

“IT GOVERNANCE AND PROJECT MANAGEMENT, HOW AGILE MINDSET CAN SUPPORT THE DIGITAL TRANSFORMATION ”

Research full-length paper or Research-in-Progress

Track N°

Abstract (format of this heading: “Subtitle”)

Information technology has become the main enabler for the creation of value for the companies. Business cannot disregard IT to realize its value through products or services.

Digital transformation must be guided and supported by a review of the organization, Business and IT have to be focused on time to market, starting from the review of processes and organization, adopting the Agile mindset.

The speech includes the PMI’s point of view, with the new agile contents in the PMBoK, and the experience on the impact of the application of Agile methodologies, with a focus on the model proposed by the Scaled Agile Framework. The SAFe redesigns the entire IT department, aligned with Agile and Lean concepts.

The Speech will try to answer the most frequent questions from customers to better support the creation of value through lean and agile approaches starting from the feedbacks of a global ICT Company.

Keywords: Agile, Value , Mindset, Project.

Transformation requires an organizational and processes review

Digital transformation could seem like a buzzword. On books and events, different definitions of Digital Transformation are often found. Digital Transformation is a matter of resources, organization, processes, culture and obviously technologies. Our times can be considered as very dynamic, as we assist to changes every day. Changes have impacts on our lives and our jobs and are supported by technologies and software.

Products keep changing through means of artificial intelligence and automation. Many products are intangible as software and apps for our table and mobiles.

Activities for the production have been automated and IT is mandatory. We could say that every working and not working activity is related to a specific technology. We don't take care about how many technologies we use every day and how much time we spent software.

The early phase of IT, at the beginning of the 70's, was a "romantic" one, characterised by a limited usage and high costs. It was the age of hardware with the software builds to work on it.

Thanks to the widespread of the personal computer and internet, IT arrived to everyone.

At the beginning of the new millennium, software has grown fast and a lot of activities could be supported by the information technology. In this period, companies asked for more software customization based on their needs.

Now we are experiencing the growth of the cloud, which delivers standardization of IT tools. We can easily find any software to our needs. Digital transformation is not a matter of IT only, as it involves a review of the whole organization's processes, in order to be always aligned with the market and competition fast-paced evolution, and a step ahead towards continuous innovation.

Time and cost are key factors to support the creation of value. Markets change fast. Companies have to be ready not just to follow the market, but driving the change.

Companies are considering new markets over their traditional ones in order to develop new opportunities. An example is Daimler's investment in Mobility Services, introducing services like MyTaxi, Cartogo, Moovel and others. All the services have a strong IT support that can be considered as part of the digitalization program, and that includes new mobility concepts and business units, like automated driving (although part of a bigger program).

Digital Transformation is also related to the automation of our process. In a lot of cases companies ask to replace old processes with tools. This approach speeds up processes but might not allow the entire exploitation of the full benefits obtainable from digital transformation.

Environments change rapidly, new products and services grown and die in few years. Companies have to be ready to drive new consumer behaviours with a quick time to market.

Digital transformation can support companies in the creation of value and achievement of business goals by reviewing organization, process and technologies: in this setting, IT is the mandatory component to the drive of the transformation.

A common buzzword is "Agile", which can be applied not only to the development procedures but can also support the company to the creation of value.

1.1 Everything starts from lean

An agile transformation is required. Every company is thinking about a review of its *modus operandi* in order to verify how to adopt new practices.

Start-ups are a step ahead, because they can create a new business from scratch. They are agile and flexible companies by definition.

The challenge is to support the transformation of structured companies that have defined roles and procedures.

