

# Lean and Self Directed Teamwork - Differences, difficulties and future developments – a case study

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**Abstract.** A value stream oriented organisational structure following the Lean philosophy, often is seen as contradictory to the concept of self directed teamwork (SDT). Whereas SDT is broadly defined by the takeover of responsibilities for a certain range of management tasks by a team within defined boundaries Lean is defined as an approach of continuous improvement for process design and development with an advanced toolbox and clear standards. The following case study describes two manufacturing companies that implemented SDT during the 90's before they decided to implement Lean strategies on the shop-floor level. Both companies used different approaches. In both cases the "new" Lean philosophy caused reasonable friction with the existing team structure. In this study we will describe the perceived differences and difficulties as well as the similarities between the two concepts. As a conclusion a way to integrate the two concepts will be considered.

## 1 Introduction

A growing number of production systems claim to be the only solution for a successful continuous improvement process with convincing results. In practice, even the Lean philosophy stands for a great variety of "homemade" systems only sharing some basic assumptions. The focus of all improvement activities is considered to be the value stream.

In recent years a majority of globally acting manufacturing companies have implemented such a system. Some put all their activities under the roof of TPM [1, 2]. Others use the EFQM model [3] as their guideline or the Six Sigma approach [4] while another group of companies name their production system in one or the other way Lean, mostly based on the ideas of the Toyota Production System [5]. Most of

them share a holistic point of view. They do not only want to contribute to an improvement of selected processes, but also claim to be part of the culture of a company. In the public mind still each of them is seen as a tool for one focused intention.

The concept of Self Directed Teamwork (SDT) [6] experienced a strong renaissance during the 90s after the publication of Womack, Jones and Ross [7] not only in the automobile industry. It was often seen as the European answer to the Japanese KAIZEN [8] philosophy and all of its spin-offs. In the northern part of Europe SDT received a growing attention as an effective organisational tool to increase productivity [9]. Although both concepts (Lean and SDT) are related to the same principle objectives they have often been seen as antagonists.

## 2 Contents of the case study

The paper investigates some frequently found opinions about the assumed and existing differences between the Lean and the SDT concept at two manufacturing sites of two different companies of the metal industry. Both companies gained experiences with both concepts for some time. The presented findings are based on expert interviews with managers of the two companies (Lean managers (N=3), line managers (N=5)) and expert consultants of the Lean and SDT concept (N=4).

The interviews were done either on telephone or face-to-face and took approximately 1,5 hours. There was a written guideline focusing on the following topics:

- Definition of Lean and SDT in the company
- Perceived shortcomings
- Perceived differences as well as similarities of the two concepts
- Possibility of integrating the two concepts

The question about the concept definition were asked in order to assure that our definition of SDT and Lean will fit to the concepts valid in the company.

The results will be described in three passages following the two main issues:

- Differences and difficulties of the two concepts
- Similarities of the two concepts and conclusions

## 3 Definitions

### 3.1 Self Directed Teamwork (SDT)

Since the 1980's the organisational concept SDT is perceived as a major means to improve flexibility of an organisation. It promises substantial success for manufacturing industry through an increase of productivity and reduced labour costs. In order to register a successful implementation of SDT a certain framework must be given including the set-up of a team-orientated factory layout (e.g. manufacturing cells).

In this paper, SDT is understood as semi-autonomous teamwork [6]. In this context a team is defined as a group of people who combine different skills on a

common purpose or goal with restricted managerial supervision. Such a team organises itself, plans and controls the processes and tasks within a framework that was previously defined by the management.

Interacting with the outside world, the team is represented by a team speaker who usually has been elected by all members of the team. This team speaker is thereby often equal in status to the other team members and a productive worker himself. In this context, the team speaker should in no case carry out all non-manufacturing tasks alone. Recent developments like the star model [9] allocate those tasks among a defined number of team members (stars) who take care of essential responsibilities.

It also takes a longer time for a team to become able to work fully semiautonomous-ly. The concept cannot be deployed as a means for rapid results but it has proved to be a promising instrument for reaching long-term success [6].

