

**ENABLING CULTURAL SHIFTS: AN ENTERPRISE APPROACH
TOWARD LEAN THINKING**

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Submitted to the MIT Sloan School of Management and the Department of Electrical Engineering
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AND
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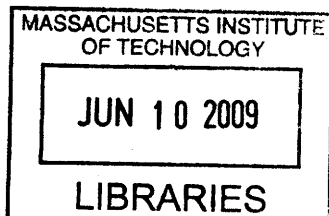
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ABSTRACT

The Supply Planning Operations team, in a large manufacturing firm, faced a future where their complexity of scope was increasing without an increase in resource levels. As an effort to improve both efficiency and effectively within the organization, they chose to adopt Lean Thinking as a method to streamline and simplify activities, connections and flows. Lean Thinking, while often viewed as a set of tools (value stream mapping, andon cords, kanbans, and others), involves the harmony between principles, culture and the appropriate application of tools. SPO has taken an approach focused on culture and deep understanding of Lean Principles before deploying the tools of Lean.

It was important to examine why artifacts succeeded or failed in influencing cultural change. One common theme for successful artifacts was their portability. With a geographically diverse team, it was important that any artifact could be transported electronically. Although not all the actions have been successful in influencing the organization's culture, many actions have had a profound impact. Seeing members of the organization write about their personal experiences is just one example of how Lean Thinking has been adopted.

By committing to "Rules before Tools," the group embarked upon a journey to change culture. This thesis used an Enacted Systems Analysis to identify Artifacts, Habits of Thought and Habits of Action. Several organizational barriers emerged along with possible levers to promote change. Even though the revolution is only in its infancy, SPO appears to be on a sustainable path toward a Lean Thinking transformation.

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I would like to acknowledge my MIT advisors. Wanda Orlikowski has helped me mature as a leader in addition to her insightful thoughts on my thesis and Debbie Nightingale has helped me see the enterprise prospective on a Lean Transformation.

I finally would like to thank my fellow Leaders for Global Operations classmates as we become the group formally known as LFM. We have had a great journey, and I wholeheartedly expect that we will continue to cross paths, work together and relive old memories.

GLOSSARY

1:1: 1 on 1 meeting either on the phone or face to face

CPLG: Customer Fulfillment Planning and Logistics Group

CR: Corporate Responsibility

Department: One of ten departments in SPO

Department Manager: A Leader directly reporting to the Director

Director: The Leader of the organization

Fab: Semiconductor Fabrication Facility

IC: Individual Contributor, one without any direct reports

SPO: Supply Planning Operations

SPO Leadership: Director and Department Managers

Team Leader: A leader directly reporting to a Department Manager

Team Member: see IC

Chapter 1. Introduction

Companies all face unique challenges and each struggle to evolve in a way that enables them to compete effectively. Initech ¹has demonstrated more than 21 years of profitability. Although Initech has been very successful in demonstrating short-term profit, the company's corporate culture has continually evolved to deliver long term success.

1.1 Statement of problem

Changing the culture of a company or even a large unit within a company is a difficult task to say the least, but the ever-changing competitive landscape may dictate these changes. In some cases a company is able to proactively identify necessary changes in existing culture and may plan to change their corporate culture over time, whereas in other cases external circumstances may require immediate action. Ironically if cultural change is mandated by external circumstances, a firm may have an easier time adopting this change because the consequence of not changing is the company's demise. Many companies have experienced a situation where external factors have mandated change. Some examples include:

- Intel adopted a change in microprocessor strategy to drive functionality instead of clock speed
- Kodak embraced digital with the disappearance of their film business
- IBM developed services after competitors consumed market share they once commanded in the personal computer space

¹ The company name and associated information is masked throughout this thesis.

- Nike grew to be a leader in corporate social responsibility after facing public pressure over labor practices in factories which they did not own

In these situations, the external factors create a situation where the company must change or face the consequences of not changing. Sometimes a company fails to recognize the true extent of the external pressure and delays changing. After inventing the technology which would later fuel the digital revolution, Kodak failed to embrace it almost to the point of demise, just as Nike initially denied any accountability for the labor practices of their suppliers. Once these companies accepted the gravity of their situation, the change in culture was fueled by a need to survive. But what enables a company to change when they are not faced with an “adapt or die” situation? How can companies evolve when they are not facing an immediate threat?

1.2 Thesis Motivation and Thesis Hypothesis

The motivation of this project follows from a prior LFM thesis entitled “Lean Transformation of a Supply Chain Organization.” Dan Walsh, the author of that thesis focused on adapting the concepts of Lean Manufacturing and applying them to a non-manufacturing environment. He postulates that “when trying to establish Lean within an organization, a “culture first” approach is more likely to create a sustainable Lean organizational competency than a “tools first” approach.(Walsh, 2008) Walsh’s background analysis is critical to the analysis and deeper understanding of the levers which enable or inhibit cultural change.

The hypothesis of this thesis is that *there are levers that can be identified using an enacted systems analysis which will promote building organizational competencies.* These levers when properly leveraged will help facilitate culture change across organizations.

1.3 Thesis Outline

This thesis is organized as follows:

- Chapter 1: Introduction describes that background and motivation for the thesis.
- Chapter 2: Conceptual Framework explains the development of the analysis model.
- Chapter 3: Company Background contains an overview of the organization studied and summary of the current status for the change initiative.
- Chapter 4: Enacted Systems Analysis is an in-depth examination of the company's artifacts and their impact on Habits of Thought and Habits of Action.
- Chapter 5: Conclusions summarizes the findings, offers recommendations, and discusses opportunities for future research.

1.4 Research Methodology

As a fellow in the Leaders for Global Operations program class of 2009 (formally Leaders for Manufacturing), I was invited to spend six months as an active participant in a change initiative at Initech's Supply Planning Operations (SPO). I entered the organization after Daniel Walsh, Leaders for Manufacturing class of 2008, had departed after also spending six months in the organization. Walsh was in many ways the father of Lean in SPO and had established himself as a Lean Mentor in SPO. My role in SPO was to focus on cultural change. I was on-site in Portland, Oregon from February 2008 through August 2008.

My role in SPO changed over the duration of the internship. Initially I was an individual actor reporting to a department manager and then after the formation of the Lean Leadership Team, I reported to the leader of that newly formed team. The mission of the Lean Leadership team was to guide the lean transformation across the entire organization.

1.4.1 Limitations

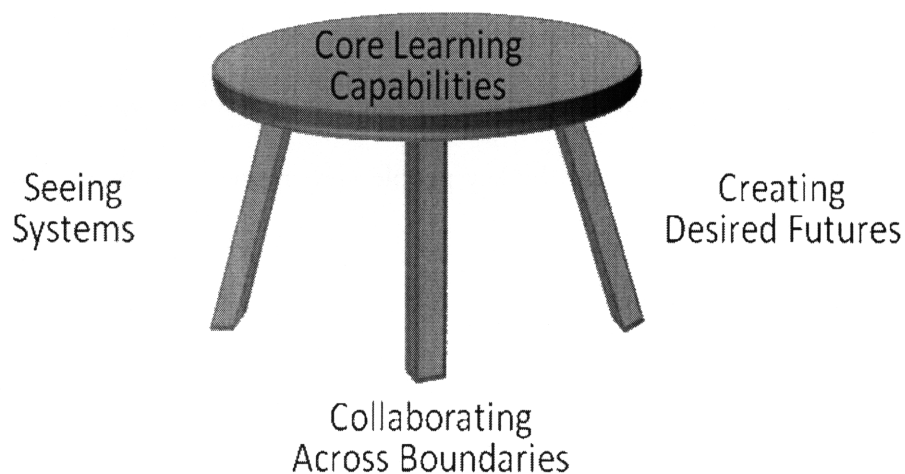
It is important to note that although the findings of this study may be applicable across multiple companies or even industries, it was only one study at one point in time. The situation within the company studied may have changed significantly and may vary dramatically between business units. Increasing the generalizability of these findings will require extensive studies across multiple business units within one company, and studies across several companies in different industries.

Chapter 2. Conceptual Framework

The underlying framework used is the Theory of Enacted Systems presented by Peter Senge and Wanda Orlikowski in a course titled Leadership Lab: Creating Systemic Change across Value Chains.

2.1 Core Learning Capabilities

The core learning capabilities (as shown in Figure 1), may be seen to reflect the key aspects of the culture of an organization. Fundamental to the Theory of Enacted Systems is an understanding of systems and structure. The system is the large, complex set of interrelated elements bound together by a structure that defines the interactions between those elements.



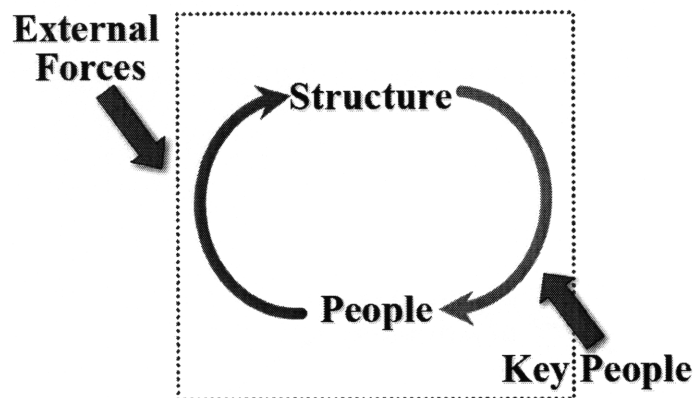
(Senge, 2008)

Figure 1 - Creating Core Learning Capabilities

The Core Learning Capabilities are developed by an organization and involve Seeing Systems, Collaborating Across Boundaries, and Creating Desired Futures. Seeing Systems involves systems thinking and a capacity to understand complex interrelated actions. The area of System Dynamics can be used to represent systems as stocks and flows controlled by feedback (both material and information). System Dynamics views “side-effects” as unintended consequences because they are a direct result of the policy maker’s actions. Creating Desired Futures is built on a creative orientation both at a personal level and also at a level shared across the system. It entails focusing on the individual and collective aspirations and visions of an organization. Collaborating Across Boundaries involves looking beyond an immediate team or workspace and working with people, groups, and stakeholders across the larger system.(Senge, 2006)

2.2 The Enacted View of Systems

The Enacted View of Systems is extension of two different views of systems shown in Figure 2. These two different views of systems are the exogenous view, represent by the “External Forces” which affect the system and the key people view represented by the “Key People” whose actions change the system.



(Orlikowski & Senge, 2008)

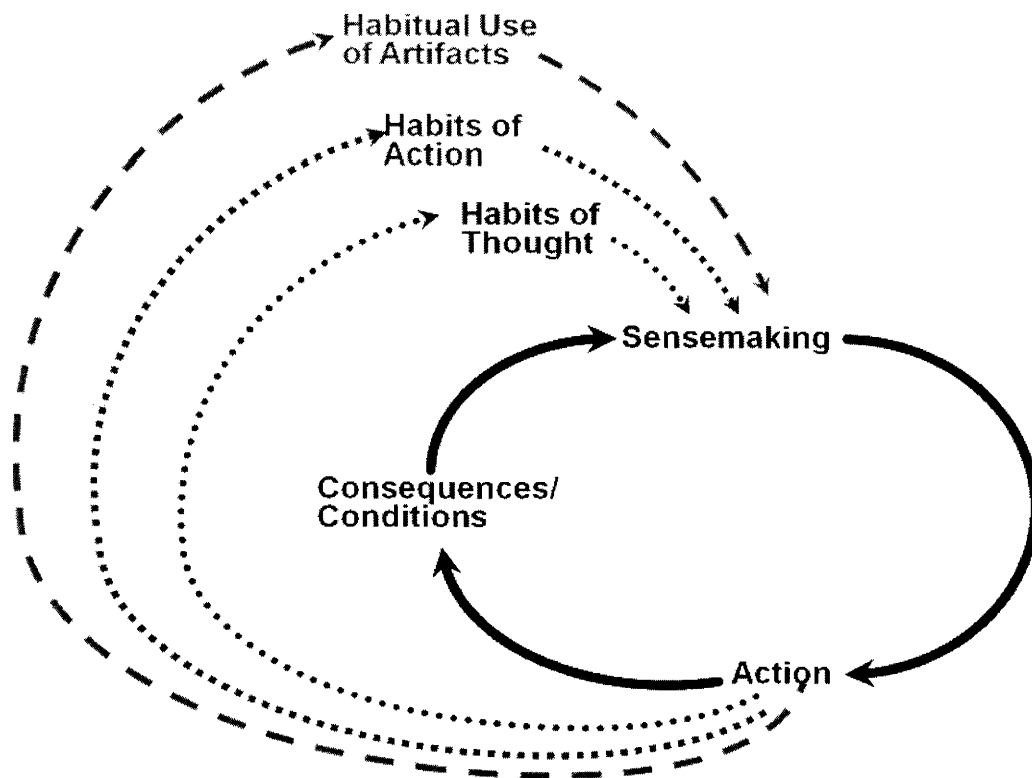
Figure 2 - Enacted View of Systems

The Exogenous View is built off the belief that external forces shape the structure of a system which in turn defines the behavior of the people within the system. In the Key People View, individuals within the system are seen to define the structure which, like the Exogenous View, defines the behavior of people within the system. Both of these views fail to explain the interrelation between the people in the system and the system itself. The Enacted View corrects these limitations by demonstrating that both external forces and key people help shape the system but only in the context of existing interactions between the structure of the system and the people with that system.

