

# Systematic, Building an Agile Enterprise with Lean Culture

## Fast and Reliable Service to Customers

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### Abstract

*“Agile is not only about technology or project management. Agile is a mindset embracing ALL activities in a company from top management to the youngest trainee. The agile mindset is crucial to be competitive” – Michael Holm, President and CEO, Systematic.*

*Systematic introduced agile methods to software development projects in 2005 on top of world class processes compliant with CMMI (Capability Maturity Model Integration) level 5. In 2007 Systematic started to report on the successful adoption within projects at the annual SEPG, Agile and HICCS conferences, [1],[2],[3]and [4]. However agility in Systematic continues beyond the software development projects – in Systematic agile is adopted at all levels in the company allowing for real time decision making based on real-time information at all levels of the company.*

*Systematic has, gained valuable experience on how to apply an agile mindset beyond the scope of software development projects, e.g. in management, shared functions, offices in other countries and sourcing partners. This article presents these experiences and the objectives behind the implemented initiatives.*

## 1. Introduction

Since the introduction of the Agile Manifesto in 2001, many software development projects throughout the world have adopted agile practices to address customers’ need for responsiveness and adaptability. Systematic also adopted agile practices in software development projects in this period, but agile methods were never the goal in itself – they were discovered and implemented as part of establishing a Lean culture in Systematic [1]. The adoption of Lean led to a unique way of working based on synergies between CMMI, Lean, Scrum and other agile practices [4].

Lean provides the overall principles and values needed for high performance teams and organizations, as demonstrated by Toyota for more than 50 years.

CMMI provides the process model describing what disciplines are needed to deliver reliably and predictably to agreed schedules, quality and budget. Agile approaches, like Scrum, provide best practices and methods for working according to the values of Lean and adopting change as it occurs, which in the end contributes to straightforward solutions to the customers’ real need. Lean, CMMI and Scrum are strong by themselves, but in Systematic, they are combined to amplify each other and provide a platform to serve customers even better.

Customers increasingly expect fast response time, transparency of development activities, and flexibility to change – while they at the same time trust the supplier to deliver consistently on time, cost and quality. We have only seen the start – the 21th century will require much more agile companies and not just agile projects. Only companies capable of playing this new game will survive in the long term.

Systematic has taken a big step in this direction by achieving predictability and needed discipline with CMMI, and short response time, smooth flow and minimal waste as a result of a lean culture and agile mindset, in development projects as well as throughout the enterprise.

In 2009, Systematic was re-certified at CMMI level 5. This is the highest level of the internationally recognized CMMI maturity model. In 2009/10, CMMI – combined with agile development principles – put us in a position to achieve 95% of all external milestones on time.

## 2. Radical Management

### 2.1. The company

Systematic was established in 1985 and employs more than 450 people with offices in Denmark, Finland, USA and the UK. It is an independent software and systems company focusing on complex and critical IT solutions within information and communication systems. Often these systems are mission critical with high demands on reliability, safety, accuracy and usability.

Customers are typically professional IT-departments in public institutions and large companies with longstanding experience in acquiring complex software

and systems. Solutions developed by Systematic are used by tens of thousands of people in the defense, healthcare, police, public sector, finance and service industries. Systematic was found to be compliant with CMMI level 5 for the first time in November 2005.

More than six month before, Systematic decided that when CMMI level 5 was reached, future improvements were to be built on CMMI practices combined with a lean culture and mindset.

The first major improvements inspired from lean concerned working in shorter iterations to get more feedback from customers and a focus on early testing in development activities to ensure early identification and resolution of defects. This improvement resulted in the adoption of Scrum and a new feature-driven software development method with a focus on early testing. It also demonstrated that it is possible to work in a disciplined way according to CMMI while at the same time being adaptive using agile methods, which was ultimately confirmed when Systematic was routinely re-assessed to CMMI level 5 in 2009. Systematic has demonstrated how it is possible to implement the CMMI model from a Lean culture to achieve non-bureaucratic processes that are a transparent, natural part of daily routines, allowing us to provide fast and reliable service to our customers.

## **2.2. What Systematic stands for**

Our whole identity is based on determination to provide value for our customers. Our mission is “simplifying critical decision making” – to supply reliable and straightforward IT solutions to customers who make critical decisions every day.

Our day-to-day activities are imbued with our core values: making a difference, people centric, freedom with responsibility, pervasive quality, cost conscious and contributing to society.

One of the reasons for the successful adoption of agile methods and lean mindset in Systematic is that the core values of Systematic are and always have been very close to the agile values and principles.