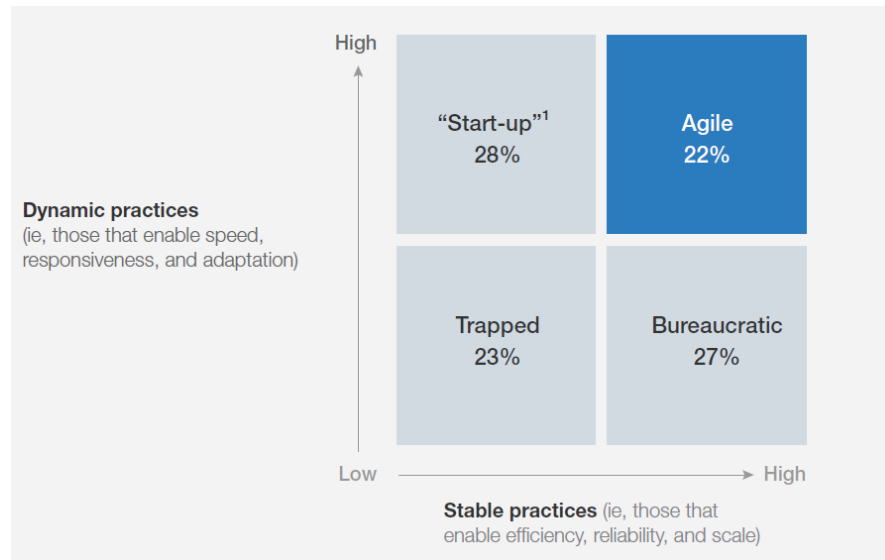


Figure 1. Agile adoption in the organization, from McKinsey - How to create an Agile organization – Exhibit 2.

Agile, formalized with the Agile Manifesto in 2001, is strongly based on Lean management.

The correct way to achieve the best success of the digital transformation is to include the lean mindset in the organization and processes review. The review of processes is supported also by practices such as Lean-Six Sigma.

As stated above, the basis of the Agile system and Digital transformation are in the lean approach, defined after the 1948 in Toyota with the TPS (Toyota Production System). The reconstruction promote the focus on goals, that includes designing out overburden (*muri*) and inconsistency (*mura*), and to eliminate waste (*muda*).

All goals can be considered as one in our digital transformation, when created in an environment supported by IT that promotes the 3M (*Muri*, *Mura* and *Muda*). Companies have a lot of waste related to an overhead of bureaucracy, procedures and lack of responsibility. IT can faster the activities but the main goal of waste reduction can be achieved by an holistic review.

Lean main concepts are related to the JiT- Just in Time approach that are strongly recommended for the actual way of work. Customizations and changes require a lean production that can support a fast delivery of the products and services. The concept of *Jidoka* –Automation is aligned with the target of the Digital transformation.

The Toyota Production System has introduced several principles that can be followed by companies that are trying to implement a Digital transformation.

The **Continuous Improvement** methodology introduces the constant research of ways to reduce waste. *Kaizen* includes a constant approach to innovation, looking for new technologies, methodolo-

gies and approaches. Genchi Genbutsu suggests to go in-deep to the roots of the problem to carefully understand and thus find a solution for improvement.

Together with the Continuous Improvement methodology, the **continuous root problem solving** defines how any long-term vision includes a solution of the problems.

The **Respect for people** introduce the people as a key factor for the success. Frameworks or rules can drive and support the activities but cannot ensure the achievement of the goals. Only people can help the company to reach the goals. A farsighted company invests in people, sharing with them the vision and promoting the focus on the values and goals.

Long-term philosophy includes a long term vision based on a shared mindset with an adaptive approach which can address the progress to value.

The lean principles are also focused on value, understanding how the success includes the engagement of all the members in an organized and adaptive company:

- Identify Value
- Map the Value Stream
- Create Flow
- Establish Pull
- Seek Perfection

Lean introduces several techniques that are also promoted in Agile:

- Pulsating rhythm of the activities dictated by the client's demand (JIT – Just In Time)
- 5S technique (Sort, Sort in order, Shine, Standardize, Sustain)
- Continuous and efficient management of information (The information flow plays a fundamental role in lean production)
- A3, using only one side of paper for the development of a structured problem-solving process.

2 IT Governance beside the company

Digital transformation is not only a matter of IT. All the company is involved in the digital transformation in order to be ready for the future.

A lot of executives across industries and regions believe that the world around them is quickly changing. Business environments are increasingly complex and volatile, looking to the Agile as new way to conduct the company. Agile could be adopted in all the sectors and departments trying to change the mindset and not only to apply a new framework.

Kotter defines enterprise governance as the following:

“Enterprise governance is a set of responsibilities and practices exercised by the board and executive management with the goal of providing strategic direction, ensuring that objectives are achieved, ascertaining that risks are managed appropriately and verifying that the enterprise’s resources are used responsibly”

Company board and executives set the goals according with the vision of the company.

IT Governance is aligned with the Business strategic goals and traduce them in the IT goals that are managed to transform vision in reality.