The organizational structure is defined by three elements - the Habits of Thought, Habits of Action and Habitual Artifacts. These three elements are displayed and used by those inside of the system. It is however difficult to see the thoughts of individuals so it is important to look at the habitual actions within an organization. While Habits of Action can be observed, it is typically easier

to identify key artifacts that are in use and represent the organizational structure. The interrelation of these three aspects of culture is seen in Figure 3. (Orlikowski & Senge, 2008)

Figure 3



(Orlikowski & Senge, 2008)

Figure 3 - Aspects of an Enacted System

It is easiest to work from the outside in when identifying opportunities for cultural change. Each firm intentionally or unintentionally builds artifacts which when used affect people's Habits of Action, which in turn affect people's Habits of Thoughts. Organizational artifacts may be:

- Metrics, standards, protocols

- Schedules, calendars, timetables
- Strategies, plans, procedures
- Spaces, infrastructure, furniture
- Technologies, tools, models
- Assembly lines, supply chains

Artifacts are powerful tools for shaping corporate culture because they directly affect how people think and act in a system. Understanding them requires insight into the following questions related to artifacts:

- What is the purpose(s) of the artifact?
- What aspects of the world are represented and how?
- Which aspects of reality are highlighted by using this artifact?
- Which aspects of reality are obscured?
- Through using this artifact, what types of actions are enabled and which are constrained?
- Whose interests are served by the artifact?
- What are the consequences — intended and unintended — of using this artifact?
- Who creates/d the artifact, when and where?
- Who gets to change the artifact, when and how?

Ed Schein describes the three levels of corporate culture in which the first level is artifacts. Simply put an artifact is “what you see, hear, and feel as you hang around.” (Schein, 1999) Artifacts are

designed and built by specific people for a specific purpose. Often the unintended consequences of artifacts may be counter to the intended purpose of the artifact's designer. Furthermore, as time changes the structure, people and external forces which act on a system, artifacts may become outdated, irrelevant or worse detrimental to the actions a firm wishes to take. Artifacts enable and constrain different assumptions and actions, and thus can reinforce or change different kinds of reality. (Orlikowski & Senge, 2008) Schein asserts that careful examination of artifacts will lead to a clear and immediate emotional understanding of corporate culture, they seldom reveal the underlying reasons why an organization behaves in a particular way or even what factors lead to the specific construction of the organization. (Schein, 1999)

2.3 Five Stages of Compliance

Another model which was used was the Five Phases of Engagement which can be applied on an individual basis as a means to understand or at least characterize the motivation that may be behind a person's actions. The five stages of engagement are:

- Non-Compliance
- Compliance
- Beyond compliance or Genuine Compliance
- Integrated Strategy or Enrollment
- Purpose/Mission or Commitment

In this model, individuals actively or often subconsciously behave in a way which indicates their commitment to an initiative. Individuals that are non-compliant fall into one of two categories: actively opposed or passively opposed. Actively opposed individuals often fight against an initiative

vocally or with their actions whereas passively opposed individually will silently revolt through non-participation. Often passively opposed individual have written off an initiative without fully understanding the initiative or they may feel that their current tasks are more important than understanding or participating in the change initiative. Individuals who are compliant often have an apathetic view of the initiative do not agree with the initiative but go along with it anyway. Sometimes Compliance may manifest itself as malicious obedience. An individual who is Beyond Compliance will require external motivation and often goes along with the norm of individuals within the group or team. Beyond Compliance can best be described as someone who does what is expected of them, but no more. For an individual to be integrated into a change initiative they will still require external motivation but often will go the extra mile. An individual who adopts a change initiative as their Purpose/Mission replaces a need for external motivation with one of internal motivation. (Senge, 2008)

Chapter 3. Company Background

Initech Corp. has designed and fabricated semiconductor devices and most recently has shifted its focus from memory to microprocessors. The business funds the extensive capital expense of building, maintaining and operating semiconductor factories. Many other players in the industry have elected to outsource manufacturing to foundries who will manufacture semiconductor devices for many different firms. Companies using foundries keep only product design in-house to lower capital costs, but Initech views their manufacturing capacity and capability as a strategic corporate asset. As a result, today Initech has one of the largest semiconductor manufacturing factory networks in the world.

3.1 Planning Organization

At present, Initech operates 17 fabrication facilities (or fabs) and seven assembly/test sites. Each fab runs one or two process technologies that define which products can be produced there. For example, a fab may run the newest process technology and thus can only build the newest products. Products designed for one process technology cannot be run on different process technology. Furthermore, each product is produced at one fab and then shipped to an assembly/test site where the product is packaged and prepared for the customer. Managing the flow of materials through this complex network is Initech's Customer Fulfillment Planning and Logistics Group (CPLG). The specific team within CPLG that focuses on planning the quantity, timing, fabrication and assembly/test location of each product is Supply Planning Operations (SPO). SPO is an 800 person team located at twenty-three sites across the world. In 2007, SPO began a journey to shift their business practices and culture toward Lean Thinking.

Supply Planning Operations (SPO), a unit within Initech’s Corporate Planning and Logistics Group, is responsible for planning the quantities and build locations of the Initech’s products. The group is divided into nine departments, each of which works closely with their upstream and downstream partners. Consequently, each department has little interaction with other departments because they are geographically diverse and also segmented by product.

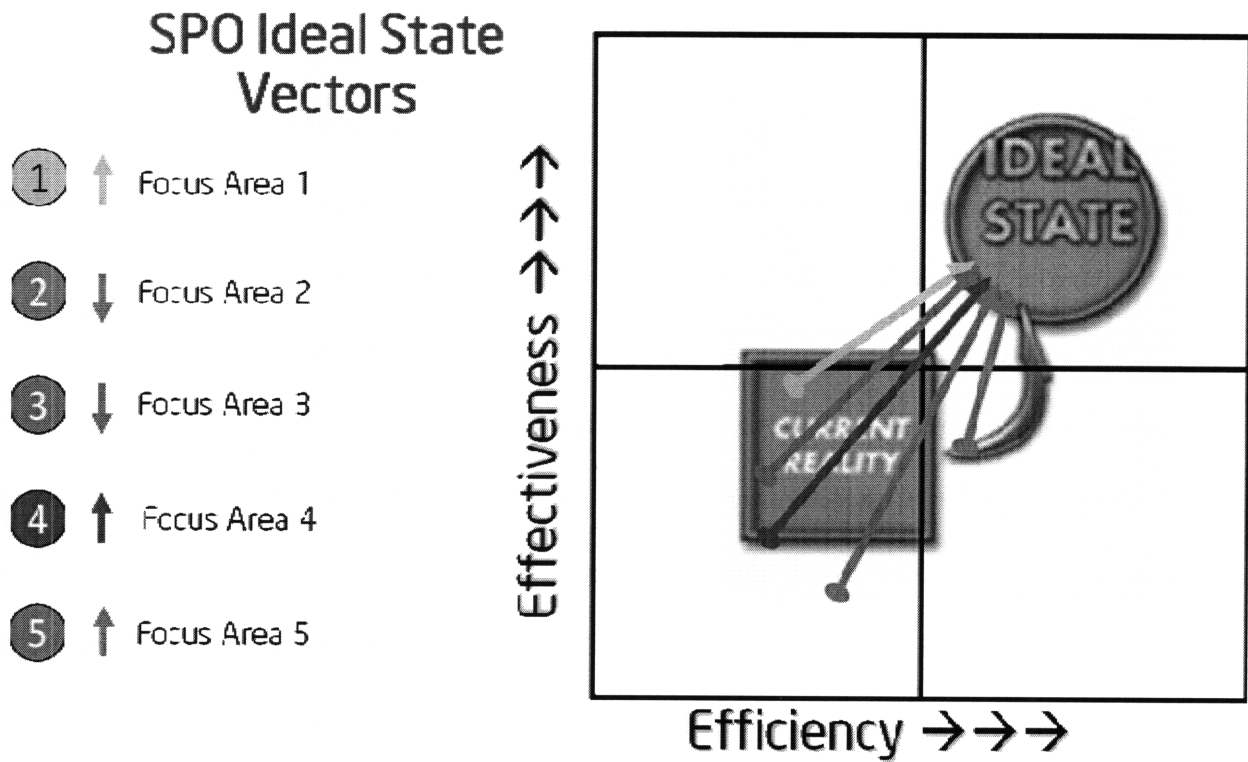
3.2 Status of Change Initiative

SPO leadership saw the complexity product planning increasing without an increase in resources to complete the required planning tasks. They thus decided to adopt Lean in a non-manufacturing setting to eliminate the waste in the planning processes enabling the department to “do more with the same resources.” SPO was already a large organization built on complex bureaucracy so taking steps to simplify the interactions was very appropriate.

The leadership team in SPO has made a conscious effort to support the cultural transformation of SPO to one rooted in Lean thinking. In doing so, they have taken an approach of “rules before tools.” Although the scope of the initiatives exceeds my project by several years, my project has several key tangible deliverables in changing the culture in SPO. Ultimately, SPO will be an organization whose thinking and day-to-day actions are aligned to Initech’s 4 Lean Rules and 5 Lean Principles (Appendix A – Initech Lean House), adopted from Steven Spear and Kent Bowen’s paper titled “Decoding the DNA of the Toyota Production System.” SPO is about one year into a multi-year journey and is already making significant progress toward the ultimate goal of reducing or eliminating all wasteful activities within the system.

Inviting an LFM intern into the SPO team enables someone who does not have ties to the history of SPO to look critically and with a fresh set of eyes at business processes and cultural change techniques. Having an intern who understands Initech culture also provides the perspective of an “outsider on the inside.” (Klein, 2004) An outsider on the inside is informed by but not embedded in the organization and furthermore does not have motivation to perpetuate the status quo.

Lean Thinking refers to the movement, coined by John Krafcik of MIT to describe the manufacturing system at Toyota which focuses on the relentless elimination of waste. Although Lean has its roots in manufacturing, the principles can be applied to a much broader array of situations. In the case of SPO, Lean is used to improve the planning process at Initech. SPO is not the first organization at Initech to adopt Lean, nor is it the only organization outside of manufacturing, but it is one of the few that has focused on cultural transformation. A common phrase heard in any SPO training session is “rules before tools.” This phrase communicates that SPO will invest the time and energy to deeply understand Lean Thinking and will not look for a quick fix by simply applying an assortment of Lean Tools. Figure 4 shows the goal of integrating Lean Thinking into the planning process.



(Menon, 2009)

Figure 4 - SPO Ideal State Vectors

Figure 4 shows that by identifying and eliminating the waste in the system five key focus areas will be improved. The Enacted Systems Model is used as a conceptual framework to examine the ongoing Lean Transformation of SPO.

Chapter 4. Enacted Systems Analysis

The Enacted Systems Model provides an analysis tool for examining cultural change within an organization. The first step is identification of Artifacts which are closely related to the existing corporate culture and designing new ones that can enable the future corporate culture. It is important to locate artifacts which support and retard adoption of cultural change. The next step is to look beyond the Artifacts to the underlying Habits of Action. It may be possible in certain circumstances to infer the Habits of Thought which drive Habits of Action, as in many circumstances, these two are closely intertwined. Although there are some preexisting cultural ties to Lean, like the corporate values of quality, discipline and results orientation, there are also strong barriers. This analysis looks at both the preexisting artifacts which need to be changed or deemphasized along with new artifacts that were created to promote the change initiative.

4.1 Preexisting Artifacts

This section walks through the Artifacts that existed in Initech's SPO in an effort to uncover the underlying Habits of Action and Thought which existed prior to the cultural change. Several Artifacts will be discussed including previous change initiatives, the incentive structure within Initech, Initech's corporate values, the title "Individual Contributor," and the organizational structure of SPO.

4.1.1 Previous Change Initiatives

One strong memory for SPO team members is the myriad of management initiatives in the past five years. SPO's Leadership had promoted Six Sigma, GE Workouts, and 4th Generation

Management at different points but all with the message that the new management philosophy would fundamentally improve the way the organization added value to Initech. The average tenure in the group was several times longer than the cycle time for any of the previous change initiatives so the vivid memory of these initiatives was a strong preexisting artifact.