In general, Systematic values align well with agile values. In particular the value “Freedom with responsibility” supports the agile value of empowered teams. The value of pervasive quality is interpreted to focus on delivering the best value to our customers, through close and trustful relationships with them and aligns to the agile principles of “Working software over comprehensive documentation” and “Responding to Change over following a plan”.

## **3. Scaling Agile beyond Projects**

The adoption of agile started in the software development projects, and short time after adoption it was evident that the new project management processes were fast moving and agile, while management processes outside projects were moving in a slower pace. There was too much paper and too much reporting. It was clear that management processes beyond projects had to become agile like the processes in software projects, using real-time information to make real-time decisions.

### **3.1. Agile Management beyond Projects**

The key observation was that too much information was communicated in status reports, only to show up to the receiver as out-dated information. Critical information had to find more efficient communication channels.

#### **3.1.1. Getting Vice Presidents (VPs) out of their offices**

The most efficient communication is face to face between people, but most upper management were located in personal offices. It was decided that all VPs should leave their personal offices to sit close to their staff and work like an agile team. The intention was to create even more communication between VPs, directors, program managers and sales managers. The setup was to place at minimum the sales and operations VP in an office very close to or at best co-located with directors, program managers and sales managers. The close distance created a natural high bandwidth of face-to-face communication supporting the ambition to response to real-time information and decision needs. This effect was amplified by another initiative to reduce time spent on writing or managing old or out-dated status information in favour of real-time status information.

#### **3.1.2. Real-time status and decision making**

When the VPs left their offices, the room was re-allocated as a situational awareness room (SIT-room). The walls were filled with whiteboards, and showed real-time status on on-going sales activities and software development progress. A huge amount of paper status reporting was eliminated in favour of making the same information immediately available in the SIT room. Anyone could go to this room and see the real-time status of activities, and meetings were set up with executive management, VPs, directors and project managers on a regular basis to review the status of activities in these rooms. Instead of waiting for written reports to show up weeks after events happened, all management levels met and discussed issues while they were happening. This setup was successful because it supported real-time information sharing and decision making based on high

bandwidth communication, by making the information visible on the walls. The only drawback from the setup was that it was cumbersome to share this information for example on video to other sites. It was realized, that the important part of the success of SIT-rooms was access to information in real-time and less that it was communicated on the walls.

The ability to act on real-time information in the 21<sup>st</sup> century is crucial, and therefore Systematic established a Business Intelligence (BI) system, to further improve the timely collection and distribution of critical information. Part of this effort also improved data collection, such that the same information is asked for only once. In this way, the effort to collect and distribute knowledge could be further reduced, while the information was even more real-time. Access to the information was moved from white boards in the SIT-room to a set of standard tools on the desktop, for example: online pipeline, order book and CRM-systems.

This step resembles the step the software development projects are taking when engaging in distributed team delivery. Co-located projects use white boards and scrum boards to visualize the projects' work, but most distributed teams find that in a distributed environment it is more efficient to share and visualize this information through a tool.

The combination of co-locating management and immediate access to real-time information, created an environment where management makes daily real-time decisions. It also further improved a culture where project managers and management resolve issues immediately as they are discovered. The monthly reports have no surprises, because all critical issues are discussed when they happen. Furthermore, the BI system enabled automatic generation of larger parts of the standard reporting still used.

### 3.1.3. Scrum all the way to the top

The responsiveness from management was an important step to build a real-time responsive environment around agile projects. This responsiveness goes all the way to the top where Vice Presidents and executive management make real-time decisions on real-time information using a daily standup meeting. Every morning they meet for 15 minutes answering the standard questions: "What did you do yesterday, what are you doing today, what is your plan, do you need any help"? At these meetings, executive management and VPs can focus on common themes or the most important issues of the day. It's like a morning parade for soldiers.

In addition to the daily, event-driven interaction with project managers, each VP calls a weekly meeting

for all management in the Business Unit to align on important issues of the week.

In some Business Units, this concept is extended with separate monthly meetings for communities of practice like testers, architects, user experience engineers and lead developers. Each of these communities of practice meets and discusses what issues they see across projects. A representative from each of these communities meets with BU management regularly to discuss and resolve issues.

The meetings described above have proved to make real-time information available and force issues to the surface issues early. All projects are using Scrum and have strategies for resolving impediments within the project. The above setup allows for efficient ways to send impediments that the project is unable to solve up to the management level where they can be resolved.

## 3.2. Shared functions

Real-time information and decision making in projects and management, depends on shared functions like HR, internal IT support, Finance, Sales and Legal to interact with the same responsiveness.

