

THE PRINCIPLES OF THE LEAN BUSINESS SYSTEM



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The Lean Principles

The book *Lean Thinking* by James P. Womack and Daniel T. Jones (1996) provided the world with a vision of what Lean was about. The authors commented: “Lean Thinking can be summarized in five principles: precisely specify **value** by specific product, identify the **value stream** for each product, make value **flow** without interruptions, let the customer **pull** value from the producer, and pursue **perfection**” (page 10).

They defined each of these principles in more detail as follows:

Value: “The critical starting point for Lean Thinking is value. Value can only be defined by the ultimate customer. And it’s only meaningful when expressed in terms of a specific product (a good or a service, and often both at once) which meets the customer’s needs at a specific price at a specific time” (page 16)

Value Stream: “The value stream is the set of all the specific actions required to bring a specific product (whether a good, a service, or, increasingly, a combination of the two) through the...problem-solving task from concept through detailed design and engineering to production launch, the information management task running from order-taking through detailed scheduling to delivery, and the physical transformation task proceeding from raw materials to a finished product in the hands of the customer” (page 19).

Flow: “Once value has been precisely specified, the value stream for a specific product family fully mapped by the Lean enterprise, and obviously wasteful steps eliminated, it’s time for the next step in Lean Thinking....make the remaining, value-creating steps flow” (page 21).

Pull: “Pull in simplest terms means that no one upstream should produce a good or service until the customer downstream asks for it” (page 67).

Perfection: “As organisations begin to accurately specify value, identify the entire value stream, make the value-creating steps for specific products flow continuously, and let customers pull value from the enterprise, something very odd begins to happen....suddenly perfection....doesn’t seem like a crazy idea” (page 25).

¹ I am grateful for the debate, input and assistance of the following to this white paper: colleagues at S A Partners especially Chris Butterworth, Kevin Eyre, Gary Griffiths and Jill Whinfrey; members of the Lean Business System and other specific Lean Business System Linked In groups that I run and participants at the 2009 LERC annual conference.

Rethinking the Lean Principles

Since *Lean Thinking* was published in 1996, our understanding of what Lean is has moved on³. Lean has also been applied across a wider range of manufacturing and service industries⁴ and the issue of sustaining change has become more central⁵. As a result I believe it is now time to revisit the Womack & Jones five principles. In order to do this, it will be helpful to understand what the main areas of concerns might be. These include the facts:

- Many organisations have failed to interpret the original principles well
- In hindsight, there are gaps or weaknesses in the original set
- The world has moved on, and
- Our understanding of how Lean works has improved.

These areas of concern lead to a number of specific problems (see Table 1). The first problem revolves around how Lean works in different industries and the fact that classic Lean texts tend, explicitly or implicitly, to assume that we all work in high volume, repetitive manufacturing environments such as car components or electronics industries.

There appears to be little allowance for people in low volume or more variable manufacturing industries or the service sector. What we have observed is that the further you take Lean from its car making origins, the more strained some of the classic principles become. For instance, in high variety manufacturing or service industries many struggle with the concept of kanban style pull systems. As a result, organisations such as Flinders Medical, an Australian hospital, have redefined their own principles including: Focus on the Patient, Understand our Processes, Social & Technical Flows, Responsive Teams & Learn and Spread.

#	Problem Area
1	Fit in Different Industries
2	Over focus on Shop Floor & Order Fulfilment
3	Overfocus on Physical Flows
4	Too much focus on Cost Reduction & Not Value Creation
5	Lack of focus on Quality/Risk
6	Lack of focus on Environment & CSR
7	Poor link with Business Needs
8	Poor link with Strategy
9	Lack of focus on Leadership & Engagement
10	Poor focus on Sustaining Change
11	Little Emphasis on Communication
12	Little focus on Support HR Policies
13	Little focus on Staff Development & Training
14	Lack of focus on Resourcing
15	Lack of focus in Wider Supply Chain

Table 1: Problems with the Original Lean Principles

³ See: Peter Hines et al, *Learning to Evolve: A Review of Contemporary Lean Thinking*, *International Journal of Operations & Production Management*, 24, 10, pp. 994-1011, 2004

⁴ See: Peter Hines, *Must Do Better: Applying Lean in the Public Sector*, *Public Sector Executive*, Sept/Oct, pp. 34-45, 2009

⁵ See: Peter Hines, Pauline Found, Gary Griffiths & Richard Harrison, *Staying Lean: Thriving, Not Just Surviving*, *Lean Enterprise Research Centre*, Cardiff, 2008

The next set of problems revolves around the fact that the original principles have been generally interpreted at an operational level. Many firms use Lean as a focus for point-kaizen improvement activities on the shop floor. Indeed, almost all the organisations we meet tend to look at physical flows only in the Order Fulfilment process (customer order to delivery of product or service).