The leadership team was concerned that some members of SPO would feel the Lean Transformation may be like any other change initiative. If team members felt this was the “program du jour,” they may not commit to the transformation and wait for it to pass. To avoid this concern, the leadership team specifically stated that this was not the “program du jour.” The leadership team in SPO anticipated this concern and took steps to build the credibility and establish the longevity of the Lean Transformation. Other members saw the benefit to their job and how it could make their life easier. Team members realized opportunities to streamline activities, connections and flows though automate tasks and also the elimination of wasteful activities. The team members who were quick to find the value in eliminating waste were embraced by the team supporting the change initiative because of their willingness to share the personal return they experienced. Further discussion on the actions taken by the Leadership team can be found below in section 4.2.1 SPO Leadership Commitment.

Team members who felt that the Lean Initiative would pass usually fell in the bottom two stages whereas those committed to the cause typically integrated Lean into their daily activities. Very few people were yet to adopt Lean as their Mission. This wide variety in perspective requires constant adjustment of language and messaging based on the person’s current level of engagement. Section 4.3 Communication and Messaging provides additional details on this topic.

4.1.2 Initech's Focal Process

Initech has a strong history of meritocracy which is presented to every new hire from day one onsite. Initech's meritocracy system, called Focal, directly compares each employee with their peers and rewards the individual whose personal achievements have the most impact. Over the years, the meritocracy system has consistently failed to reward qualities like teamwork and continuous improvement because they are perceived as having less impact than large cross-functional projects. Cross-functional Projects are team-based but have a scope that requires a significant number of resources committed over a relatively long duration, unlike Lean Thinking which is driven by rapid small improvements. Furthermore, Cross-functional Projects help individuals build networks that span across multiple organizations, which are helpful for understanding the larger system, but at the same time these neglect building local teams that are at the heart of continuous improvements made at the point of work.

In many cases, Initech's Focal Process does not incentivize employees to adopt Lean. One artifact of the rewards and recognition system is the one page performance review, often called a "brag sheet." This is a one-page document which is reviewed by an employee's manager and is intended to represent one year's worth of accomplishments. With limited space, activities which show the daily relentless pursuit for eliminating waste are often removed and replaced by two or three larger projects.

Focal presents significant barriers to the adoption of Lean Thinking. Since an employee is rated only on projects which fit on one page, they are discouraged from working on anything that does not make a short list of top projects throughout the year. Lean, the relentless pursuit of the elimination of waste, focuses on incremental improvement. The constant struggle for employees of

doing what will result in a pay increase vs. doing the little things to eliminate waste was readily apparent. One example was that employees, under the guise of Lean, wanted to reinvent massive planning systems. These projects would be worthy of year-end accolades, but typically outside of their sphere of influence. This habit of action reveals the underlying habit of thought that continuous, small changes are not as important as large, one-time changes.

Teamwork is also discouraged by the incentive system in place at Initech since each employee is directly competing with their peers for raises. Teamwork is encouraged, but it is up to the pool of managers to determine how or even if they value team contributions relative to individual accomplishments. In practice, employees learn to be involved on cross-functional team projects, but only when those projects lead to results which individuals can claim. This view is exaggerated to make a point, but in many cases, it is not far from the truth. The transformation to a Culture of Lean required constant and credible messaging from all levels of SPO leadership that adoption of Lean Thinking and the incremental improvements that it brings will be valued at the end of the year. I was able to draft a message that was included in every employee's 2007 year-end review that noted:

"In 2008, SPO expects to make significant progress on the Lean Journey that began in 2007. For SPO to be successful, every SPO employee needs to play a key part in making this cultural shift happen, by learning and embracing the Lean Philosophy, and applying it to identify and remove waste from our work environment. I look forward to your 2008 contributions on this key focal expectation."

At this point, it is unclear how and if this message will have any impact on the actual behavior or attitude within the group. In many ways, the 2008 focal process will be a defining

moment for SPO because it will be a clear indicator of whether the leadership team is serious about incentivizing Lean Behavior. Although compensation is never discussed publically, the reinforcing impact of an individual who receives additional compensation for their Lean Behavior will manifest itself in that individual continuing that behavior. On the contrary, if an employee gets a review message stating that they are not being compensated as much due to their lack of Lean Behavior; it is likely that that employee will begin to recognize the commitment SPO is making toward cultural shift. It is worth noting that incentive systems alone are rarely the answer to changing behavior, and it is not anticipated that this situation will be any different; however, it is important that the entire organization understands that this in fact is a shift in the way SPO conducts business instead of just a temporary deviation.

This message alone is not the answer, but by laying the groundwork at the beginning of the year, employees can see the changes which the leadership team expects. If leadership at all levels, from the First Line Managers to the Director, acknowledge and reward team members who have demonstrated a shift in their behavior, others will increase their level of engagement to eventually become Integrated in the shift of possibly even take it on as their Purpose/Mission.

4.1.3 Initech Values

A casual glance at Initech's 2008 Values (Appendix C - 2008 Initech Values) may not accurately convey the importance of results orientation within the company but one dominant artifact of the preexisting corporate culture is results orientation. Initech's value statement is an artifact; one defined to emulate the preexisting culture. Although the generation and annual

modification of the stated corporate values is out of the scope of this research, it is important to understand it affects behavior at the organization level.

Within Initech it is critical for an individual to articulate and attribute results to individual efforts. This focus on results drives many of the Habits of Thought and the corresponding Habits of Action. This is a situation where a preexisting Habit of Thought is parallel with the desired future state of SPO's culture. The desired future state of the organization is one which is focused on team-based results which are achieved the first time to deliver value to the customer. This is directly in line with the corporate values of Great Place to Work (team based), Results Orientation (results), Quality (achieved the first time) and Customer Orientation (to deliver value to the customer). The other values of Discipline and Risk Taking also support the change initiative as team members are encouraged to experiment to find better methods of operating (Risk Taking) and at the same time they will continue to conduct all business with integrity (Discipline). To build off the existing culture and help shape it the leadership with SPO created additional artifacts.

4.1.4 Individual Contributor

The phrase "Individual Contributor" (IC) has become an artifact and most employees do not recognize the impact of this on their Habits of Thought and Habits of Action. Within Initech, employees fall into one of two tracks: Management or Individual Contributor. While it is clear that the Management Track is defined by having direct reports (hence managing people), the artifact of an Individual Contributor does not clearly dictate the role. Within Initech, anyone who does not have direct reports is by definition an Individual Contributor.

The impact on an employee's Habits of Thought and Habits of Action may be that they approach their role as an individual even though their role is team based. It is difficult to generate concrete examples supporting this hypothesis, but the fact that the Individual Contributor artifact is so pervasive, it is difficult to believe that it does not have an impact on employee's Habits of Thought, and thus on how they act in the organization.

4.1.5 Organizational Structure

SPO, as an organization, was very hierarchical with prominent leaders who had been in the organization for a long time (in some cases 15+ years). The artifact that defines the organizational structure is the SPO Org Chart (see Appendix B – SPO Organization Chart). The Habits of Action and Habits of Thought generated by this artifact was that a top-down approach generally provides easy ways to seed ideas but inhibits building passion across the organization to rally behind a cause. Furthermore, as each group was isolated from all other groups it was difficult to promote the word-of-mouth excitement and sharing about Lean Thinking. The siloed structure was ideal for departments with leaders who were in the upper three states of engagement (Mission/Vision, Integrated, Beyond Compliance) but it proved difficult to bring departments and leaders who were in the lower two levels of engagement (Non-Compliant, Compliant). The Habits of Action (and accompanying Habits of Thought) were that there is no need to collaborate across boundaries within the organization. In some cases, there were in fact few synergies between departments; therefore collaboration was not necessary, while other opportunities were left untapped because of the Habits of Thought that developed around the siloed organizational structure. Although segmentation within the organization was not desired, the departments who were committed to the

Lean Transformation were not deterred by the non-compliant leaders who had minimal impact on other leaders and more importantly the team members in other groups.

One ramification of the siloed nature of each of the departments, proved beneficial because the non-compliant groups were sheltered from overachieving groups. Also evident was the fact that there was a cultural resistance to any change initiative due to the organizational memory of several change initiatives which have come and gone.

4.2 Leadership and Capabilities

The commitment of SPO Leadership has been consistent since the introduction of the change initiative in 2007. Although each leader has taken his/her own path up the levels of engagement, each has remained outwardly supportive with both words and actions. One of the primary tenants of Lean, pushing decision making to the lowest possible level, may threaten the scope and power of leaders since they no longer will be involved in as many decisions. The leaders who were committed to the cultural change generally felt overburdened by the scope of their job going forward and that they were pulled into too many decisions that did not require their attention. In this respect, the change initiative was reinforced by the desires of the leaders to streamline their task because by supporting the initiative the number of decisions they are involved in should decrease. This by no means implies that these leaders felt the change initiative was a way out of decision making, but in fact they recognized that many decisions that they were individually involved with could be made by team members lower in the organization. Each leader was faced with a question of whether he/she prefers an increased number of direct reports or the increased responsibility that comes with increased efficiency. In the latter case, a leader will have increased

responsibility even though they will be involved in fewer decisions. These leaders may eventually begin to be involved in additional decisions, but the decision should be of higher importance related to their increased scope.

4.2.1 SPO Leadership Commitment

Defining Leadership Commitment is a somewhat difficult task, but at the same time “one knows it when they see it.” It was clear in SPO that most of the leadership team was in full support of the cultural change. The Director of SPO was invested in the long-term viability of the organization and committed to changing the organization’s culture. The Department Managers (second level managers) within SPO had varying degrees of commitment based on their motivation. Some viewed implementing Lean as an opportunity for career advancement and therefore were compliant (and in some cases beyond compliant). Others understood the benefits for cultural transformation and were committed to the cause. A third group of leaders was non-compliant and passively opposed. These individuals were the most difficult because they did not take a position one way or the other. A fourth group of leaders were non-compliant and vocally opposed. These individuals had invested the time in understanding Lean and feel it was too hard for their group due to the current workload.

The leaders who did not support the change initiative chose to run their departments in a “business as usual” mentality and this has had minimal impact on the overall advancement of the change initiative. Interestingly enough, the momentum of the entire organization has had minimal impact on pulling the non-compliant departments along. Another aspect of implementing Lean Thinking in hierarchical siloed organization is that there is a significant redistribution of power.

The Director of the organization acted with a consultative leadership style where each department manager was entitled to his/her own opinion and the group decided on the best course of action. It is unlikely that any individual department manager has sufficient power to veto any decision. With this structure, none of the non-compliant department managers were actually able to stall the overall movement of the organization. In fact, SPO took a position to move forward with the Lean Transformation even though not all of the Department Managers were sure that cultural change was the right course of action. (Walsh, 2008)

The leadership team, like the rest of SPO was learning as they progressed on the journey of cultural change. In 2007, much of the leadership team's effort was dedicated to knowledge seeking. Viju Menon, Director of SPO, co-authored a paper with Daniel Walsh titled "Leading Lean." This paper was presented at the Initech Manufacturing Excellence Conference (IMEC) in June of 2008 as a tool to share SPO's learning across Initech. The paper also was a signal to SPO that their leadership team is committed to cultural change and they were willing to make public their experiences throughout the process. (Menon & Walsh, 2008)

Up until 2009, SPO had not shared the progress of their transformational journey externally until Viju Menon presented a talk entitled "Leading Lean Beyond the Factory" to the Stanford Supply Chain Forum. The stated purpose of his presentation was to "Share learning from our ongoing Lean Journey in the Supply chain arena." Implicit in this purpose is the fact that SPO is committed to the journey and the leadership understands that it is process which is underway instead of complete. Even though this was a presentation to an external forum, the presentation along with the leaders comments on the experience were sent out to the entire SPO organization

along with the presentation materials. This symbol of commitment to an external forum reinforces the leadership commitment within SPO to the Lean Transformation. (Menon, 2009)

These artifacts of the public declarations by SPO's leadership team revealed their underlying Habits of Thought. Their commitment has, in turn, created similar Habits of Action and Habits of Thought across SPO. Investigation into the Habits of Action and Habits of Thought across the organization should begin with the Lean Champions.

4.2.2 Lean Champions and the Shared Learning Forum

The term Lean Champion is an artifact created as part of the cultural transformation. This title was not a positional title, but indicated a role on the unofficial governing body over the transformational movement. The Lean Champions were part of a team who met bi-monthly in a forum called the Lean Shared Learning Forum. This team, also an artifact of the cultural change, defined implementation plans for Lean initiatives across SPO. They also reflected upon SPO's progress and shared learnings across departments.

Each Department Manager in SPO nominated a Lean Champion, but the Lean Champion continued to report to their Department Manager. Having the Lean Champions embedded across the organization was an intended consequence of the forum so that as the transformation progressed, each department would have their own personal relationship with the Lean Shared Learning Forum. In most cases, the Lean Champions had minimal Lean experience mainly due to the fact that prior to 2007, Lean principles had not been introduced to SPO. Furthermore, Lean Principles had been introduced to only a few organizations across Initech.