Examples of initiatives taken by shared functions to support real-time decision making based on real-time information in the enterprise are:

- Scrum is adopted in applicable teams in shared functions
- Projects are provided a coordinated start-up service to ensure efficient initiation
- An IT-infrastructure including tools like CRM to support efficient identification of business information and data collection is provided
- Shared functions are shared with the enterprise and jointly staffed from offices at the different locations. Systems are put in place to support efficient access of information where it is needed in the enterprise.
- Facilitation of lean initiatives to eliminate waste, implementation of improvements to install a lean mindset in projects, and most notably using lean as a tool to simplify the processes significantly.
- The needs for real-time information are supported by installing Microsoft Office Communicator System (OCS) to provide all employees with audio and video connection to each other independent of physical location.
- Systems and procedures allowing for more efficient reporting and real-time information are established.
- Greatly improved bid-process supporting fast decision making and close collaboration with BU.

### 3.3. Establish Systematic group

Systematic has offices in Denmark, Finland, UK and USA. In order to scale for future growth and align efforts from all offices, all offices have been re-organized into one group.

Significant efforts are being undertaken to reform ownership and organization to support one group, where each office has a distinct responsibility within a certain competence or service that this office provides for the rest of the enterprise. The Systematic Group identity is supported by:

- The use of Office Communication Server (OCS) to ensure that all employees have easy access to chat, or video phone to other colleagues whether they are in Denmark, Finland, UK or USA.
- Monthly local Town Hall meetings, where end-of-month results, sales status, project status and other items important for all employees are presented.
- Quarterly Town Hall meetings, held by top management, broadcasted live to all offices in the group.
- 6-8 yearly Café-meetings, where top-management are present and the agendas are set by the audience (max. 30 people after the principles: first-come) – questions and dialogue are provided by top-management. These Café-Meetings enable two-way communication, which cannot be accommodated at all-hands meetings.
- Systematic's values are communicated and debated in all offices, for example by using the Systematic Value game where cases related to different values are presented.

These efforts show a dedication to build one Systematic group based on respect for each individual office, while at the same time engaging all offices in a team effort for one group.

### 3.4. Sourcing

Systematic has during the past years engaged in sourcing activities. The first initiatives were based on experiences reported by Jeff Sutherland describing how to set up distributed teams using scrum. Initially Systematic decided to look for sourcing partners in Czech Republic and Ukraine, to reduce the cultural challenges.

Systematic has made a de-centralized setup for outsourcing based on distributed teams. Whenever a project needs staffing from our sourcing partner, the project will contact the sourcing partner to identify

people with the right competences. The people from the sourcing partner will be organized in distributed Scrum teams where approximately half of the team is in Denmark and the other half at the sourcing partner.

Systematic has established a standard setup that allows mutual learning between employees from Systematic and the sourcing partner and we have a setup that ensures people meet in both places regularly. Once the mutual introduction is complete, distributed teams allow for the same agility as a team without a sourcing partner – but it requires a setup supporting real-time communication and the exchange of information.

### 3.5. Customer interaction

All of the above initiatives are steps to establish agility in the entire company, allowing for real-time decision making based on real-time data. The unique achievement of this capability from the synergy in combining CMMI, Lean and Agile supports even closer collaboration and trustful relationships with our customers.

Systematic has always valued close customer relationships, and put efforts to truly understand our customers' real needs. For example, Systematic employees participate in military exercises to see how Systematic products are applied. They walk with doctors and nurses in the hospital to see how the electronic patient records are used. They sit down with the policemen running the daily operations in their headquarters.

Agile development provides a great advantage to our customers, because it is possible for us to make the activities and progress of the project even more transparent. Some of the first agile projects were won, because our customers could see they would achieve this transparency. Systematic wants to go even further. Whenever we have the opportunity, we invite the customer to visit us. Many customers participate regularly in sprint review and sprint planning meetings. Customers participate closely in the clarification of the on-going work and in some projects they also participate directly in test activities. Systematic values such close relationships with customers. It builds confident trusting relationships with customers when they can see real-time what happens on the project serving their needs.

## 4. Conclusions

Systematic has learned that real-time management works. Transparency is extremely powerful, both internally and externally. Common information is essential to manage a modern service company, where knowledge and information are the power tools.

## 5. Recommendation

We recommend companies pursuing an agile enterprise to install a lean mindset and values in the organization. Even though agile processes and practices are important to build an agile enterprise, the crucial part is to establish the right mindset and values in people.

## 6. References

- [1] J. Sutherland, C.R. Jakobsen and K.A. Johnson, "CMMI and Scrum - a magic potion for code warriors" in proceedings for Agile 2007, SEPG2007, HICCS41
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- [4] C.R. Jakobsen, J. Sutherland, "Mature Scrum at Systematic" published in "Methods and Tools" in 2009
- [5] Steve Denning, The Leaders Guide to radical Management, ISBN 0-470-54868-1, 2011.