As a result Lean is often used as a short term cost cutting or waste reduction mechanism. Indeed, many refer to Lean as a cost reduction toolkit, an initiative or a programme. Even Womack & Jones open their book with: “*Muda*. It’s the one word of Japanese you really must know...*muda* means “waste””. In contrast if you seek out the Toyota corporate website you will find that Taiichi Ohno has a different perspective: “Eliminate muda, mura, muri....completely”⁶. What appears to be missing in the *Lean Thinking* book is the focus on levelling and making life easy for people.

Linked to this waste reduction focus, is another significant gap, the lack of an appropriate focus on quality and risk. Fundamental to the creation of a complete Lean Business System⁷ is achieving what the customer wants, when they want it. This implies the pursuit of 100% quality as well as 100% on time delivery. It also implies that risk is at an absolute minimum.

Rarely do we see Lean applied within the context of the business needs, wider environmental or social concerns, strategy formation or deployment. It is usually a tactical activity run by full, or part time, improvement agents. This lack of senior management involvement means that there is rarely appropriate senior level leadership and, as a result, insufficient attention to employee engagement. The result of this is that the sustainability of change is poor.

The reason for this is that the classic Lean Principles almost totally missed the importance of people. Specifically, little attention was drawn to the importance of communication, supportive human resource policies, staff training and development. In addition, inadequate attention was paid to the importance of resourcing the change process and individual job design. It is interesting to contrast that with some key reasons why Lean transitions fail as shown in Table 2.

1	Lack of a clear executive vision.
2	Lack of an effective communication strategy.
3	Failure to create and communicate a real sense of urgency.
4	Poor consultation with stakeholders.
5	Lack of structured methodology and project management.
6	Failure to monitor and evaluate the outcome.
7	Failure to mobilise change champions.
8	Failure to engage employees.
9	Absence of a dedicated and fully resourced implementation team.
10	Lack of sympathetic and supportive Human Resources policies.

Table 2: Reasons Why Lean Transitions Fail

Source: Lucey, Bateman & Hines, 2005

Finally, the classic Lean principles appear (or have been interpreted as being) too focused inside the organisation. As a result, few organisations outside of the automotive sector appear to take their

⁶ http://www.toyota.co.jp/en/vision/traditions/jul_aug_04.html

⁷ For more details of the Lean Business System, please see the white paper *Creating a Lean Business System* at <http://www.sapartners.com/content/blogsection/6/87/lang/>

Lean activities into their supply chain. The result is again often point-kaizen activity where single firms are the focus of improvement rather than the complete supply chain.

To summarise: the traditional Lean approach is too piecemeal, too short term in nature and with little focus on the areas required to make it sustainable in most organisations. What is called for is a more systemic approach.

Redefining the Lean Principles

Taking all these concerns and issues into account we have redefined the original principles into a new holistic framework – the 8Ps of the Lean Business System.

This framework helps companies in any industry, and at any stage of Lean maturity, to reflect on how they are deploying Lean in their business. It helps to take the focus away from point-kaizen activity towards a more contingent approach, a more aligned approach, a more human approach and ultimately, a more sustainable approach. Indeed it is part of a move to Lean becoming a cultural journey towards everyone in the organisation actively working towards a fully aligned ‘tomorrow better than today’ system.

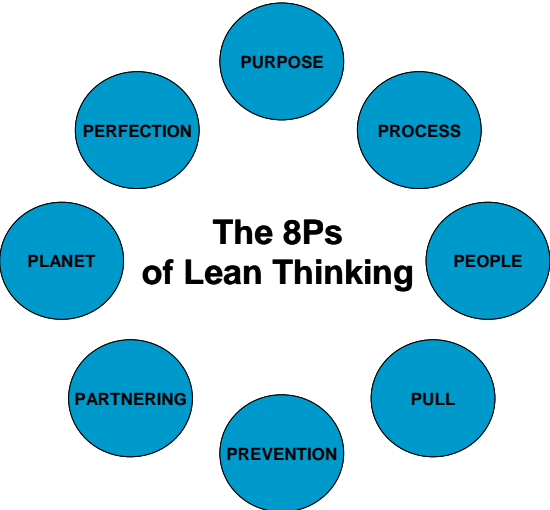


Figure 1: The 8Ps of the Lean Business System

We believe that this new 8Ps approach will also, at least to some degree, overcome the shortcoming of the classic Womack & Jones approach as shown in Table 3. In the table the darker the shading, the more impact the particular principle will have on the existing problems.

