Is Agile Portfolio Management Following The Principles of Large-Scale Agile?

Case study in Finnish Broadcasting Company Yle

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Abstract—**Finnish Broadcasting Company Yle has taken Agile Portfolio Management into use at web and mobile development. This paper examines how the general benefits of Agile Portfolio practices described in training material and literature differ from the actual benefits described by real users of Portfolio Kanban Board. We also compare if the Principles of Large-Scale Agile collected from various Agile Organizations and published in the keynote presentation in the XP2014 conference can actually be detected in-action by users of Portfolio Kanban Board, and end up with a suggestion to remove the Principle of pattern utilization.**

Keywords—large-scale agile software development, agile methods, software engineering, project management, portfolio management, Scaled Agile, agile planning

I. INTRODUCTION

Agile Portfolio Management is seen to be one way to improve the efficiency of operations and transparency. The agile way of working is also a radical improvement to how management used to be. After a competitive tendering Nitor Delta was selected to offer agile consultation and service to Yle in November 2013.

Improving productivity and quality is a key concern of any organization while there are also some global trends that amplify the reasons why organizations are looking into ways to boost their performance.

1. Change or die. New innovations and new technologies come to markets with increased speed. [1, 2]

2. Constant need for further innovations. What is there is quickly copied — there is a need for constant innovation to remain competitive. [3, 4]

3. Transaction costs are small or almost absent compared to traditional settings. Publishing new (software) versions in the cloud is "free" once the cloud and the continuous deployment infrastructure is there. This leads to faster ROI circulation. [5, 6]

4. Markets are more unpredictable than before. There is a need to be flexible when it comes to investments and capacity. [7, 8]

Finnish Broadcasting Company Yle operates four national television channels that are also available as simulcast HD-channels, and six radio channels and services complemented by 25 regional radio programmes. In 2013 Yle TV1 was the most popular television channel in Finland. Yle's share of daily television viewing was 41,9%. Yle's radio listening was 51%. Yle programmes and content reach 100% of Finnish people yearly. Yle is a public service broadcasting company owned by the Finnish people and funded by a special Yle tax. [9]

Yle has set its strategic target to be to provide value to society, to serve all Finns and to have the media sector's best competence [10]. The best competence is implemented by having the best people and partners, to boldly renew its operations and to operate in a transparent, effective way.

II. AGILE PORTFOLIO MANAGEMENT

A. Adaptive (Agile) Organization

An Adaptive (or Agile) Organization can be seen to consist of three layers, as described in Figure 1.
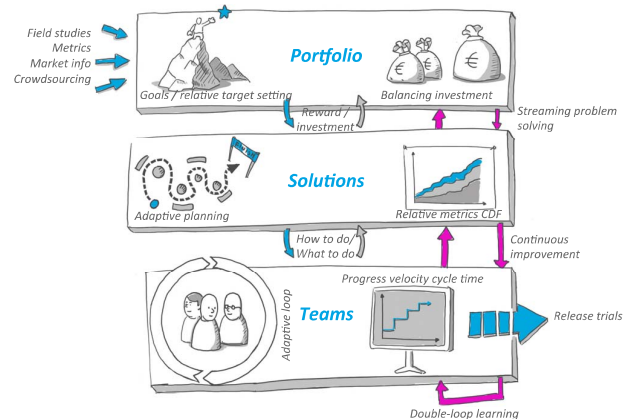

Fig. 1. Model for adaptive organization [11].

Here we are focusing on the topmost Portfolio layer. On the portfolio level decisions on how much is invested in each of the products during the next period of time are made based on past performance.