The most common pains for the business regarding the IT are related to the failing of the initiatives in terms of scope, schedule and costs. Other pains are related to the bugs in the code or in the organiza-

tion that stop the business continuity. A lot of frictions are related to different missions, typically revenues increase for the business and cost reduction for the IT department, or for a different language, focus on value for the business and focus on technicality for the technicians.

The complexity of the IT Department can also reduce the time to market; wasting time moving from different structures (e.g. Demand, development, operations).

Agile try to overcome pushing the department to work together. In order for it to work properly, is mandatory that Agile is not applied on a single project but is adopted by all the company. Agile could also be extended to DevOps to improve the quality and reduce the time with a strong collaboration between Delivery and Operations, supported by a strong automation.

In 1989 National Institute of Standards and Technology proposed the Information Management Decisions, shown the importance of an architecture that works from Business to IT to achieve the main goals of the company.

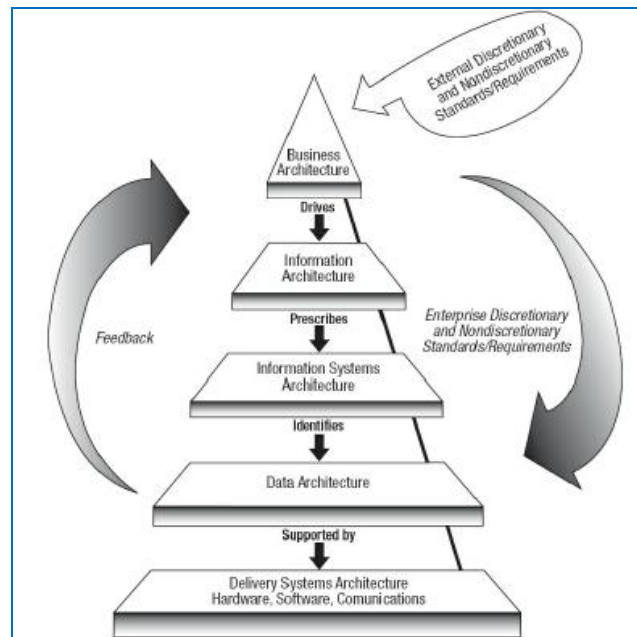


Figure 2. Information Management Decisions, from NIST Special Publication 500-167.

Business goals and IT goals introduce changes. Changes involves resources coming from different departments, both Business and IT. Changes requires programs and projects that are managed by project managers.

3 IT can drive the transformation

All the activities are supported by an IT tool. IT engagement is mandatory in each transformation. IT have to understand his role in the company working to support the business in the achievement of the company strategy.

IT is the key enabler for the Digital Transformation in the company, involving and supporting all the departments in the change.

IT have to reshape his organization to be oriented to time to market and business value creation without losing the attention on infrastructure

Weill and Ross introduce 5 domains in the organization of the IT to be considered in management:

- IT principles

- IT infrastructure
- IT architecture
- Business applications needs
- IT investments and prioritization

IT changes related to the main digital transformation, can be managed according to Kotter's Implementation Life Cycle:

- Establish a sense of urgency
- Form a powerful guiding coalition
- Create a clear vision that is expressed simply
- Communicate the vision
- Empower others to act on the vision
- Plan for and create short-term wins
- Consolidate improvements and produce more change
- Institutionalize new approaches.

Change requires a project. A project can be managed using the guidelines proposed by the Project Management Institute in the PMBoK(Project Management Body of Knowledge), actually at version 6.

In the software extension of the PMBok 5, PMI defines IT projects as challenging.

- *software is an intangible and malleable product; source code for software is written text*
- *software requirements often change during a software project...*
- *Intellectual capital of software personnel is the primary capital asset for software project....*
- *Communication and coordination within software teams and with project stakeholders often lack clarity*
- *Creation of software requires innovative problem solving...*
- *Initial planning and estimation for software projects is challenging*

IT can support the company Digital transformation with projects that needs a clear vision also adopting Agile approaches.

4 Project management to drive the change

In 2017 Project Management Institute have updated the PMBoK with two actions, a review of the document and the introduction of the Agile practice Guide.

Projects can be managed with different approaches, as described in the table.