Each of the Lean Champions had a different experience, but the overwhelming Habit of Action taken as a result of the role was a deep dive into Lean Principles. Lean Champions acted as leaders by first learning. The immediate challenge for Lean Champions was to close the gap between what was expected of them by the departments they represented and the knowledge they had of Lean Principles. One method used was for each Lean Champion to attend a week long “Lean Experience” class. The Lean Experience class expanded on the concepts of the Intro to Lean class and provided more time for application and reflection on the Lean concepts. Further discussion on Lean Training in SPO can be found in section 4.5 Practice and Training.

Another artifact of leadership commitment was a workshop presented at IMEC by three Lean Champions: Divya Kumar, Sean Walkenhorst and Daniel Walsh. These individuals were not the direct leadership team of SPO, but were supported by SPO’s leadership team as the leaders of the Lean Transformation. This workshop displayed how the principles of Lean could be applied in an office environment. The time and commitment displayed as they built the “Lean – It’s Not Just For Manufacturing” workshop was a Habit of Action which revealed their underlying Habits of Thought regarding the importance of Lean in SPO. (Walsh, Kumar, & Walkenhorst, 2008)

4.2.3 Lean Integration Team

The Lean Integration Team was formed nearly one year after SPO decided to initiate a cultural change. Although this team was relatively small, three members at some points, it was very symbolic in the organization about the longevity of Lean within SPO. Unlike the role of a Lean Champion, the Lean Integration was a formal team with dedicated resources. Even though the Lean Champions had been regularly meeting in the Lean Shared Learning Forum, the body’s authority

came from the relationships members had within their department. After the creation of the Lean Integration Team early in 2008, the cultural change gained official status as a program within SPO. Although program status itself does not deliver results, the associated authority and leadership went a long way toward legitimizing the Lean Culture.

One observable Habit of Action was the flow of information from SPO Leadership through the Lean Integration Team. This was a very important step in helping coordinate all the individual efforts enabling a smoother overall change initiative. The creation of the Lean Integration Team also revealed that the SPO leadership team's Habits of Thought were committed to creating a culture of Lean.

4.2.4 Lean Experts

Lean experts across the department were not artifacts simply because they did not exist. Some Lean Champions or members of the Lean Integration Team had experience in other roles with Lean and those individuals stepped up into leadership roles for SPO's Lean Journey, but in general, SPO did not have many experts. Most Department Managers recognized that it was critical to build experts and therefore did not rotate the Lean Champion that represented their department. In the few cases where the role of Lean Champion was rotated between several team members in a department, that department had several people with a more narrow understanding and less practical experience with Lean Principals. It may be the case that this rotation actually inhibited the creation of lean experts.

This Habit of Action - that SPO did not reach out to bring in external experts but instead chose to organically grow the capability - indicates that their Habit of Thought was that it was more

feasible to train someone on Lean Principles, rather than training a “Lean Expert” on the business of SPO. SPO leadership has also committed to the ongoing training on Lean Principles across the entire organization but especially for team members who were becoming experts. The lack of experts was one of the factors that may have slowed down the Lean Transformation, although it clearly did not prohibit the cultural change.

4.3 Communication and Messaging

As part of the Lean Transformation, appropriate communication across the organization was imperative to changing culture. It was important to distinguish that the change initiative was not a headcount reduction effort. Several artifacts including the SPO Strategic Pyramid along with the SPO Lean Newsletter were created to provide a means to communicate across the organization.

4.3.1 Efficiency vs. Headcount Reduction

One core concern of the SPO’s Leadership is to ensure that Lean had minimal or no association with headcount reduction. This concern had to be formally addressed each step of the way. In this case it was easier to understand the Habits of Thought and then examine the change initiative to find the resultant artifact. Here SPO Leadership built a vision that the increased complexity of Initech’s supply chain required more efficient management so that the current resources could meet increasingly demanding expectations. This message was the normal message delivered in most companies, including Initech. Generally employees expect their leaders to campaign for additional headcount when the workload is increasing. By taking a position that acknowledged the increased workload but at the same time did not promise additional headcount to complete that workload was an attempt to build urgency behind the Lean Transformation.

Even with this artifact in the organization, the level of urgency was far from the crisis level which typically demands change. The employees in SPO viewed Lean as something that was “good to do” and even “important to do,” but often fell short of feeling that it was something that “must be done.” What was accomplished with the creation of this artifact was that the change initiative did not stall because people felt that increasing their personal efficiency would result in the loss of their position or the position of a teammate.

4.3.2 SPO Strategic Pyramid

The SPO Strategic Pyramid artifact was created to help change the Habits of Action in the organization. This artifact is shown in Figure 5.

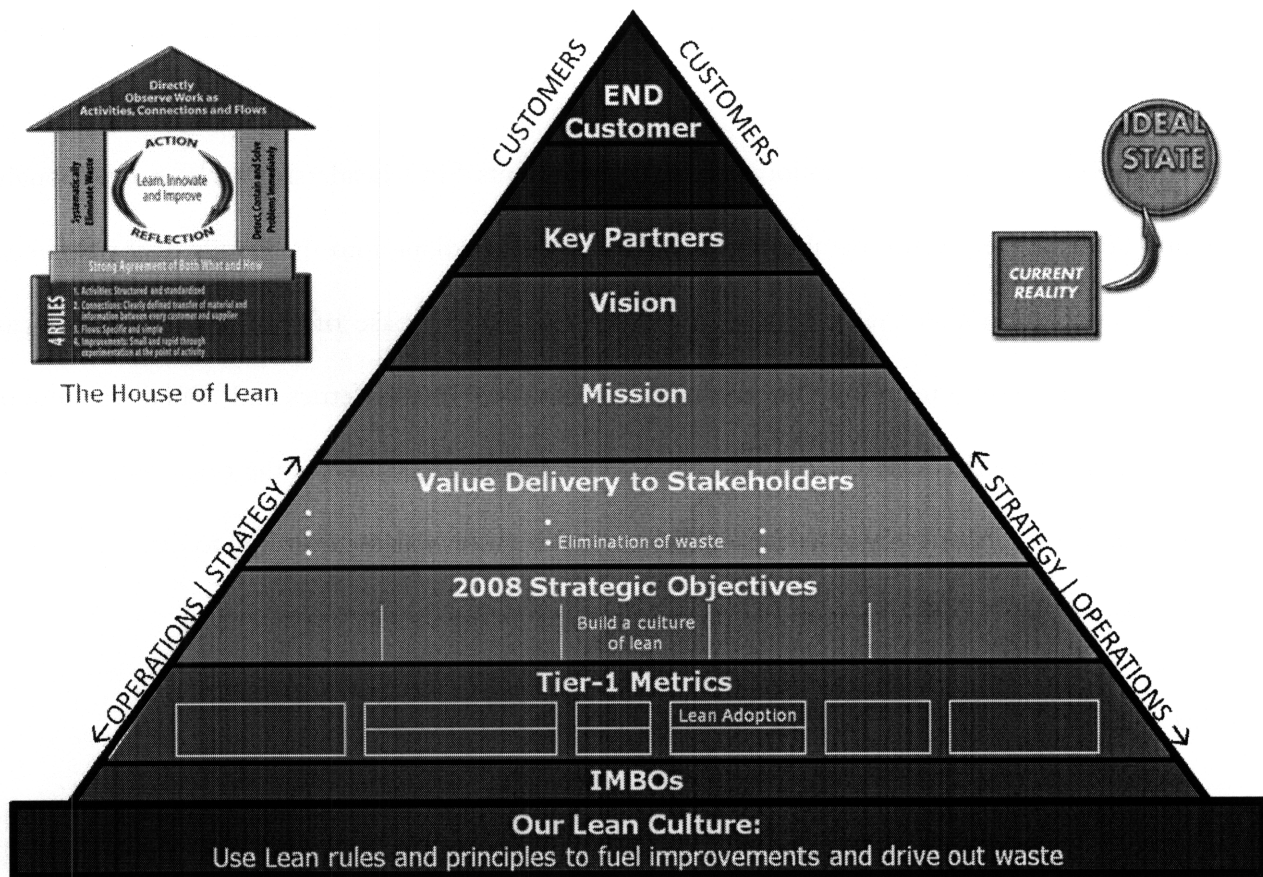


Figure 5 - SPO Strategic Pyramid

The Strategic Pyramid was adapted by a staff member within SPO after a visit to the Virginia Mason Hospital in Seattle, Washington. The intent of the artifact was to create a visual symbol of how all of SPO’s activities build off a foundation which is the Lean Culture. The SPO Strategic Pyramid was designed to be in a portable format which could be easily imported into presentations. The portability was important due to the geographically diverse workforce and the use of PowerPoint presentations at Initech. For example, the SPO strategic pyramid was sent, via email to administrative professionals at each site. The support staff at each site was able to print them locally

and hang them throughout the office space. This visible reminder, posted for all to see, was quickly adopted.

The creating and proliferation of artifact represents SPO Leadership's Habit of Thought bringing Lean to every team member in the organization. Looking into the details of the Strategic Pyramid revealed another Habit of Thought. Not only is the base of the pyramid "Our Lean Culture," the leadership team built "Lean Adoption" into the Tier-1 Metrics and "Build a culture of Lean" into the 2008 Strategic Objectives. In interviews with leaders across the organization, it was evident that the leaders felt that that this cultural transformation was the best way to deliver Value to Stakeholders and meet the Vision and Mission of SPO.

4.3.3 SPO Lean Newsletter

The Lean Leadership Team put significant effort into ensuring the appropriate messages were reaching as broad of an audience as possible. One method that was employed was a Lean Newsletter. The monthly newsletter highlighted changes across the organization and provided a medium to celebrate early wins and communicate them to the organization. In addition the newsletter provided many examples of what Lean Thinking looks like in the context of the team members in SPO. To increase the reach of the newsletter, the team chose to publish it via email from a newly created email address with the name "from the desk of Viju Menon." Having the newsletter come from the Director's email address provided an additional level of credibility. It signified the newsletter's importance and indicated that the Director was resourcing the activity with his direct staff. In addition to the association with his position, Viju also gave his personal endorsement to the first edition. As published, his comments were:

Dear Team-mates,

As you're aware, our Lean Journey in SPO is off to a great start, and Lean Principles are taking hold across the organization. In this first Lean Newsletter you will find a few stories of how different people and groups are applying Lean Thinking in their daily jobs. Let's continue to adopt a Culture of Lean to eliminate waste within SPO. As the saying goes, learn it, live it, love it ☺

- Viju

The sections of the newsletter included some combination of the following (depending on available content):

- Lean Thinkers Across SPO – celebrating early wins
- Group Spotlight – describing group activities
- Recent Lean Events –communicating results achieved by teams across SPO
- Training – a brief update on the available training and also status against goals
- Lean Testimonial – personal stories about how Lean has changed jobs
- Lean Experiments Tracker – showing trends over time for Lean experiments
- Want to Learn More About Lean? – providing additional resources to enable team members to lead Lean

The SPO Lean Newsletter also quickly developed a strong following. Team members read the newsletter and several took an active role in providing content for the newsletter. Team members and Department Managers across SPO provided content for future editions at a rate that exceeded the newsletter release schedule. An overwhelming majority of stories were from team members who, by taking small steps to eliminate waste, have been able to change the way they think

about all aspects of their job (and in many cases their life outside of work). Department Managers wrote articles on how Lean Thinking had changed their perception of how work should be done at their level and also within their departments. Appendix F – Example of Lean Newsletter Content from a Department Manager, shows an example of a contribution from a Department manager and Appendix G – Example of Lean Newsletter Content from a Team Member, shows an example of a contribution from a team member.

Having an artifact like the Lean Newsletter slowly changed the Habits of Action for many people. Most notably this is seen in the team members who took the initiative to share their journey with the entire department. One can also assume that seeing stories in the newsletter may have also promoted a change in the Habits of Action and Habits of Thought of more team members than just those who contributed content.

4.4 Roles and Responsibilities

SPO has several distinct roles that transcend job scope. The Department managers, Team Leaders, and Individual Contributors (Team Members) all work together to achieve the organization's vision. In this chapter, the expectations of Department Managers and Team Leaders along with the attributes and role of Individual Contributors will be examined to determine how they influence the change initiative.

4.4.1 Expectations of Department Managers and Team Leaders

One expectation was that Department Managers and Team Leaders would actively and regularly mentor their team members in their personal Lean Journey. The most common place for this to occur was in their 1:1 meetings. It was important that manager/employee relationships

included a discussion on how the direct report was improving their understanding of Lean Principles and applying Lean Principles in their current role. The Lean Leadership Team worked with individual team leaders and department managers to encourage them to build time into the agenda for their one on one meetings (or 1:1's), with team members along with their team meetings. Though discussions with team members across different departments, they appeared to react positively to hearing about and discussing Lean regularly with their direct line leaders. Although leaders committed to cultural transformation were having these discussions, the Lean Leadership Team struggled to create an artifact that could promote a change in Habits of Thought and Habits of Action.

4.4.2 Attributes of a Lean Individual Contributor (IC) and Team Leader

An artifact that did not enjoy immediate adoption was the “Attributes of a Lean Leader and Lean Individual Contributor.” This artifact was designed by the Lean Leadership Team as a method to “make Lean tangible for the organization.” The intent was to document attributes and practical examples of each attribute so SPO employees could personalize the Lean vision to their individual situation.