B. Portfolio Kanban

Figure 2 shows a picture of the actual Portfolio Kanban wall, and Figure 3 shows it in electronic form. The benefit of having an electronic board is that it is always available with you, wherever you go.
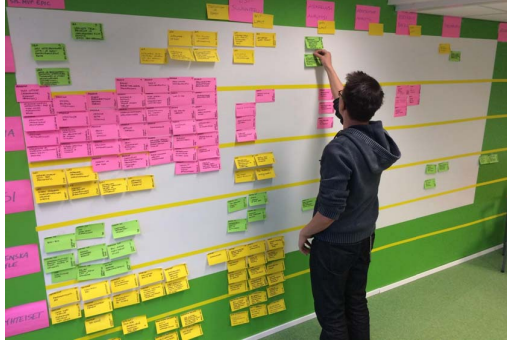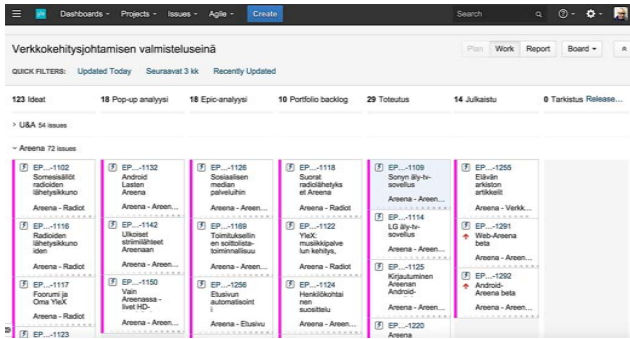
Fig. 2. The actual Portfolio Kanban wall

Fig. 3. The Portfolio Kanban wall in electronic form

C. Benefits of the Portfolio Kanban board

General benefits of Agile Portfolio Management are listed in Table I. These benefits are derived from the respective practices that are used with Agile Portfolio Management in Scaled Agile Framework [12]. Table II lists the benefits people have been describing after Portfolio Kanban has been taken into use in Finnish Broadcasting Company Yle. This list is based on the actual comments from various people collected through discussions, presentations of the new model as well as retrospective. The table is listing only the most often mentioned benefits that we have heard from multiple sources i.e. users of the Portfolio Kanban board.

TABLE I.   USUAL BENEFITS OF AGILE PORTFOLIO MANAGEMENT

No.	Usual Benefits (by literature)
1	Epics. Avoid a long queue of development items that will get out-dated. Specify the new Epics just-in-time when needed. Focus on value derived from each Epic.
2	Prioritization. Clear visibility and communication of what needs to be implemented. Generically, the fractal backlog structure helps development teams to identify what is the larger entity that the Stories under development will comprise to. A change of

No.	Usual Benefits (by literature)
	priorities in the portfolio backlog enables the company to quickly change its strategic direction.
3	Epic Owner. Each Epic has an Epic Owner who is responsible for making all the decisions regarding the contents of that Epic. An Epic owner remains the same from the idea until the Epic is ready, and participates all negotiations and meetings considering the Epic, this process resulting in a lot of tacit information.
4	Enterprise Architect. Architecture is a business decision. What architecture solutions are used impacts the Return On Investment, i.e. the payback of each investment decision made. Thus Enterprise Architects analyse and make decisions regarding the possible future architecture solutions, e.g. what cloud solution, database or framework a company should use.
5	Program Portfolio Management. Program Portfolio Management is a group of senior managers, strategy planners and directors that make portfolio decisions and prioritize the Portfolio Backlog.
6	Strategic Themes. Strategic Themes express the intent to which direction the enterprise would like to develop its portfolio, i.e. what kind of new strategies it will implement in the future. Epics are derived from Strategic Themes.
7	Portfolio metrics. Portfolio metrics measure the enterprise's performance on the highest level. They can include measures like employee engagement and market share / development.

TABLE II.   DESCRIBED BENEFITS DETECTED AT FINNISH BROADCASTING COMPANY YLE

No.	Described (Actual) Benefits (by users)
1	A portfolio wall (kanban wall and roadmap) with visibility to all on-going Epics from idea to implementation has brought new kinds of visibility and transparency into on-going activities.
2	A constrained on implementation budget with the common visibility on all on-going activities stimulated easily a discussion if some of the Epics could be done with a joined effort. These discussions have led to the use of some shared code and elimination of some unneeded effort.
3	The visualization on the portfolio level is also challenging management to set the expectations on a more realistic level. Adding a new Epic to the Portfolio Kanban is now less than 5 minutes of work. After the Epic is added, its business value is compared to all other Epics. If the Epic is considered valuable, it is specified in more detail. This is a significant improvement compared to the past since previously all projects were specified in lots of detail without knowing if the effort was going to be wasted as the project got later delayed and/or rejected.
4	The new visibility and transparency has forced managers to discuss and make joined decisions, instead of operating and making decisions just regarding their own areas. There is also better knowledge across the organization what new services are under development.
5	Specifying and approving Epics is also a lot more quicker than earlier. The budget is granted for each of the swim-lanes on the Portfolio Kanban board, not for individual Epics or projects.