#	Problems	New Principle							
		Purpose	Process	People	Pull	Prevention	Partnering	Planet	Perfection
1	Fit in Different Industries								
2	Over focus on Shop Floor & Order Fulfilment								
3	Overfocus on Physical Flows								
4	Too much focus on Cost Reduction & Not Value Creation								
5	Lack of focus on Quality Risk								
6	Lack of focus on Environment & CSR								
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15	Lack of focus in Wider Supply Chain								

Table 3: Countering Problems with the 8Ps of Lean Thinking

The 8 Principles of the Lean Business System – a detailed look

1. Purpose

Before starting any activity it is important to understand the purpose and to align the organisation. Ask yourself, how many people in organisations:

- Really understand what they are supposed to achieve?
- Feel they have an appropriate set of KPIs?
- Are working on too many things at once?
- Can point to how they are making tomorrow better than today?

So what do you need to take into account in developing a purpose? Traditional management has taught us to focus on the Voice of the Owner. Traditional Lean Thinking has extending that to include the Voice of the Customer (although we rarely find that this is the starting point for a Lean transformation). Even this dual focus is not enough, as we see in Figure 2.

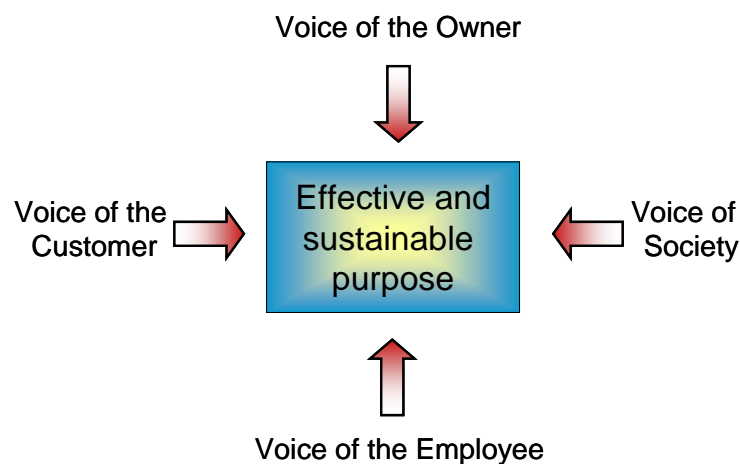


Figure 2: Achieving an Effective and Sustainable Purpose

Focus on the Voice of the Owner and Voice of the Customer fails to focus on the *muri* - the frustrations and problems that individual people face in their work. It fails therefore to address the “what’s in it for me?” objection to change. It fails to focus adequately on the Voice of the Employee. This concern is key and we will return to it in the section on People.

As our collective thinking has moved on, we now need to focus also on the Voice of Society. Specifically our role as corporate citizens and in particular the environmental impacts of our activities. We will again return to this area in the Planet section below.

Codifying the purpose is a key job of the senior management team. It is a way of capturing the WHAT, the direction, the focus and ideas about the destination. If done well it is also a powerful tool in establishing the WHY. Focusing on these two areas is not only essential, but it will help senior managers start moving away from simply HOW based thinking. In my experience, pre-defined solutions from senior managers, often without much thinking about

WHAT and WHY, often have only a poor chance of being accepted by the business and an even poorer chance of leading to sustainable change.

Not only do organisations need to have a purpose, they also need to communicate it in a way that engages the workforce. This almost certainly needs to be done in a visual way translating the purpose into a language that is accessible to people at their level of the organisation. It needs to be more than mere visual displays used to impress visitors, but a living, breathing management tool that is the focus of how the organisation is run. It needs to be a complete visual management approach. An example from Cogent Power is depicted in Figure 3.