Ten members of the Lean Shared Learning Forum volunteered to work as a sub-team to create an artifact which identified the key attributes of a manager and Individual Contributor who had adopted Lean Thinking. The sub-team was comprised of both individual contributors and also managers. In a series of meetings, individual contributors collectively brainstormed the lean attributes of an individual contributor they felt were most important and then the managers on the team completed the same exercise for the attributes of individual contributors. Using this format,

the team was able to identify those factors which were valued by both team leaders and also team members. Then the team focused on the lean attributes of a team leader using the same format. A third phase of the project was kicked off where the team identified the attributes for members of the Lean Leadership Team. This phase of the activity was left in a draft phase. The final product was a PowerPoint document which is summarized in Table 1 and Table 2.

Attributes of a Lean Leader (Manager)

Drives Lean Thinking and Cultural Shift within their Staff

- Create the compelling reason why Lean is NEEDED – e.g. Vision, Ideal state, Future state goals
- Focuses on the learning process as the primary deliverable and recognizes that results will follow
- Makes Lean visible and leads by example - owns A3's and also actively engaged in other projects/experiments
- Coaches employees and is fully engaged in the Lean Journey
- Dedicates time in staff to discuss experiments and recognize Lean Thinkers
- Publically and privately rewards employees (Focal, Goodie Drawer, DRA) based on Lean Thinking and all properly executed experiments regardless of outcome

Examines group business processes to identify and relentlessly pursue the elimination of waste

- Gains in-depth understanding of current state IC's R&R and established business processes from Direct Observation or other methodology prior to making recommendations
- Empowers teams to make changes and eliminate waste
- Drives standardization and expects employees to create, document, adopt, and continuously improve standard work
- Examples: Removal of Monthly, reinforcing effective meetings

Incorporates Lean topics in 1:1's

- Coaches employees on how they can apply Lean Principles to their job
- Reviews their own experiments with employees in 1:1s to role model Lean Thinking
- Proactively coaches employees about their experiments (In development OR investigation phase)
- Reviews SPO vision with employees so they know how it applies to their role

Has sufficient knowledge of Lean to actively lead and mentor their team members

- Proficient in materials posted on Self-Paced Training
- Searches for and shares other articles or examples on how to apply Lean in their group
- Looks for opportunity to become a coach/certified on at least 1 Lean technique (Direct Observation, Value Stream Mapping, Facilitating Kaizen Events etc.)
- Leverages internal/external learning opportunities, and shares learnings within their team and across SPO
- Takes their advanced knowledge of Lean and imparts it to their teams by clearly defining concepts, expectations, and actions associated to specific Lean initiatives

Actively supports the continuing education of their team

Values Reflection (Hansai) to identify areas for improvement

- Supports their team's reflection time (as a team and also as individuals)
- Takes time to reflect on their experiments and activities
- Encourages and respects individual's time for reflection
- Example: Schedules daily time in their calendar to reflect on the day's activities, sets agenda time in staff mtgs for reflection

Table 1 - Attributes of a Lean Leader (Manager)

Attributes of a Lean Leader (Individual Contributor)

Drives Lean Thinking and Cultural Shift within their sphere of influence

- Understands and internalizes the 4 Lean Rules and 5 Lean Principles, and applies them to all aspects of their job
- Always thinks Lean in everything they do (Lasik surgery, not just sunglasses)
- Drives system-wide waste elimination, instead of just passing the work to stakeholders
- Positively influences peers on Lean and helps others to understand Lean Thinking
- Is open to reflect, learn and apply
- Embraces self-improvement opportunities

Continuously examines group business processes to identify and relentlessly pursue the elimination of waste

- Detects and escalates problems immediately to make them visible
- Initiates and conducts experiments utilizing the A3 / experiment tracker process, and drives experiments to completion
- Examines what is needed from suppliers and what they can provide to customers
- Actively initiates, leads, and constructively participates in Kaizen events, Direct Observation, A3, etc.
- Builds “Strong Agreement on Both What and How” by embracing standardization
- Utilizes “5 why” methodology to help identify the root cause of a problem

Incorporates Lean topics in 1:1’s

- Reviews experiments with manager
- Discusses how their job function fits into the SPO Vision

Seeks Continuous Lean Education to increase application of Lean Concepts

- Reviews Self-Paced Training and Lean Newsletter
- Looks for opportunities to share lean successes with peers
- Focuses on learning from everyone’s cumulative knowledge
- Leverages internal/external learning opportunities, and shares their learnings within their team and across SPO
- Adept in at least 1 Lean technique (Direct Observation, Value Stream Mapping, Facilitating Kaizen Events etc.)

Values Reflection (Hansai) to identify areas for improvement

- Takes time to reflect on their experiments and activities
- Encourages and respects other’s time for reflection and participates in team reflection
- Example: Schedules daily time in their calendar to reflect on the day’s activities

Table 2 - Attributes of a Lean Leader (Individual Contributor)

It is important to note that the team identified that the title of Individual Contributor prohibited true Lean Thinking and in the finished product, described both Individual Contributors

and Managers as “Lean Leaders.” The need to distinguish between the two groups dictated that the phrase Individual Contributor was still part of the document so that team members would understand the scope and differences between the two lists of attributes.

One reason this artifact was not adopted was its length and density. It was very difficult to communicate all of these attributes, even though each is important. To improve adoption, the team could have continued to summarize concepts such that the material could be concisely communicated. Another option would have been to focus on just one attribute each month and promote that attribute, possibly in the Lean Newsletter or possibly in staff meetings across the department. The Lean Newsletter could have included an article describing how several Lean Leaders have applied this attribute in their job. In staff meetings (at the department and team level) the group could take five to ten minutes to discuss how they could see the attribute manifesting itself. Since the major attributes are identical for both team leaders and team members, it would be easy to deliver just one section at a time (i.e. Drives Lean Thinking and Cultural Shift within their sphere of influence) to both groups.

The team also identified the fact that the document, although in a portable electronic format, was most impactful with an appropriate amount of discussion. Any individual sitting and reading through the lists may adopt one aspect, but group discussion would have aided the application of those attributes to their individual job expectations. Since department meetings were typically held over phone conferences, the opportunity for face-to-face discussion was limited, but this would not have precluded small team meetings of individuals who work in the same site having breakout sessions. One possible way to correct this situation was to bring together members of SPO who reside in the same location, regardless of their individual department and have a discussion which

transcends department boundaries. Additionally, this begins to lower departmental divides and begins to build teams, team leaders, and team members who have an enterprise prospective.

4.4.3 *Role of Individual Contributors and Managers*

An artifact that was closely coupled to the Attributes of a Lean Individual Contributor and Team Leader is a graphical model showing the interaction between Individual Contributors. Figure 6 shows the structure of a team in SPO. This team has three planners who work with both suppliers and customers. The graphic shows that Individual Contributors (IC) are empowered to work with their suppliers and their customers in addition to other Individual Contributors within the team. Prior to introducing Lean Thinking, Individual Contributors were not encouraged to reach out to upstream and downstream partners, and may not even have worked with other Individual Contributors within their own team.

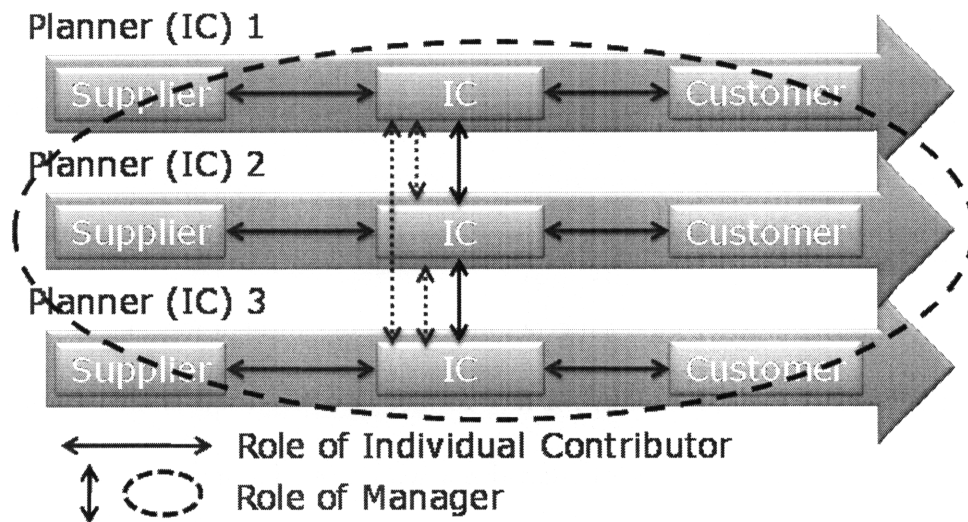


Figure 6 - Role of Individual Contributors and Managers

The role of the manager to collaborate across boundaries was a relatively new concept in practice for the teams. In many teams, managers are tasked with their own responsibilities such that their role as an integrator of knowledge was diminished. As part of the Lean Transformation, managers will be responsible for working with other peer teams to identify opportunities to remove waste at the system level. These expectations have not been part of a manager's scope in the past and furthermore, managers who excelled in building teams might not have been rewarded in the performance review process as much as their peers who had demonstrated tangible individual results. In essence, this artifact is intended to change the existing Habit of Thought that managers should produce and not manage teams. The desired future state for manager's Habits of Thought is that they view their role as a mentor, integrator and are personally responsible for knowledge sharing within their team as well as across teams.

In Initech, as in many large companies, teams and leaders do not have the appropriate access to information or visionary prospective to integrate activities across the broader enterprise. Proliferation of this artifact could create a sense of responsibility within team members and managers to collaborate to increase the efficiency of the system instead of sub optimizing based on efficiency and an individual's scope.

4.5 Practice and Training

A deep understanding of Lean Thinking was required for true cultural change. The Lean Experiment Tracker was a tool used to share experiments designed and implemented by team members. All team members were required to attend the one day Introduction to Lean training

class to begin the educational journey. This chapter examines how these two artifacts supported SPO's cultural change.

4.5.1 Experiment Tracker

The Lean Experiment Tracker may be the most prominent artifact of SPO's Lean Journey. The experiment tracker is a web-based system, designed by a team within SPO, to collect and share experiments conducted all across SPO. The tracker's designers focused on minimizing the amount of extra effort required to report experiments because one of the Lean Principles is to "Systematically Eliminate Waste." (See Appendix A – Initech Lean House) From the Lean prospective, the Experiment Tracker is considered wasteful because no value is added to the product or service that customers are paying for. However, even though wasteful, it was imperative that activities which promoted knowledge sharing and highlighted the Lean Journey were supported.

The tracker, shown in Figure 7, requires only seven pieces of information:

- Experiment Title
- Problem Statement / Current Stat
- Root Cause Analysis / Why
- Future State Hypothesis
- Action Plan
- Planned Start Date
- Planned End Date