### 3.2 Lean Concepts

Lean has its origins in the Toyota Production System developed by Taichii Ohno [10]. The elimination of waste due to restricted resources was at that time one of the driving principles. The customer and the fulfilment of his needs began to play a crucial role in the further steps of its development. Womack and Jones [11] outlined the basic components of a modern Lean system:

- 1 Specify value from the standpoint of the customer,
- 2 Identify the value stream for each product family,
- 3 Make the product flow,
- 4 Allow the customer to pull production forward and
- 5 Work toward perfection in your offering.

The value stream defines the Lean Enterprise [12]. The main objectives of the Lean Enterprise are to correctly identify and specify value to the ultimate customer in all its products and services. Waste is any activity, which the customer is not willing to pay for since it adds no value to the product or service and often at times, is consuming resources. Waste exists in all parts of the business – front office to the factory. This effort results in redefining the current value stream to one of value adding activities and what is called sustaining activities. Sustaining steps are defined as, non-value-added activities performed for one of two reasons: it is required by law or regulation or because it contributes to business effectiveness.

The Lean approach defines the tools and principles that determine how all aspects of a business operate from sales through distribution. In order to be successful, one must follow a rigid process. Depending on ‘easy goals’, savings can be realized in several months and have an immediate impact. However, one must be committed for the long run as some change efforts can take as long as 2 years or more.

## **4 The two companies**

### **4.1 The motion control parts manufacturer**

The first company looked at in this case study is a European Division of a North American corporation that manufactures products for the motion control process at three different locations in Europe. The European headquarter is stationed in Germany and employs around 700 employees. Since 1996 the company introduced SDT during an implementation process of 4 years with striking success. In the German plant, around 80 teams were installed not only in the production department but also in administration and other service departments.

Dedicated facilitators for the transition process were selected within the company that have been formerly working in different departments and turned back to their line alignments after a certain period of time.

2002 the mother company decided to aim the corporation to the Lean culture for all the divisions throughout the globe. Each division had to name a Lean manager. Depending on the size of the company a certain number of Lean leaders who are acting as supporters for line management were nominated. The general managers of each divisions act as sponsors. A measurement system called 'The Lean journey' which allows each division to rate its status quo regarding Lean was introduced. Today both concepts are alive, but Lean is seen as the dominant model.

### **4.2 The packaging material manufacturer**

The second company also belongs to a North American corporation. It manufactures packaging materials for different market sectors at its site in Southern Germany with around 1.300 employees. The first attempt to establish self-directed teamwork started 1994 in selected areas in the production department with little success. Nevertheless the concept was rolled out throughout the entire production department.

Constant struggle with the concept due to disputes over the role of the team speaker was one of the reasons for management to decide in the year 2000 to readjust the model. Until then the team speaker was elected by all team members but never fully accepted by the middle management. The team speaker was replaced by a team leader function. A project team introduced further adjustments of the SDT concept that was implemented with the help of an experienced facilitator.

At the same time the corporation initiated the global roll out of its Lean model under the headline 'Continuous Improvement'. The approach was launched with a clear statement to use Lean and Six Sigma together as a concept for maximizing opportunities by improving the company's competitiveness and efficiency.

In the very beginning, the new concept was only applied for projects limited to process improvements with considerable cost reduction effects. Only trained experts were participating at those projects. Shop-floor teams had nearly no exposure to the new concept. The corporation invested a considerable sum for trainings of the selected experts in Lean and Six Sigma techniques. SDT and Lean seemed to belong to two different worlds. Today there are attempts to integrate both concepts, because

more and more projects tackle value stream processes, where shop-floor workers are directly touched and involved.

## 5 Differences and Difficulties between the two concepts

There are undoubtedly differences and incompatibilities between SDT and the Lean philosophy. Because Lean is focusing on the value stream, experts state that it looks merely at the process and not at the people. This results in a frequently observed opinion that Lean is a neutral and technical approach (hard facts concept) whereas SDT with its clear focus on people is perceived as strictly people oriented (soft facts concept). Therefore a lot of people in both companies don't see connections, because in their eyes SDT only seems to cover actions regarding the quality of collaboration while Lean is strictly perceived as a toolbox for process improvements.