Approach	Requirements	Activities	Delivery	Goal
Predictive	Fixed	Performed once for entire project	Single delivery	Manage cost
Interactive	Dynamic	Repeated until correct	Single Delivery	Correctness of solution
Incremental	Dynamic	Performed once for a given increment	Frequent smaller deliveries	Speed
Agile	Dynamic	Repeated until correct	Frequent small deliveries	Customer value via frequent deliveries and feedback

Table 1. PMI Projects approaches from PMI-Agile Practice Guide

Traditional approach is based on a predictive way of work where the scope is clear and all can be managed with a detailed series of activities from the initial planning phase.

The challenging projects of IT requires different approaches that can be used at the same time, increasingly.

The first step is to organize the project with an **iterative** approach, whereby the project is split in many iteration with a fixed cycle of few weeks, from 2 to 4.

The iterative approach do not change the processes but ask to review them in order to simplify and repeat at each iteration. An Iterative way introduce a bigger commitment to the projects. Team members are engaged every two to four weeks. The focus is higher on few topics that have to be delivered at each iteration.

The second step is the **incremental** approach that introduces an advancement at each iteration. Software can be delivered in an incremental way adding working functionalities at each iteration. Some costumers have a DevOps approach where the delivered software is put in production in few minutes after the demo. IT could be done if the company has as automated testing factory and if the project have enhancements on an existing platform. When the project produces a new software the organization is typically aligned to SAFe® recommendation “*Develop on cadence, release on demand*” where the Business guide the roll-out in production according with the value created.

Iterative and incremental approach increase the commitment and the focus on project by all the stakeholders.

A different way to manage the scope is described by an **Adaptive** or **Agile** approach. In a changing world is not recommended to describe in detail the scope of the project that will be changed during the life of the project. The scope is refined iteration by iteration. Team members have to be focused only on the actual activities in order to maximize the value creation. This approach cannot be considered like an anarchic way of work. A vision or roadmap is required with an high definition of the scope that have to be refined for the following iterations.

Be Agile includes all the activities needed to manage a project, changing the activities or the tools but maintaining the processes. A vision or roadmap is needed during the planning to make the usual activities of the planning, including the duration of the project, the main deliverables, the resources needed and the contracts to be done with contractors.

Agile introduce two different levels of planning. An high level planning to start the iteration, in order to set the project, and a planning each iteration in order to refine the scope to be managed in the starting iteration.

The main recommendation of the agile is to be always focused on value creation managing the planning to adapt the project to the goals and not only for following a plan.

5 Agile Project management

The Agile Practices Guide describe the Agile mindset that all the members of the project have to believe in. The mindset is based on the Agile Manifesto of 2001.

The agile manifesto maintains all the characteristics of the projects strengthening the resources and interactions, the working software, the customer collaboration and the responding to change maintaining the traditional aspect like plans, processes, documentations and contracts.

Agile is not only the application of a framework but also the acquisition of a mindset that can be analysed starting from Lean and to be acquired by all the team members. Mindset is not referred to how to work but how I can be part of the project and how I relate with the stakeholders.

5.1 Focus on value

The main aspect is the focus on value. Also in the past, the project manager was focused on value, but sometimes being more focus towards the completion of the project meant loosing focus towards the potential value-creation opportunities.

In traditional approach all the items to be done are defined in detail at the start of the project. In Agile there's a continuous attention on the value refining the goals just before the delivery with a clear communication, in the same room, between Business and IT.

Value grows trough the communication that is used to maximize the value of the product acquiring the feedback from the development team that can suggest alternative solution.

Value is driven by the business that can use tools and techniques eliciting the requirements through specific activities based on workshops to clear the vision and create a first draft of the roadmap, changing the Business Analysis techniques in an agile way.

Workshops can transform an idea in a value generation that become Service Design, using the Business Model Canvas.

According with the Agile Samurai the inception deck includes many steps:

1. *Ask why we are here*
2. *Create an elevator pitch*
3. *Design a product box*
4. *Create a NOT list*
5. *Meet your neighbors*
6. *Show the solution*
7. *Ask what keeps us up at night*
8. *Size it up*
9. *Be clear on what's going to give*
10. *Show what it's going to take*

Value creation starts from a correct analysis of the needs through a process well defined and guided to prioritize the needs.

The main agile value is in the resources. People have to be aligned to the mindset and be empowered to be part of the project, not only as an executor, but also as a key element to the success. A new leadership has to been acquired and adopted.

Tools can help the application. Agile prefers less technology supporting tools like a Kanban board that can visually guide the activities and show the progress.