The benefits described in real life can be understood as additional benefits. We often hear a comment that Agile Development is perceived to be much more efficient than

Phase-Gate Development. The described benefits may explain why.

III. THE PRINCIPLES OF LARGE-SCALE AGILE

The Principles of Large-Scale Agile were described in [11] based on examination of various Lean (Toyota [13]) and Agile Organizations (Apple [14], Google [15], Facebook [16], Netflix [17], Pixar [18]) and literature and theories (Denning [19], Cockburn [20], Reinertsen [21], Business Model Refactoring [22], Panarchic systems [23] Combinatorial explosions [24, 25], value chain [26], Agile Principles in Agile Manifesto [27], Beyond Budgeting [28], Mindset [29], TRIZ [30], Cost innovation [4], Organizational learning [31], Lean startups [32]). Mapping of these principles and real-life organizations can be found in [11]. Table III lists these principles.

TABLE III.   PRINCIPLES OF LARGE-SCALE AGILE

No.	Principles and explanations of Large-Scale Agile	
	Principle	Explanation
1	The content is the key	Use the feedback from user and the intrinsic knowledge based on expertise and experience to create the best you can dream of. Delighting the user is key to success.
2	Co-creation	Groups are faster solving problems than individuals. Let the software evolve together, as the sum of the whole is more than its parts. Software Development is a Co-operative Game.
3	Feedback is the fuel to learning	Use rapid and concrete feedback on all work done. Study what creates success and do more of that.
4	Business Agility	Releases generate revenue. The business model must dictate the release rate and user interest defines the business model. A pay per month basis business can only be based on continuous releasing. Release less often when the transaction cost is high.
5	Use of automation as leverage	Use automation to leverage the manual effort needed. Develop the system, so that it gives a better leverage for the work unit done.
6	Scale using fractals	Fractals are nature's way to scale, and fairly permanent structures. Use higher abstraction levels and nested systems, such as nested control loops.
7	Avoid Combinatorial Explosions	Complexity is best tamed by splitting it to smaller pieces. Internal releases must be as small as possible.
8	Sequence for maximal throughput	Modular architecture increases speed. Find the maximum throughput for your portfolio by balancing what can be done in parallel, and what must be done sequentially.
9	Appreciate deep knowledge	Only more than five years experience creates deep knowledge. Use the best experts to tackle the most important and wicked problems. Check what new is learned and that your knowledge is still deep. Give room for creativity.
10	Work leveling	Even distribution of work and elimination of unnecessary work and waiting time based on measured performance. Work prioritization and Kanban are the tools here.
11	Simplicity	Seek simplicity in solutions.

No.	Principles and explanations of Large-Scale Agile	
	Principle	Explanation
12	Situationality	Use Pareto principle to avoid making processes overly complex. Not all cases need to be treated equally.
13	Control process, not items	Create simple rules for decision-making, instead of controlling each decision individually. Make clear game rules.
14	Growth mindset	Do more of what created success. Best leaders do not reject faulty attempts, but instead twist them to create more success. Have a growth mindset and improve what originally created success. Failures are the secret source of success.
15	Listen to employees, they know all the problems	Value is created in the front-line. The rate at which you are able to remove impediments of progress or service correlates with the improvement done for business. Understand the problem you are solving.
16	Detect and use patterns	Use and apply patterns. Your problems have already been solved by someone and somewhere.
17	Cost innovation	Ease the user's burden with a solution that costs less. Provide better service or fill the gaps between value chains. Do not tie capital; allow flexibility in investments and option thinking on portfolio level. Optimize cost of portfolio.
18	Utilize tacit knowledge	Crowd source the strategy. Use tacit knowledge of people to tell if you are heading in the right direction or not. When people feel proud of the outcome, you are heading in the right direction.
19	Learning happens between teams	Create collective knowledge that shares the same vision and ambition. Collective must have multitalented semi-permanent teams combined with deep individual knowledge.
20	Fast is better than perfection	Maximize the work undone. If it is not broken, do not fix it. Tolerate small imperfections. Fast is better than perfection. The best is the enemy of the good.
21	Prevent problems when small	Success hides small problems. In order to stay successful do not become ignorant of small problems.