Most of the perceived differences and difficulties are arising out of the different focus. While Lean can only be implemented in a top-down manner (the commitment and involvement of the top management is a given), SDT can only be implemented with a combination of both top-down and bottom-up approaches. Agreement processes are essential to all implementation steps and need a defined scope of action. Voluntariness of the team members seems to be inevitable for SDT whereas Lean can more or less be ordered. Lean has to deal with the human factor only when the concept encounters significant reluctant behaviour endangering the success of the implementation process. This difference is caused by the methodologies used in the two concepts. Every step you take in Lean is formalized. The SDT model in contrast is using the empowered employee to come up with the best solution in a given situation. If a team finds a good solution it will be implemented as a standard mostly for the individual team alone and is based on agreements.

Empowered employees are also important for Lean, but here they act in a different setting. The basic idea is that the process is designed in such a simple and reliable manner that a single employee can control each possible deviation. The decision process is insofar reduced to a selection process of different options. The decision making process differs between clearly defined boundaries for every step (Lean) and a more fuzzy approach (SDT).

For both companies this had its impact on the selection process for the facilitators and trainers. For the SDT concept the social competency of a facilitator are of major importance as well as training abilities and communication competencies. The Lean leaders receive in contrary their vast amount of training in tools and techniques. Only a short part deals with soft factors. Accordingly the selection process took place.

Another difference deals with the communication and information structures. Both systems rely on the same communication channels – e.g. team meetings and visualisation boards. The team meetings have a clear structure in both systems. In SDT team members are encouraged to bring forward their own topics additional to the standard agenda. Lean is working on given standards alone and will not allow contributions, which do not belong to the focussed topic.

This shows another fundamental difference. Lean is perceived as a way to reduce complexity because everybody is focused on one problem only. SDT is in contrast focusing on the problems of the employees whenever they bring them forward. It therefore leads to sometimes even more complexity. As a result of this, Lean is often perceived as the more pragmatic approach. But on the other hand in both companies have been areas where the SDT model was implemented prior to Lean. The degree of reluctant behaviour towards the Lean tools was significantly lower than in other areas where the concept was introduced without existing SDT. There seems to be no short cut for dealing with complexity.

**Table 1.** The perceived differences of the two concepts: an overview

Lean	SDT
▪ Hard facts concept	▪ Soft facts concept
▪ Focus on value stream and process	▪ Focus on people
▪ Goal: process improvement	▪ Goal: improvement of collaboration
▪ Top-down implementation	▪ Mix of top-down / bottom-up implementation
▪ Can be ordered from top-down	▪ Needs voluntariness of team members
▪ Formalized system, uses standardized methods	▪ Uses the employee for finding the best solution
▪ Pragmatic, result driven system	▪ Behavioral, agreement driven system

It is most interesting that the further involved into Lean a company gets, the less these differences are emphasized. It seems clear that the further you go into the Lean journey the more you have to rely on concepts and ideas out of the SDT concept like empowering people and enforcing ownership. And obviously the degree of a deeper understanding of what both concepts are all about increases, which make their appearance more and more alike.

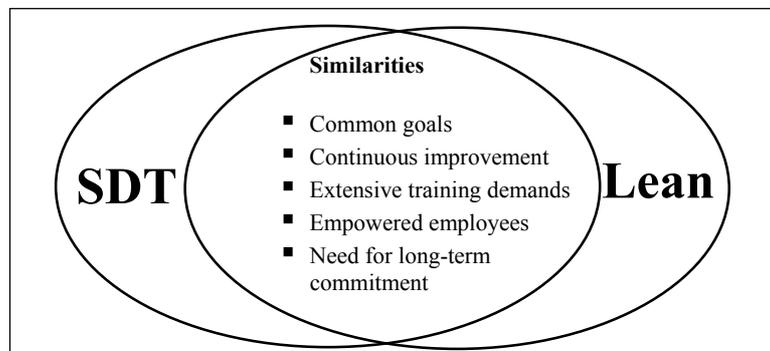
## 6 Similarities of the two concepts and conclusions

As all expert interviews and observations in the two companies indicate, there are a lot of similarities between the two concepts as well. First of all the overall objective seems to be the same: establishing a continuous improvement process for the company. Both SDT and Lean refer to this as the primary goal. Standard working procedures are also demanded by both concepts. The way in which they are accomplished however is indeed completely different (as described in chapter 5).