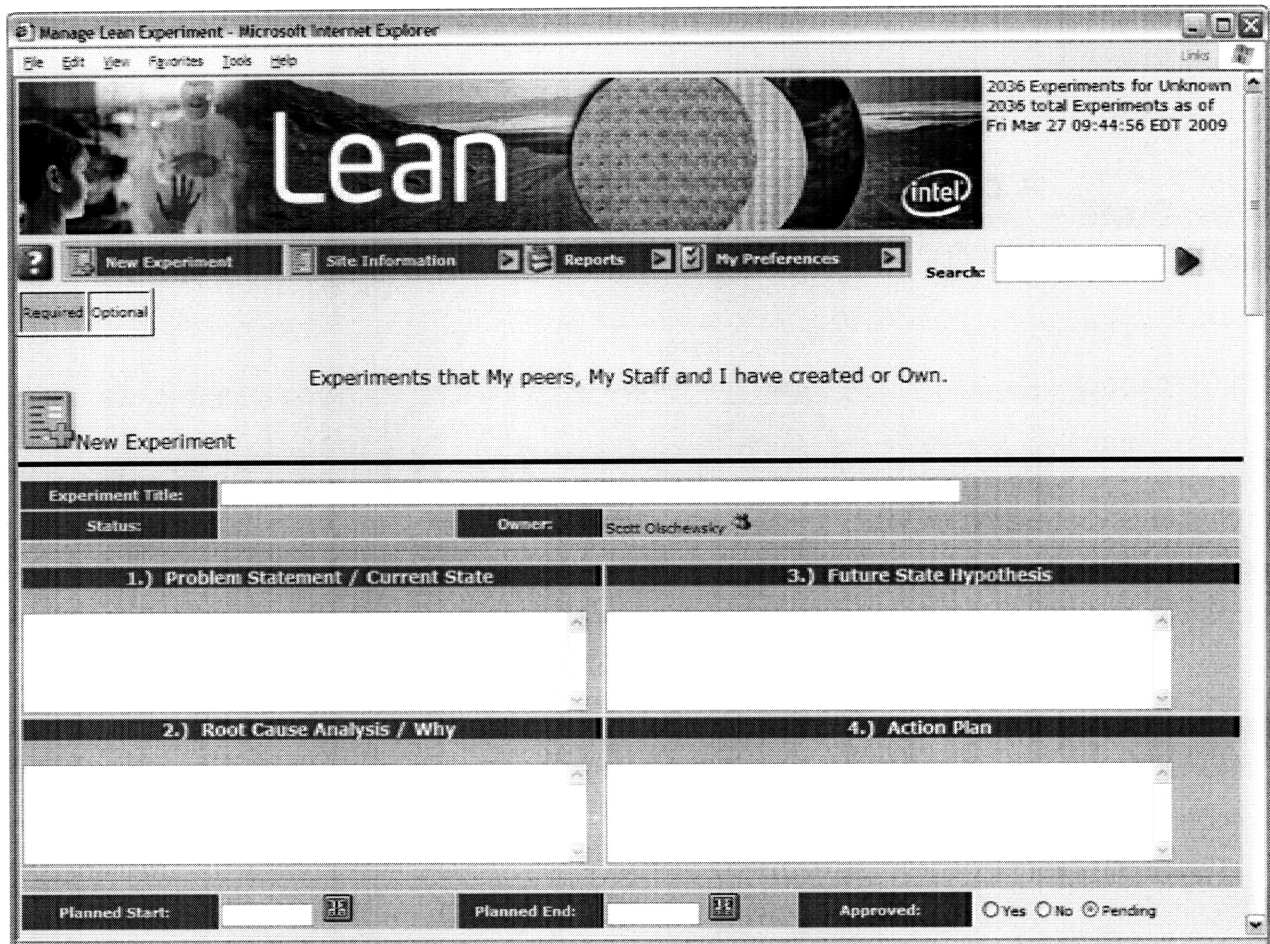
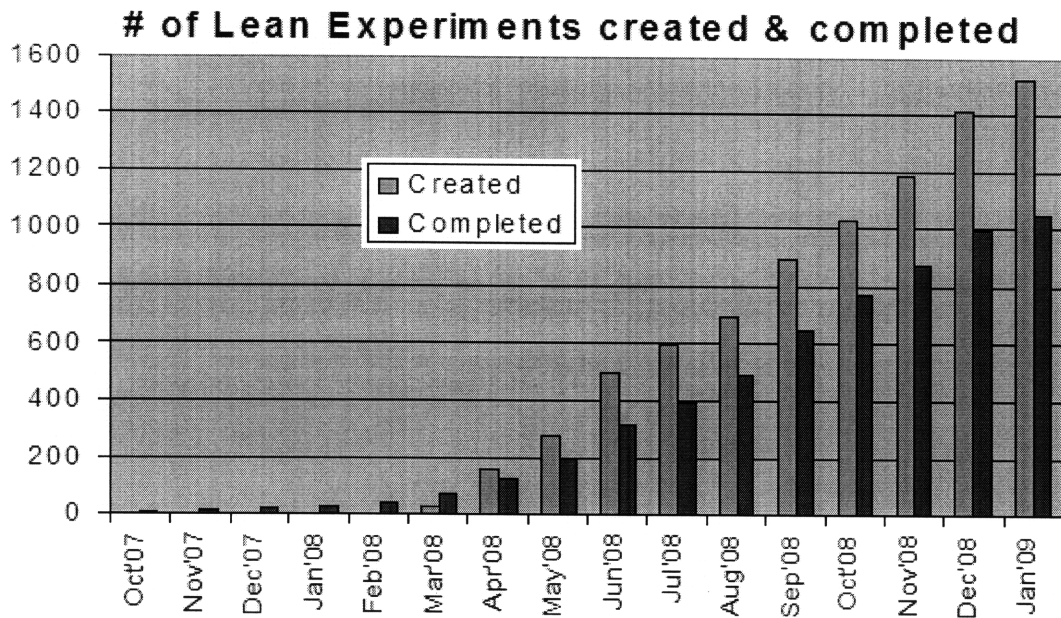


Figure 7 - Lean Experiment Tracker

Each field, except the date fields, was a freeform text box which allowed team members to insert as little or as much information as they saw fit to adequately communicate the intent and results of the experiment across the organization. By limiting the number of required fields, the Experiment Tracker was successfully proliferated across the department. Figure 8 shows the cumulative number of experiments recorded in the Experiment tracker. After fifteen months team members recorded roughly 1500 experiments on the Experiment Tracker going live, and indicated

that two-thirds of the experiments had been completed. On average, roughly 150 new experiments were posted each month.



(Menon, 2009)

Figure 8 - Lean Experiment Tracker Report

In addition to the basic functionality, the tracker also allowed team members to track and share information related to an experiment like: Actual Start, Actual End, Actual Results, Comments, Reflections, Successful (Y/N), Stakeholders, and Productivity improvement as shown in Figure 9. Having these fields as optional instead of required, makes the system less cumbersome.

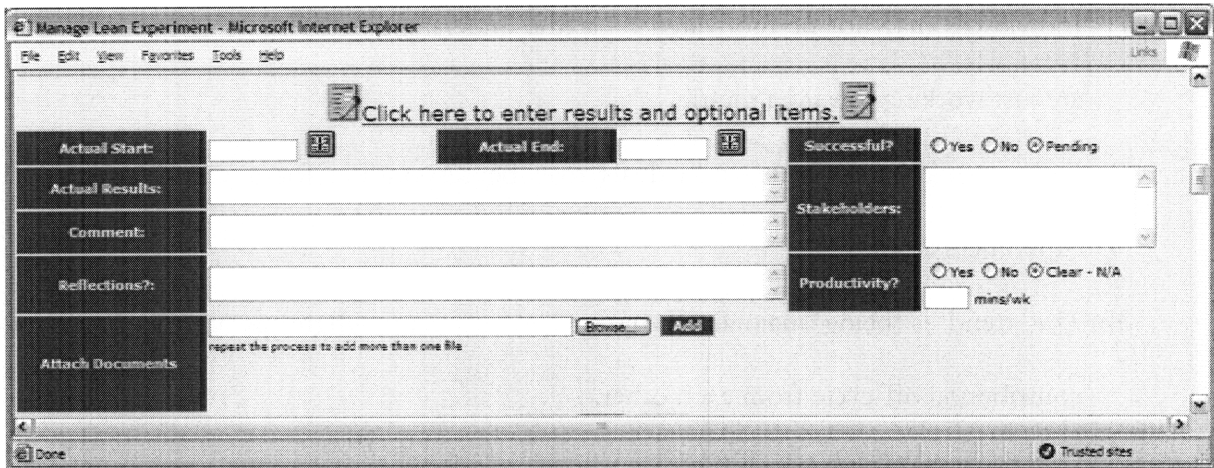


Figure 9 - Lean Experiment Tracker (Optional Fields)

The Lean Leadership Team had significant discussion around whether to include the optional detailed results fields, but in the end, decided that awareness and adoption of Lean Thinking was more important than trying to strip away the preexisting Habit of Thought (Results Orientation). In practice, SPO team members did not regularly populate detailed experimental results, but instead they focused on describing how the experiments helped their daily work.

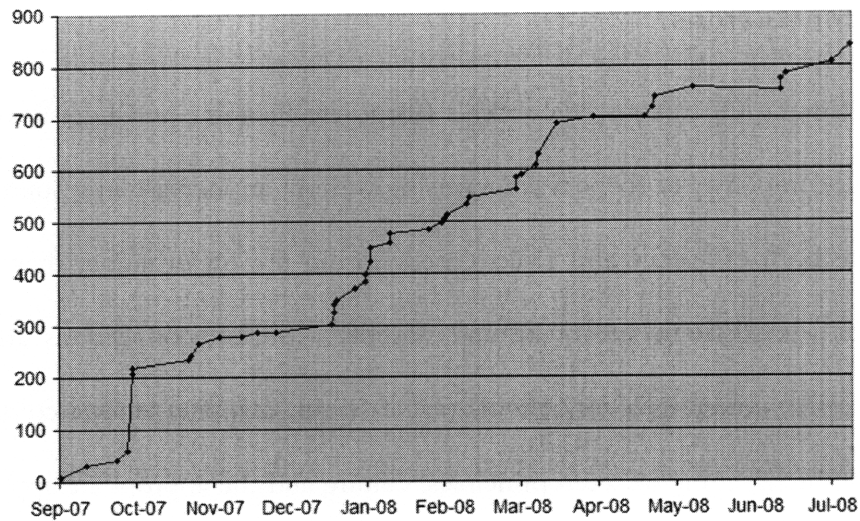
The experiment tracker, as an artifact, was useful in shaping the entire organization's Habits of Action. The sheer volume of experiments recorded is an indication of the organization's changing behavior. One can only speculate that since the trend is consistent, the individuals which are submitting experiments may have shifted their mental models in how they view their job scope. It is important to consider the other possible explanations for this trend in experiments reported:

- 1) Individuals may not be motivated by a true understanding of the change and therefore are just working toward a metric
- 2) Only a small number of individuals may be responsible for a vast number of the experiments
- 3) The trend is being maintained by several different subgroups in the organization contributing off-cycle from each other.

Even though there are possibilities to explain circumstances that are not new Habits of Thought, it appears unlikely that this is an unintended consequence of the metric. As time passes, it will be clear to the leaders in SPO whether the number of experiments continues at the same, increasing or decreasing rate and this can be used as a pulse on the organization's transformation.

4.5.2 Intro to Lean Training Class

The Intro to Lean training class is a one-day training class which was developed in SPO specifically to address an education gap within the organization about Lean Principles. The training class introduced Lean Thinking in a manner focused on office-based application of Lean Principles. The class itself is an artifact along with a metric which tracks the percentage of SPO team members who have completed Intro to Lean Training class. This metric acted as a visible indicator of the organization's ability to proceed toward cultural change. Only ten months passed from the time the first class was delivered and all 800 members of SPO had taken the class as shown in Figure 10.



(Menon, 2009)

Figure 10 - Number of Students Completing the Intro to Lean Class

SPO used a train-the-trainer model to build a suitable instructor base to deliver the class to the students in 45 training sessions at twelve world-wide sites. Not only was this method successful in training SPO team members, it also helped build experts in each site. Each class has at least one SPO staff-level leader present to teach part or all of the class. This commitment by leadership was a strong factor contributing to the success of the training class. In addition, the fact that over 6,400 student hours plus the time of the instructors were invested in this signaled to the organization that SPO's leadership team was willing to dedicate significant resources to changing the organization's culture.

Chapter 5. Conclusions

Supply Planning Operations, in Initech's Corporate Planning and Logistics Group, faced a future where their complexity of scope was increasing without an increase in resource levels. As an effort to improve both efficiency and effectiveness within the organization, they chose to adopt Lean Thinking as a method to streamline and simplify activities, connections and flows. Lean Thinking, while often viewed as a set of tools (value stream mapping, andon cords, kanbans, and others) is actually the harmony between principles, culture and the appropriate application of tools. (Walsh, 2008) SPO has taken an approach focused on the culture and deep understanding of Lean Principles before they deployed the tools of Lean.

It was important to examine why artifacts succeeded or failed in influencing cultural change. One common theme for successful artifacts was their portability. With a geographically diverse team, it was important that any artifact could be transferred electronically. Although not all the artifacts and accompanying actions have been successful in influencing the organization's culture, many have had a profound impact. Seeing members of the organization write about their personal experiences is just one example of how Lean Thinking has been adopted.

By committing to "rules before tools," the group embarked upon a journey to change their culture. Using Enacted Systems Analysis to identify Artifacts, Habits of Thought and Habits of Action, it is evident that several organizational barriers emerged along with possible levers to promote change. Even though the revolution is only in its infancy, SPO appears to be on a sustainable path toward a Lean Thinking transformation.

5.1 Barriers to Change

Enacted Systems Analysis was a valuable technique to identify barriers for the change initiative. Although Artifacts are pervasive in any setting, identifying key preexisting artifacts was most important. In addition to any preexisting barriers, some intentional actions may also be present as barriers to change.

Arguably the most important barrier to change may be the preexisting incentive system which is core to Initech's Culture. Focal, as it is called may not be the driver for anyone's daily activities but it certainly has an impact on the underlying mindset of the organization. The performance review process has generally rewarded large-scale projects instead of continuous improvement, a primary tenant of Lean Thinking.

Along with the focal process is the title "Individual Contributor" given to anyone who does not have a management role (defined by having a direct report). Employees are grouped as "managers" or "Individual Contributors" for performance review. Referring to someone as an Individual instead of a team member directly opposes the cultural shift toward teamwork embodied in Lean Thinking.

The organizational structure of SPO is a siloed, hierarchical organization with many experienced leaders. The initial movement toward Lean Thinking did not have any official authority, but instead had implied credibility through SPO's leadership team. Although this has since changed, the lack of formal structure for the Lean initiative may have delayed its diffusion through the organization.

