analyzing", "building", "testing" and "putting into production", once for the entire project. In this case, it is a matter of delivering the end product based on a fixed scope. One of the key goals in this approach is to manage cost. In this approach, the customer can (only) cash in on the added value after the delivery of the end product. After all, something useful for the customer only happens when the end product is running in the production environment. You can use various project management methods to deliver in a waterfall manner, such as PRINCE2[2].

Not iterative and incremental

In the lower right quadrant, you see an incremental approach without iterations. This is a phased delivery of smaller parts or functionalities of the final product. All activities within a certain phase

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[2] Many people see PRINCE2 as a waterfall method. It's not. It's a staged delivery method that can be tailored to use in a waterfall environment.

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such as 'design', 'analysis', 'build', 'testing' and 'take into production' are carried out once. Within a given stage the scope is fixed. At the same time, the total end product is based on a more dynamic or flexible scope. This can then be adjusted prior to a subsequent phase. The customer can achieve added value after each delivery of the (partial) product. You can deliver incrementally in this way with PRINCE2 (Agile), for example.

Iterative but not incremental

In the top left quadrant, you see a spiral or iterative approach without incremental delivery. This is a single delivery where the final product is created using multiple iterations. A good example of this approach is design thinking. Design thinking is an approach to the development of design concepts such as for a building, a machine, a communication campaign, and so on.

In the spiral, you see a sequence of the activities 'framing', 'analysis', 'idea generation', 'realization' and 'reflection'. This sequence is repeated or iterative. In each iteration, you come closer to the final, correct or required, product. Often, the intended end product is a prototype or model. In this spiral approach, the scope is dynamic or flexible. The customer can (only) achieve the added value after the delivery of the final product. One of the most important goals in this approach is the correctness of the solution.

Iterative and incremental

In the upper right quadrant, you see the combination of an incremental and an iterative approach. This is Agile. You can think of working methods such as Scrum but also AgilePM and PRINCE2 Agile. At the end of each sprint or timebox, the team delivers an increment of the product. This increment is created through many iterations to arrive at small, correct parts of the product. You probably know these parts as 'user stories' or 'backlog items'. With these, the team delivers the end product piece by piece. In this agile approach we have a dynamic or flexible scope. Customer value can be achieved after every delivery of the product. One of the key goals in this approach is customer value via frequent deliveries and customer feedback.

Conclusion

Iterative and incremental are not the same and usage results in four different approaches waterfall, staged delivery, spiral and agile.

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Sensemaking in the Agile Forest series

This article is part of a series of articles called *Sensemaking in the Agile Forest*. This series[3] consists of the following parts:

- Portman, H. (2022). What is Agile? Sensemaking in the Agile Forest series, PM World Journal, Vol. XI, Issue I, January.
- Portman, H. (2022). What is Scrum? Sensemaking in the Agile Forest, series article 2, *PM World Journal*, Vol. XI, Issue II, February
- Portman, H. (2022). Is agile always better? Sensemaking in the Agile Forest series, *PM World Journal*, Vol. XI, Issue III, March
- Portman, H. (2022). The ideal Product Owner, Sensemaking in the Agile Forest series, *PM World Journal*, Vol. IX, Issue IV, April
- Portman, H. (2022). The Ideal Scrum Master, Sensemaking in the Agile Forest series, PM World Journal, Vol. XI, Issue V, May
- Portman, H. (2022). Is an agile team always autonomous? Sensemaking in the Agile Forest series, PM World Journal, Vol. XI, Issue VI, June
- What do iterative and incremental mean in Agile?
- The Minimum Viable Product (MVP) unraveled
- Prioritizing in an agile team (MoSCoW, WSJF)
- Multitasking task switching or monotasking
- Being predictable as an agile team (story points, velocity, t-shirt sizing, flying fingers)
- Self-managing or self-organizing agile teams
- Slicing user stories
- Agile management products (burn-down and burn-up charts)
- Agile user testing (cohorts, A/B testing)
- The Kanban bord (WIP-limit, cumulative flow diagram)
- Culture makes or breaks your agile transformation
- Getting started as an agile team (a pilot)
- The evolution of agile frameworks
- ?

Please let me know if you would like to add specific agile topics to this series.

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[3] This series is based on a number of short blogs I made for Forsa Advies, a project management training organization in the Netherlands (https://www.forsa-advies.nl).

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Henny Portman, owner of Portman PM[O] Consultancy and was partner of HWP Consulting, has 40 years of experience in the project management domain. He was the project management office (PMO) thought leader within NN Group and responsible for the introduction and application of the PMO methodologies (portfolio, program, and project management) across Europe and Asia. He trains, coaches, and directs (senior) programme, project and portfolio managers and project sponsors at all levels, and has built several professional (PM(O)) communities.

Henny Portman is/was accredited in a variety of qualifications, including P3O, PRINCE2, MSP, MoP, PRINCE2 Agile, AgilePM, AgilePgM and AgileSHIFT trainer and an SPC4 SAFe consultant and trainer. He is a P3M3 trainer and assessor and PMO Value Ring Certified Consultant (PMO Global Alliance). On behalf of IPMA, he assesses mega and large projects for the IPMA Project Excellence Award. In addition to this, he is an international speaker, author of many articles and books in the PM(O) field, and an active blogger (hennyportman.wordpress.com/).

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