Although Lean is often stated as the easier way to improve a company and hence the concept that is able to reduce complexity all experts are in agreement that there still remains the need to think. Both concepts have a holistic understanding of improvement and therefore are in the end intellectually challenging. The development of individuals is an inevitable precondition.

This leads to another similarity: the need for extended training. Lean as well as SDT is relying on empowered employees who are needed to make sensible, useful and correct decisions. The training needs are significant for the supervisory level too. Lean offers only in the beginning a more efficient support for weak managers because of its standardised procedures and measurements. When the quick wins are achieved the going gets tougher and all the competencies that are related to leadership are again in desperate need.

Both systems require a major cultural change for a company and cannot be easily implemented in a year or two. Both concepts are vulnerable to outside interferences through unexpected growth or downsizing processes. Since both concepts need a lot of care and are time consuming they will degenerate if not enough energy is delivered to sustain the assistance and support for the vital elements of the concepts. Therefore only with a long-term commitment of the top management the organisational change process is possible in the long run.



**Fig. 1.** Where both concepts meet

There is one basic statement all experts agree upon: if Lean would not exist it had to be invented as the perfect extension of SDT. Lean without SDT can run successfully up to a certain degree. After first steps into the improvement cycle however the management tends to find out they cannot improve the processes anymore. The lack of competencies in social and communication skills hinders the management, the Lean leaders and the employees similarly. Suddenly not everything can be clarified with a simple, ready-made standard – everybody who is involved has to make a contribution. This needs more commitment and ownership than Lean alone can create.

Integration of the two concepts is more complicated as it seems in the beginning. In the two considered companies this attempt could not be fully executed because a variety of clashes and misunderstandings happened. The conclusion of the experts suggests that one has to be absolutely clear about what to take from which concept and how to implement it. Nevertheless there are defined elements that are in need regardless of the main focus of the improvement a company is opting for:

1. **Enhance empowerment on all levels of the workforce.** Competency frameworks for every team as in SDT should be implemented but also simple problem solving tools from Lean.
2. **Define rules and consequences applying to everybody in the company.** The most important will be: you are either part of the party or you will have to find another company to work for. If employees will violate this ground rule one has to act accordingly.
3. **Train middle management not only in problem solving tools but also in all aspects of leadership.** SDT here gives a good clue which competencies are needed to help the employees developing. Continuous training and also a more forceful selection of supervisors have to take place.
4. **Establish a coaching process for all levels of the organisation.** Coaching will gain more and more importance for both concepts. It is an essential tool for SDT regarding the supervisory level and inevitable to sustain Lean after advanced levels of the process have been reached.
5. **Make sure that the top management stays involved.** The Lean philosophy delivers here helpful ideas. Sponsors should be trained and act as agents for the change process. This is one effective way of showing the commitment and to remove roadblocks on an organisational level.
6. **Establish a goal setting and an audit process.** The goal setting process as a steering wheel of the improvement needs to be addressed as well. The way Lean is operating with key performance indicators, tracking boards and clearly communicated goals can deliver the best practice standard. The SDT way of communication and agreement of goals will enrich this steering process. The multi-layered audit system introduced by the Lean concept can also be used for SDT. Daily, weekly and monthly audits with the involvement of all layers of the organisation help to sustain the process and keep it alive for a long-term period.

In the end there is still the danger of excessive demands of the whole workforce, employees and management alike. Being able to keep to small steps, integrating the concept into the world of the company and throwing a party if success is seen, seem to be still the only remedies for that.

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