5.2 The change on the leadership

Agile support the adoption of a servant leadership that can support the empowerment of the resources that can drive the projects without a strong command and control.

A key word is time-boxing because a model, in which the people are empowered and can promote the orientation to the value, requires a strong management model. Before and after the Agile manifesto several frameworks describes how to work.

Apply a framework requires the agreement to a leadership in which leaders, not necessary the project manager, serve the whole team to bring out the energy inside, promoting the team spirit as a unique group that aim to create value. Servant leader is a facilitator that remove process impediments and helping the people to express themselves.

Passing from traditional to Agile can be considered the difference between management and leadership. In the past project managers was focused on task execution and command while in the Agile the key word are Empowerment, communication and resources.

People used to working under command find it difficult to change in an environment where they are free to express themselves.

Management focus	Leadership focus
Task	Resources
Control	Empowerment
Efficiency	Effectiveness
Doing the right thing	Doing of the right thought
Velocity	Direction
Practices	Principles
Command	Communication

Table 2. PMI Projects approaches from PMI-Agile Practice Guide.

According with the PMI-Agile practice guide, a project leader have to adopt the following characteristics focused on the resources:

- *Promoting self-awareness*
- *Listening*
- *Serving those on the team*
- *Helping people grow*
- *Coaching vs controlling*
- *Promoting safety, respect, and trust*
- *Promoting the energy and intelligence of others*

The creation of a team, according to traditional methodologies, typically follows the model described by Bruce Tuckman that has been analyzed by Blanchard and Hervey.

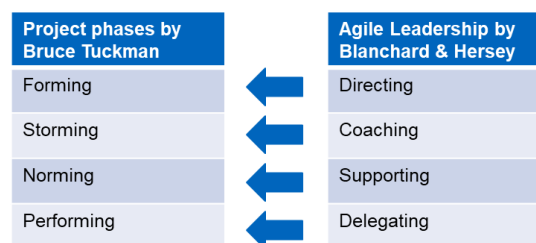


Table 3. Agile leadership vs. Project phases

Leadership requires a different approach according to the phase moving from a directing role to a progressive delegating role.

Tools that can be used are related to **Emotional intelligence**, the ability to identify, evaluate and manage the emotions of ourselves, and **Building responsible teams**, Self-organized, self-directed and high-performance teams which organize project work independently

5.3 The change on the organization

Agile changes involves all the company with a review of the way to manage projects: moving towards a more oriented organization where at the start of the project the resources became part of the project and are dedicated only to the project.

Agile prefers to work in the same room to guarantee the correct and fast communication. The organization requests to create a single room where the whole team works together. For Scaled Agile projects are requested bigger spaces and more rooms in the same building to ensure the correct communication.

Room have to be arranged with a big desk in the center of the room promoting the communication face to face, but introducing a cave for the private activities, like the calls. This approach is sometimes named Cave & Commons.

Companies, trying to exploit virtualization with distributed teams or resources, in order to contain costs, have done some experiments. The feedback suggests that communication tools as Skype can be used, but not in the same place, as it's suggested to guarantee focus during the "ceremonies" in presence.

6 Agile frameworks for project management

The agile mindset can be translated in a framework that enables the team to work in an agile way.

A collection on agile frameworks and practices includes over 20 types of agile application that can be classified in Frameworks and Practices.

Frameworks:

- Enterprise Scrum
- LeSS, Large Scale Scrum
- Nexus, Scaled professional Scrum
- SAFe, Scaled Agile Framework
- iAgile
- Scrum of Scrum
- Setchu, Scrum-based lightweight framework
- Xscale
- ASD, Adaptive Software Development
- Agile Modeling
- AUP, Agile Unified Process
- BADM, Business Analyst Designer Method
- Crystal Clear Methods
- DAD, Disciplined Agile Delivery
- DSDM, Dynamic System Development Method
- XP, eXtreme Programming
- FDD, Feature Driven Development
- Kanban
- Scrum
- Scrumban

Practices:

- ATDD, Acceptance Test Driven Development
- BDD, Behavior Driven Development
- CD, Continuous Development
- CI, Continuous Integration
- CT, Continuous Testing
- DDD, Domain Driven Development
- IID, Iterative and Incremental Development
- TDD, Test Driven Development

Mapping the main frameworks on the project pattern (Portfolio, Program and Project) could help analysing the impact that different frameworks have on the projects. The most common framework, Scrum, with a diffusion over the 60% of the market, is the basis for the main Scaled Agile framework but it's focused on the team organization and it needs more details for the starting of the project.