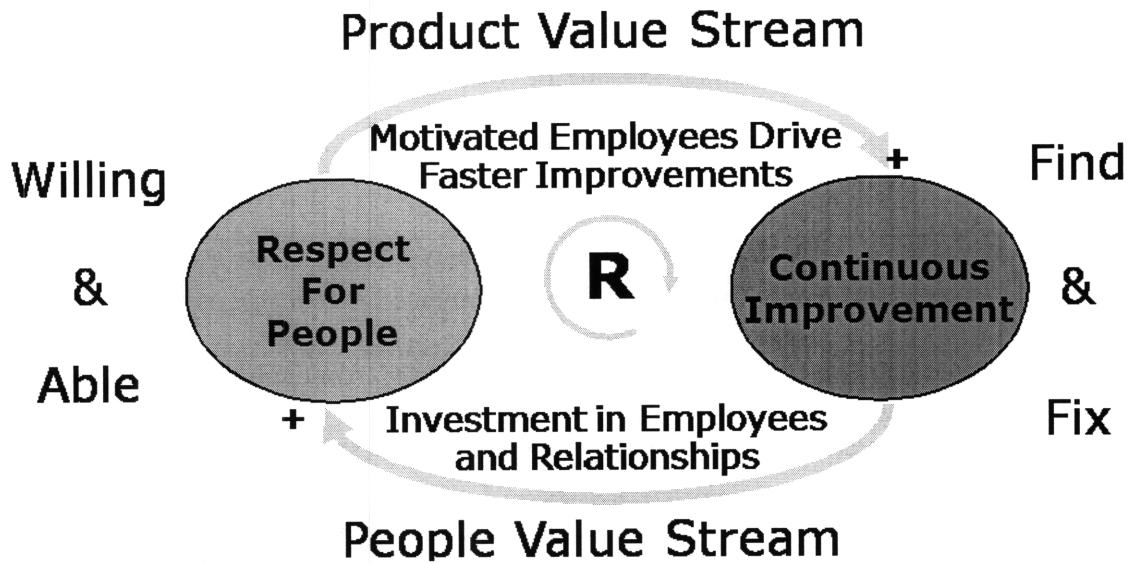
SPO has chosen to develop and mentor Lean Mentors internally rather than hiring external mentors for short term or even embedded roles. There is nothing to suggest that internal

development of Lean Leaders will prohibit the adoption of Lean Thinkers and, in fact, it may ensure that the journey is sustainable. However, the rate at which Lean Thinking is diffused across the organization is certainly slowed due to the lack of mentors across SPO.

5.2 Levers to promote change

Although several aspects of the current culture or even the actions taken as part of the Lean Transformation may be barriers to change, there are several strong levers which promote the change. Many of the levers highlight some part of the preexisting culture in a way that supports a change to Lean Thinking like Initech's corporate values of Customer Orientation, Quality and Results Orientation. Other levers, like the commitment of leadership, are the result of significant investment since the beginning of the change initiative and must continue to be resourced at the same level. A third category of levers entail changes to the existing method of building a culture of Lean within SPO.

To increase the entire organization's commitment toward cultural change, SPO should look for and develop reinforcing loops. The concept of system dynamics is already rooted in SPO as seen in Figure 11.



(Menon, 2009)

Figure 11 - Respect for People and Continuous Improvement

As shown in Figure 11, Viju Menon, the Director of SPO, highlights the reinforcing relationship between “Respect for People” and “Continuous Improvement.” He shows that “Respect for People” leads to “Continuous Improvement” through “Motivated Employees who Drive Faster Improvements.” Likewise, “Continuous Improvement” leads to more “Respect for People” through an investment in employees and relationships. Viju has also highlighted the “Product Value Stream” and the “People Value Stream.” This type of reinforcing behavior leads to an accelerating rate of adoption and therefore the broader adoption of Lean Thinking.

Some preexisting artifacts should be embraced while others should be removed. One barrier to change is the title of an Individual Contributor. Most organizations who have adopted Lean Thinking have removed any reference to the individual and instead replaced it with the title of team

member. This simple change, has minimal impact on the roles and responsibilities of an employee, but has significant impact on their mindset toward those roles and responsibilities. Removing all references to individual efforts, including the title of Individual Contributor, will promote cultural change, while at the same time shift the mindset of employees toward the larger system instead of their individual tasks.

Another aspect of Initech Culture should be embraced. Initech has a focus on results orientation, supported widely by the performance review process. Although the performance review process could inhibit change (if managers continue to reward individual results on large-scale projects) it has instilled a strong conviction in employees that delivering results is paramount. If SPO is able to shift the driver of those results from the individual toward a team-based approach of Lean Thinking, it will further the change toward a Culture of Lean.

There is no doubt that the initial push toward Lean Thinking was the result of the focus, passion and desire of the SPO leadership team. It is worth noting that the SPO leadership team is different from the Lean leadership team in that the SPO leadership team is responsible for leading the organization whereas the Lean leadership team is focused on leading the change initiative. Both entities are vitally important to a sustainable cultural shift, but after the creation of the Lean leadership team, there is a risk that the SPO leadership team may disengage, which, in the eyes of the organization, could diminish the importance of Lean Thinking. Furthermore, any retreat by the SPO leadership team may signal to the organization that Lean Thinking, like other change initiatives is nothing more than the “program du jour.”

Directly coupled to leadership are the Lean Mentors within the organization. SPO should continue to develop mentors internally. After making an initial commitment to internal

development of mentors, it may discourage members of the organization to continue their development if SPO shifts strategy and begins to bring in large numbers of external mentors. Having external experts will, by no means prohibit cultural change, but the timing for external mentors was at the kick-off of the change initiative. Bringing in external mentors now runs the risk of displacing the existing Lean leadership team which has, in many cases, self selected. The current Lean leadership team is influential across the organization and if replaced in mass by external hires could signal to the organization that internally developed skills are not valued.

Also critical with respect to mentors is continuing to support, develop and promote team members who have adopted Lean Thinking. The performance management process could be a deterrent to change, but it could be used as a tool to highlight the behavior of team members who have developed a culture of Lean in their current role. Even more important than rewarding the Lean leadership team is rewarding team members in the organization who have made a personal investment in Lean and taken it upon themselves to mentor those around them. Early in 2008, Viju Menon, the Director of SPO, made a statement which tied Lean thinking to the performance review process in the beginning of 2009. It is important that the leaders in SPO do not renege on that previous commitment. The reinforcing effort of rewarding desirable behavior is that other team members recognize and are also motivated (even if it is solely for compliance) toward Lean Thinking.

As SPO continues on their Lean Journey, the organization and the leadership team will develop and deploy new artifacts. Each artifact should be created with an understanding of the Habits of Thought and Habits of Actions it will drive. Artifacts for a geographically diverse organization like SPO should be portable and in many cases may be electronic or transmitted

electronically. SPO should continue to develop visual icons to keep reinforcing the cultural change like the experiment tracker and the Lean Newsletter. Even in a virtualized organization is also important that some physical artifacts like training or even the SPO Strategic Pyramid inhabit the work environment.

5.3 Remaining questions for further research/future theses

As an organization, SPO has an advanced understanding of cultural change. To further the application of this knowledge SPO could investigate the following:

1. Incentive Structures: Even with the initial push toward rewarding Lean Thinking, significant work remains to shift the employees understanding of which behaviors will be reward in the performance review process.
2. Developing Mentors: As stated, introducing external mentors to supplement, and possibly replace the existing lean leadership team could be damaging. Instead continuing to invest in the development of internal resources will help to create mentors who have a deep rooted commitment to the organization. If external resources are brought in, they should be utilized in a role where the mentor the leadership team instead of supplanting the leadership structure.
3. Leadership Commitment: It is imperative that SPO's leadership team remains committed toward cultural change. Investigating how leadership engagement changes throughout a change initiative could provide valuable insight into how best to change culture.

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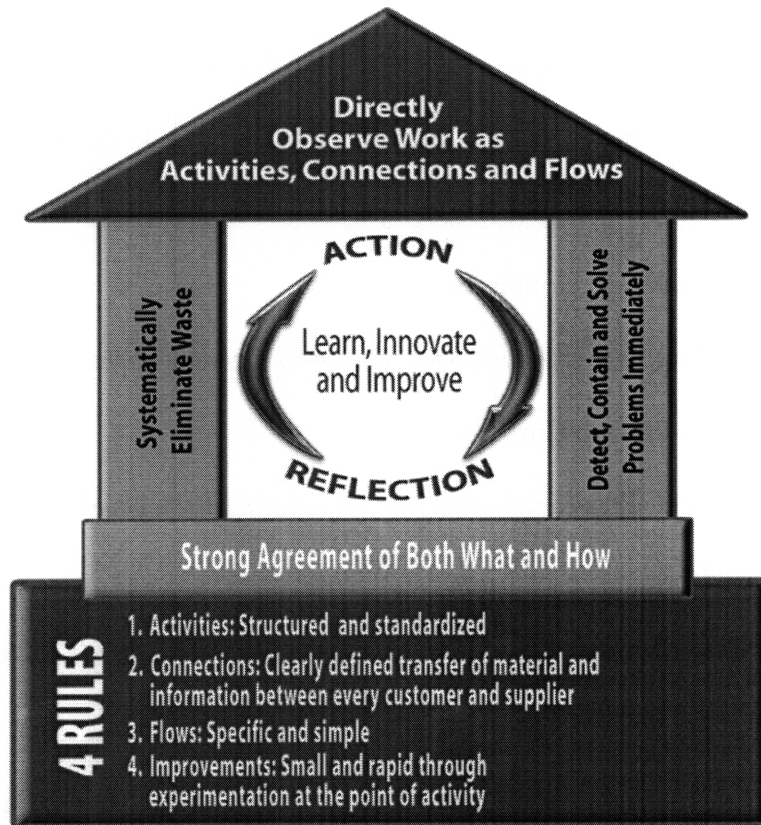
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Appendix A – Initech Lean House



Adapted from the Lean Learning Center

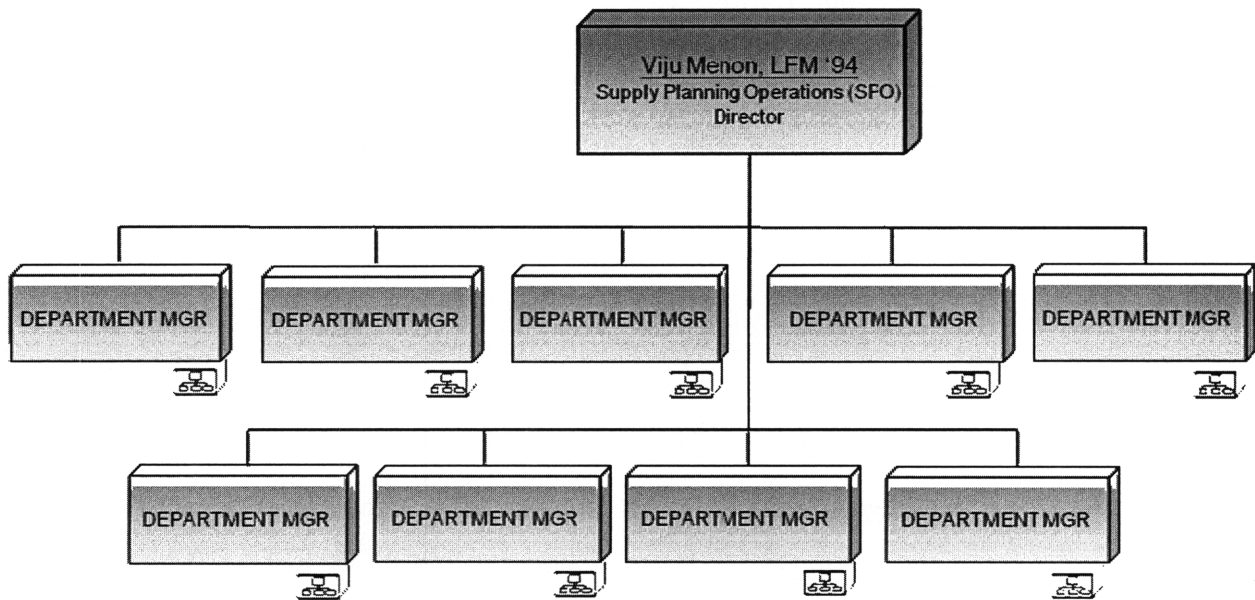
4 Lean Rules

- 1) Structure Every Activity
- 2) Clearly Connect Every Supplier/Customer
- 3) Specify and Simplify every Flow
- 4) Improve through experimentation at the point of activity toward the Ideal State – Scientific Method

5 Lean Principles

- 1) Directly Observe Work as Activities, Connections and Flows
- 2) Systemically Eliminate Waste
- 3) Detect, Contain and Solve Problems Immediately
- 4) Strong Agreement on Both What and How
- 5) Learn, Innovate and Improve

Appendix B – SPO Organization Chart



Appendix C - 2008 Initech Values

Customer Orientation

- Listen and respond to our customers, suppliers and stakeholders.
- Clearly communicate mutual intentions and expectations.
- Deliver innovative and competitive products and services.
- Make it easy to work with us.
- Excel at customer satisfaction.