A. Principles detected with Portfolio Kanban board

Table IV describes if and how the abovementioned principles could be detected with the Portfolio Kanban board in Finnish Broadcasting Company Yle. Here, the reflection-in-action method has been used.

TABLE IV.   COMPARISON IF LARGE-SCALE AGILE PRINCIPLES HAVE BEEN WITTNESSED AT YLE PORTFOLIO KANBAN BOARD

No.	Principles detected in Portfolio Kanban board	
	Principle	Detected , how?
1	The content is the key	Yes. The focus in the conversations has moved on the content that is visible on the kanban board.
2	Co-creation	Yes. The team meets regularly and works on the items together.
3	Feedback is the fuel to learning	Not yet detected. The aim is to learn from the feedback and iterations but this has not yet been verified.
4	Business	No. Business Agility points to business

No.	Principles detected in Portfolio Kanban board	
	Principle	*Detected , how?*
	Agility	model refactoring. As Finnish Broadcasting Company is publicly funded there is no need for business model refactoring.
5	Use of automation as leverage	Sort of. Converting the portfolio tool to electronic format gives real-time visibility that was impossible with old Power point and calendar-based reporting.
6	Scale using fractals	Yes. The work is described first with Epics, and then as Features, Stories and Tasks. The chief product owner is talking to several product owners.
7	Avoid Combinatorial Explosions	Yes. As the communication cycles have shortened, the portfolio management meetings have become very short and effective.
8	Sequence for maximal throughput	Yes. Portfolio management does constant prioritization in order to find maximal throughput.
9	Appreciate deep knowledge	Yes. Group-based decision-making is knowledge-based.
10	Work leveling	Yes, automated metrics and reporting are saving time.
11	Simplicity	Yes, The kanban board itself is simple and the way how the Epics are defined is simple.
12	Situationality	Yes. This is visible especially in the architecture studies. Some Epics pass the architectural evaluation while others are checked more carefully.
13	Control process, not items	Yes. This is happening with rule-based decision-making
14	Growth mindset	Yes. Each Epic has a metric assigned for measuring growth.
15	Listen to employees, they know all the problems	Yes. Retrospectives surface the problems.
16	Detect and use patterns	No.
17	Cost innovation	Yes. Architects check each Epic in order to find a cost-conscious way of implementation or in order to find and cut unnecessary or double work.
18	Utilize tacit knowledge	Yes. As people are present, the tacit knowledge is utilized.
19	Learning happens between teams	Yes. Decisions are made by groups and this enforces learning.
20	Fast is better than perfection	Yes. It is easy to make a rapid prototype first.
21	Prevent problems when small	Yes. The kanban board makes potential problems visible.

From Table IV we notice that from these 21 principles only two were not detected, and one was not detected because the company under research is publicly funded. One principle was not yet detected but was expected to and one was only partially detected.

This study is interesting as it validates the earlier derived principles. Based on this examination we can accept all other principles except the principle of pattern detection and utilization. The agile practices do not encourage pattern usage and recognition as such. It should also be noticed that this

pattern is not really originating from agile literature but has its roots in the TRIZ methodology. Dropping this pattern could refine the earlier published list of principles.

IV. CONCLUSIONS

This paper has described the Portfolio Kanban board that is in use in Finnish Broadcasting Company Yle at web and mobile development and compared how the described benefits by the users differ from the more generic benefits described by other Portfolio Kanban users. The conclusion is that the new described benefits seem to be additional to earlier described benefits of Portfolio kanban usage.

Then we have compared if and how various Large-Scale Agile Principles that have been derived from various Agile and Lean Enterprises and other literature references and noticed that all but two can be detected with the Portfolio Kanban taken into use in Yle web and mobile development in practice. Some of these practices were detected and some were not yet detected, but are assumed to be found at some later phase. We also found that one Principle was very different from the rest of the Principles, so we ended up by recommending dropping the earlier suggested Large-Scale Agile Development Principle of Detection and Usage of Patterns.

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