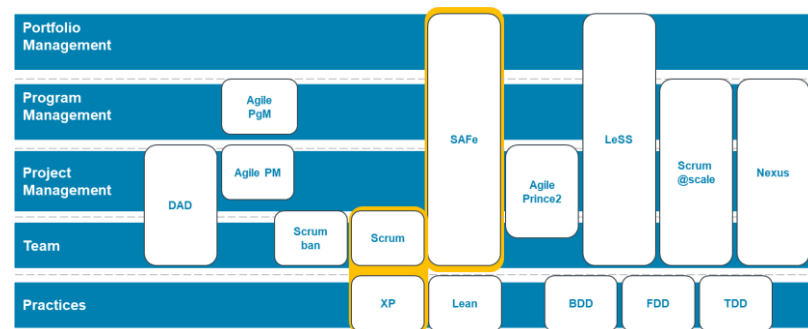


Figure 3. Framework mapping on patterns

Regarding the team organization, Spotify has developed its own vision about the organization, known as " Spotify Engineering Culture". The base unit is the "Team", which consists in a limited number of resources, from a minimum of 5 to a maximum of 10 persons, in order to develop the projects as mini-startup. Next is "Tribe", coordinated by a tribe leader, allowing their teams to achieve high performance.

The "Guilds" represent the transversal skills of the tribes as centres of competence.

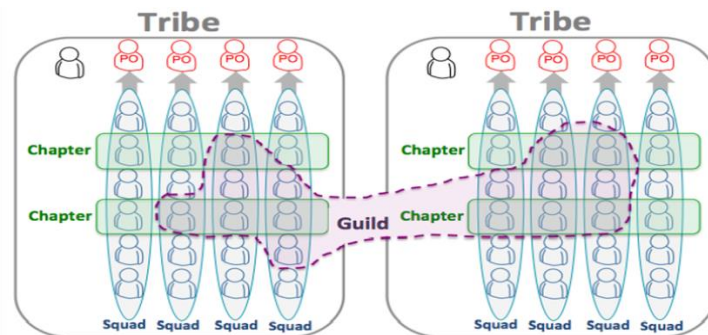


Figure 4. Spotify Engineering Culture organization

7 Scaled Agile framework for a complete application of the IT Governance

The first model of SAFe®, Scaled Agile Framework, was developed by Dean Lefflingwell in 2011 with the aim of extending the Agile methodologies to the whole ICT context since the real benefits of Agile can be appreciated only if the company or the ICT department know and use Agile methodologies. The last version of the SAFe is the version 4.6.

The model proposed the organization of IT Department in an agile way. The Business goals are driven by the Enterprise in the IT. All the needs will prioritized by value, integrating also the IT needs using a WSJF model.

The model in the higher level, named Portfolio, can transform the Company and IT needs in programs and projects that realize the IT Governance guidelines.

The framework is named SAFe for Lean Enterprises, remarking the strong relationship with the Lean.

The mindset is described as an Agile and Lean mindset, based on 12 principles and on the House of lean.

House of lean has the value creation as main goal with a sustainable lead time ensuring the quality.

The house is based on four pillars:

- *Respect for people and culture*
- *Flow*

- *Innovation*
- *Relentless improvement*

Foundation of the pillars are based on a Lean-Agile Leadership based on the Agile Manifesto and the 12 principles.

Lean-Agile leadership requires a manager that is both Lean-Thinking manager and teacher. In a not mature company the change can be driven with a SAFe Implementation roadmap.