Discipline

- Conduct business with uncompromising integrity and professionalism.
- Ensure a safe, clean, and injury-free workplace.
- Make and meet commitments.
- Properly plan, fund, and staff projects.
- Pay attention to detail.

Quality

- Achieve the highest standards of excellence.
- Do the right things right.
- Continuously learn, develop, and improve.
- Take pride in our work.

Risk Taking

- Foster innovation and creative thinking.
- Embrace change and challenge the status quo.
- Listen to all ideas and viewpoints.
- Learn from our successes and mistakes.
- Encourage and reward informed risk taking.

Great Place To Work

- Be open and direct.
- Promote a challenging work environment that develops our diverse workforce.
- Work as a team with respect and trust for each other.
- Win and have fun.
- Recognize and reward accomplishments.
- Manage performance fairly and firmly.
- Be an asset to our communities worldwide.

Results Orientation

- Set challenging and competitive goals.
- Focus on output.
- Assume responsibility.
- Constructively confront and solve problems.
- Execute flawlessly.

Appendix D - Attributes of a Lean Leader (Manager)

- Drives Lean Thinking and Cultural Shift within their Staff
 - Create the compelling reason why Lean is NEEDED – e.g. Vision, Ideal state, Future state goals
 - Challenges team to determine where Lean thinking is applicable today AND TOMORROW
 - Demands strong agreement from their staff and SPO Staff on their roles in our Lean Journey
 - Encourages the org by sharing success stories and testimonials demonstrating how Lean applies to daily work
 - Focuses on the learning process as the primary deliverable and recognizes that results will follow
 - Makes Lean visible and leads by example - owns A3's and also actively engaged in other projects/experiments
 - Coaches employees and is fully engaged in the Lean Journey
 - Welcomes change and doesn't make excuses as being too busy
 - Has a open trusting relationship that encourages employees to escalate issues and ask for help from their managers, instead of covering up issues to stay out of trouble
 - Dedicates time in staff to discuss experiments and recognize Lean Thinkers
 - Reviews their own experiments with the team during staff meetings

- Encourages review of the team's experiments during staff meetings
 - Publically and privately rewards employees (Focal, Goodie Drawer, DRA) based on Lean Thinking and all properly executed experiments regardless of outcome
- Examines group business processes to identify and relentlessly pursue the elimination of waste
 - Gains in-depth understanding of current state IC's R&R and established business processes from Direct Observation or other methodology prior to making recommendations
 - Has the patience to fully define the Current State
 - Recognizes and provides help at the point of activity (Go to the Gemba, What is the problem and how can I help?)
 - Empowers teams to make changes and eliminate waste
 - Provides and supports educational opportunities and coaching for their team
 - Encourages team members to determine when an organized event (kaizen, Direct Observation, etc.) may be appropriate
 - Drives standardization and expects employees to create, document, adopt, and continuously improve standard work
 - Encourages team members that the standard way is better than "*my way*"
 - Provides appropriate feedback when Standard Work Instructions are not followed
 - Examples: Removal of Monthly, reinforcing effective meetings
- Incorporates Lean topics in 1:1's

- Coaches employees on how they can apply Lean Principles to their job
- Reviews their own experiments with employees in 1:1s to role model Lean Thinking
- Proactively coaches employees about their experiments (In development OR investigation phase)
 - Remains engaged with team members ongoing experiments, and actively removes roadblocks
 - Strongly encourages team members to reflect on experiment results to define next steps/new experiments
- Reviews SPO vision with employees so they know how it applies to their role
- Has sufficient knowledge of Lean to actively lead and mentor their team members
 - Proficient in materials posted on Self-Paced Training
 - Searches for and shares other articles or examples on how to apply Lean in their group
 - Looks for opportunity to become a coach/certified on at least 1 Lean technique (Direct Observation, Value Stream Mapping, Facilitating Kaizen Events etc.)
 - Leverages internal/external learning opportunities, and shares learnings within their team and across SPO
 - Takes their advanced knowledge of Lean and imparts it to their teams by clearly defining concepts, expectations, and actions associated to specific Lean initiatives
 - Actively supports the continuing education of their team
- Values Reflection (Hansai) to identify areas for improvement
 - Supports their team's reflection time (as a team and also as individuals)

- Takes time to reflect on their experiments and activities
- Encourages and respects individual's time for reflection
- Example: Schedules daily time in their calendar to reflect on the day's activities, sets agenda time in staff mtgs for reflection

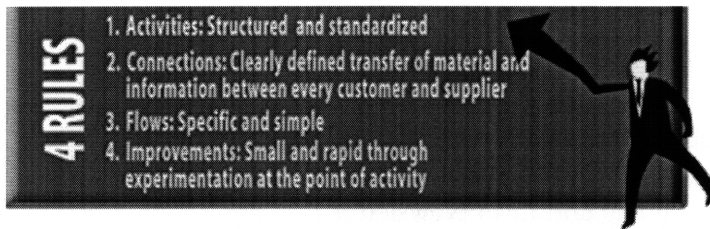
Appendix E - Attributes of a Lean Leader (Individual Contributor)

- Drives Lean Thinking and Cultural Shift within their sphere of influence
 - Understands and internalizes the 4 Lean Rules and 5 Lean Principles, and applies them to all aspects of their job
 - Demands strong agreement on their role in our Lean Journey with their manager
 - Example: Has IMBOs to promote the Lean Journey
 - Always thinks Lean in everything they do (Lasik surgery, not just sunglasses)
 - Drives system-wide waste elimination, instead of just passing the work to stakeholders
 - Positively influences peers on Lean and helps others to understand Lean Thinking
 - Is open to reflect, learn and apply
 - Embraces self-improvement opportunities
- Continuously examines group business processes to identify and relentlessly pursue the elimination of waste
 - Detects and escalates problems immediately to make them visible
 - Initiates and conducts experiments utilizing the A3 / experiment tracker process, and drives experiments to completion
 - Examines what is needed from suppliers and what they can provide to customers
 - Actively initiates, leads and constructively participates in Kaizen events, Direct Observation, A3, etc.

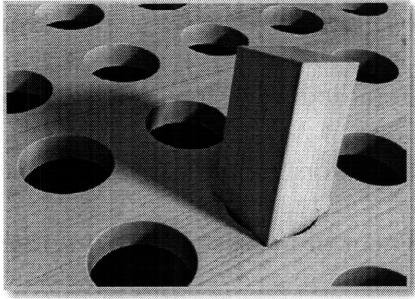
- Builds “Strong Agreement on Both What and How” by embracing standardization
 - Creates, adopts, and follows Standard Work Instructions
 - Drives Continuous Improvement to existing standard business processes
 - Encourages and fully supports other’s experiments on the standard process
- Utilizes “5 why” methodology to help identify the root cause of a problem
- Incorporates Lean topics in 1:1’s
 - Reviews experiments with manager
 - Discusses how their job function fits into the SPO Vision
- Seeks Continuous Lean Education to increase application of Lean Concepts
 - Reviews Self-Paced Training and Lean Newsletter
 - Looks for opportunities to share lean successes with peers
 - Focuses on learning from everyone’s cumulative knowledge
 - Leverages internal/external learning opportunities, and shares their learnings within their team and across SPO
 - Adept in at least 1 Lean technique (Direct Observation, Value Stream Mapping, Facilitating Kaizen Events etc.)
- Values Reflection (Hansai) to identify areas for improvement
 - Takes time to reflect on their experiments and activities
 - Encourages and respects other’s time for reflection and participates in team reflection
 - Example: Schedules daily time in their calendar to reflect on the day’s activities

Appendix F – Example of Lean Newsletter Content from a Department Manager

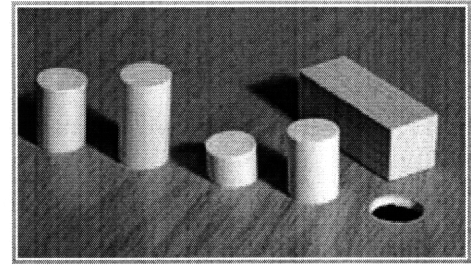
XXXXXX, SPO Fab Planning Manager, shares his experience on the job that reinforces Rule One – how standardization paradoxically fosters more creativity among employees. For those of us who are still pondering the benefits of standardization, read more about Mitch’s thoughts in his article, ‘Is Standardization the Death of Creativity?’ below.



Let’s be honest. At one time or another, most, if not all of us have thought that standardization either greatly reduces or altogether eliminates creativity, until we begin to gain a deeper understanding of the Lean concepts and philosophy. I have heard the question come up in one form or another in every Lean discussion when the talk turns to the role standardization plays in our journey. As we all know, Lean teaches us that standardization is the core block on which to build upon. Rule One states that all activities must be structured and standardized. More specifically, all work shall be highly specified as to content, sequence, timing and outcome. Clearly this is a significant change from the way that we have learned and even been rewarded for during our Initech careers up to this point.



One constant that has never failed to amaze me is the lack of



standardization across all of the areas of Planning that I have worked in. From planner to planner, let alone team to team or

site to site, significant differences exist in the way we conduct our business. As a result, it comes as no surprise when we get a less than positive response to the concept of standardization.

I have always answered this inquiry with my view on standardization and how it will not limit creativity, but allow us to focus the creativity of everyone on improving the best known method, thereby ensuring we all benefit from every improvement. However, I realize that we are a data driven bunch in SPO and I could talk until I am blue in the face about my beliefs on the benefits of standardizing. Until there is some real life actual testimonial that standardization is not the death of creativity, what I think or say really does very little to win the hearts and minds of the people raising the question.

Now the reason for this article is to share some of that real life actual data.

In my ongoing efforts to make Lean discussion and inquiry standard practice in my everyday interaction with my team, I have recently been very energized with the feedback I am getting, specifically as it relates to the concept of standardization. First, standardization is very hard to do (see above assertion that we all do everything differently) and takes a lot of time. Although this was

not a complete surprise, what was eye-opening was the amount of effort required to get to a true standard that everyone agrees to and complies with. Next, and even more revealing, is that once you get the team to agree on, produce and utilize a standard work instruction, more changes begin to occur! That's right, *more changes begin to occur!* This development of increased change activity was unexpected.

In reflection, this surprise to us makes sense. You have the content experts who do the work responsible for defining the standard for the work to be done and once the standard is defined by the content expert, how could there possibly be more changes? However, this is exactly what is happening and exactly what we would want to happen. It is truly inspiring to hear directly from the planners about the positive effect this development has had. Comments from them stating that “I secretly look forward to seeing the A3s every Monday so I can learn something new,” and “Coming to work each day I know that I am going to provide value and learn something new,” speak volumes.

Now I cannot share all of the learnings from our standardization efforts because in keeping with the Lean philosophy, the activity of actually learning is key for us all. What I will say is that after listening to comments like these, I am even more convinced of the power of standardization. It is clearly not the death of creativity by any means. I would contend that, based on the actual results experienced thus far, it is the spark of creativity and experimentation that is vital to a learning organization embarking on the Lean journey.

Appendix G – Example of Lean Newsletter Content from a Team Member

The hype started from the Supply Chain Conference and Lean Workshop in ww43.3'07. Not willing to be left out from the Lean Journey, XXX Planning team, pioneered by KMO FPM, XXXX brainstormed on how they could embark the Lean Journey. In ww01'08, KMO kicked off their 1st Lean Learning Lab. The Lean Learning Lab meets each Thursday and uses SharePoint as a Lean repository. The repository started with one “Ideas” folder, which soon grew into five folders for “Articles,” “BKM-sharing,” “Training Materials” and the latest folder entitled “I Have Problem!



Help Needed.” This structure has facilitated problem identification.

The first Idea submission was in ww04'08 and currently 42 ideas have been posted. Of those, 22 have been implemented, 11 are WIP, 5 are under exploration and 4 have been deemed as No Go. In XXX, all ideas are encouraged and the team each one to discuss its relevance to lean and possible countermeasures.

To preserve the excitement and keep the momentum going, mystery gifts were given for three highest A3 submissions. The team learned and applied Lean’s value stream mapping technique with the XXX setup process. XXX also performed experiments and pilots to reduce their

XXX response time and to pull their Gameplan in by 1 day to Wednesday which was then shared with the “1 day Build Plan Reduction Project” team.

“We are not stopping, yet. Our next steps include value stream mapping the setup process , “Office Kaizen” training (ww33.5), and 4 people are attending the 5 days Lean Workshop in PG9. To us, Lean is a life long journey that is best shared as a team. Looking back at the things we gained, we are glad we took the lean road. Over the 27 week journey, we collected memories, creative ideas, and realized a whopping ~1534 minutes of productivity savings through our LLL A3s on top of CIT saving! Until then, see you in the next pit stop”

- submitted by XXXXX