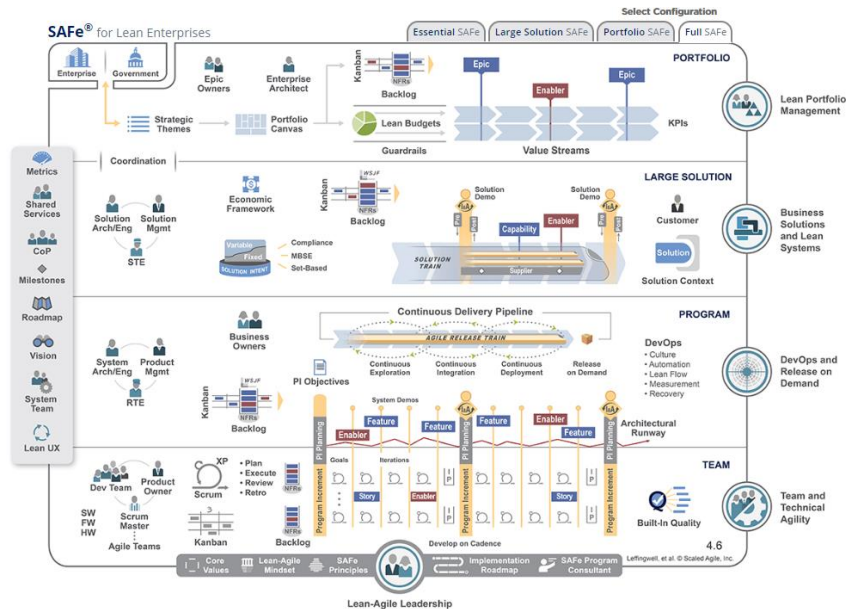


Figure 5. Scaled Agile Framework ver. 4.6

The full framework starts from the Portfolio prioritization, based on WSJF (Weighted Shortest Job First), which introduces the cost of delays. Company has to be focused on initiatives that create the maximum value in the minimum time. Initiatives can start when the company have the resources available.

Initiatives are realized with a train of value in a program and many trains in a large solution.

Each train can contain at most 125 resources. The complexity in the management of the resources requires a strong organization and application of the framework. Peoples can express themselves creating value in an organized and time-boxed department.

Framework designs three key roles. A RTE (Release Train Engineer) that drives the train and ensure the application of the framework. A Product Management the collect the needs of the stakeholders and manage the prioritization of the requirements. A System Architect/Engineer ensures the respect of the guidelines of the company on architecture.

Projects are developed using Scrum in many teams that work together every five sprints to review the roadmap in a 2-days meeting, named PI Planning (Product Increment Planning). The model maintains the Development on Cadence mixed with the Release on demand.

Agile approach is represented also by the sprint organization. Four sprints are dedicated to the development of the software. The fifth sprint is dedicated to the Innovation and Planning, where the teams can works on defining new solutions and to integrate the complete solution.

The basis of the development is Scrum, integrated with XP (eXtreme Programming) as indicated in the lower line that apply all the guidelines of the Scrum framework. All the “ceremonies” are confirmed as Planning, Review, Demo and Retrospective.

The progress in managed locally using the Kanban as suggested by the most common approaches.

8 Conclusion

Digital transformation has to be viewed in an holistic way, including an agile approach, not only to automatize the delivery but simplifying the processes and reviewing the organization to be focused on value creation.

The company has to be focused on the value creation breaking the existing silos represented by the department. The mission of the company is to realize the business strategy using all the energies available.

The liquid market requests to be easily flexible to change, in regard to the mission of the company. The changes of strategy require a more complex change in the company, including different organization, processes and skills.

The challenge of the digital transformation is to create a company that can be adapted faster and that is able to involve all the members in the vision.

Agility can support the transformation in order to reduce the waste in the processes and adapt the organization and the processes.

Transformation requires a change in all the members of the company starting from the mind-set where everyone feels part of the transformation and gives the maximum.

Mind-sets cannot arrive from the top or the bottom but have to be shared at each level.

The application of the lean guidelines have to drive every action of the members of the company at each level.

Agility is the key to implement a real and complete digital transformation that includes programs and projects that manage the activities designed at C-level.

Programs and projects can use agile frameworks to be more adaptive, and to be focused on the value creation, fixing times and costs and managing the scope in a flexible way to maintain the time to market and supporting the business vision of the company, granting at the same time the quality expected in a flexible architecture.

Cloud platforms are outsourcing the low-level IT activities to vertical companies, and that can maximize the benefits to companies that do not have IT in the core business, but ultimately could increase the need for IT in the first place..

Start-ups born digital and growing introduce the complexity of the big companies in terms of roles and processes. Big companies have to change to break the silos and to be more adaptive to the new context.

Success is not a matter of organization or project management but mind-sets, organizations, processes and project management can support or destroy the success of a company.

The more the company will be able to create the right environment, the more it will be able to apply a real and complete digital transformation.

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