Figure 3: Sales team visual management at Cogent Power

The key elements required include:

- A purpose for the team
- A relevant set of KPIs
- A team-selected (bottom-up) set of problem solving action plans
- A set of team-selected celebrations of success

Indeed in her work on sustainability, Nicola Bateman found that this type of deployed visual management was one of the most important elements of achieving sustainable change⁸.

2. Process

After nearly 20 years working with Lean I find that the majority of firms still only apply Lean in one process: Order Fulfilment. Order Fulfilment starts with the customer's need, is translated into an information flow in the organisation and results in a reverse flow to the customer of the end product or service. This is the process that almost all organisations address in their Lean journey, either in whole or in part - 95% never get any further. In addition these 95% tend to be addressing cost reduction having done some Value Stream Mapping.

So why is this a problem? Mainly because they are only scratching the surface of what is possible with a Lean Business System. Businesses have many processes that they need to manage, and manage well – including ones that stretch across internal departments. In general there are three types (see Figure 4):

- Directional Processes
- Core Processes and
- Enabling Processes

There is usually only one Directional Process in a business, often called strategic management and it is often only in this process and at this level that a cross-functional approach is taken. There are usually 3-6 Core Processes that deliver the main tangible outputs and outcomes for the business. These might include Innovation, Order Creation and Order Fulfilment. In addition to these there are 3-6 Enabling Processes that support the Core Processes to deliver the key business result.

⁸ See: Nicola Bateman, *Sustainability: A Guide to Process Improvement*, Lean Enterprise Research Centre, 2001

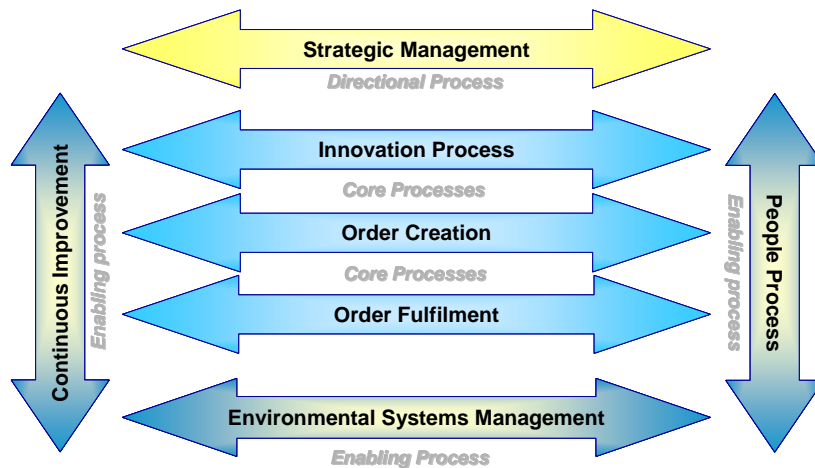


Figure 4: Generic Process Framework

Each process has its own part to play, but it is the Core Processes that are likely to deliver on the majority of the top level strategy and KPI set. However, across different organisations, this may be in radically different ways.

Improvements in the Order Fulfilment process are likely to deliver an increase in capacity in order to achieve a cost benefit. Many businesses go wrong here, however, because they assume that is the goal of Lean. In many cases there is a dislocation between the business strategy and this 'Lean' cost reduction. Worse than this, many of the cost savings are often illusory. What for instance is the cost saving of merely freeing up 20% of a factory or office block on its own? There may be some, but it usually far from 20% of the total costs.

If we instead think of Lean more holistically, as an approach to deliver improved customer service **and** waste reduction, then the outcome should be an increase in profitable growth⁹. In other words lean should deliver an optimal balance between these two areas aligned to the business goals and purpose.

However, how can organisations do this if they are usually only addressing one single process whose improvement is likely to be largely about reducing cost? The answer is, of course, that they can't, not unless they seek to improve a range of other processes such as Order Creation and Innovation. The improvement of these processes is less likely to be about reducing cost and more about improving customer value. In other words they are about growing the business or **filling capacity**.

I call this X and 2X thinking as this links to the profit potential of Lean in an organisation (see Figure 5). By creating capacity through the improvement of processes like Order Fulfilment a business may achieve *some* cost reduction and hence deliver on *some* profit potential it may have had. However, it is only when this capacity is utilised when processes such as Innovation and Order Creation are addressed that the full benefit will be reaped by the business. In my

⁹ In a public sector environment this might be seen as improved value for money where value (in whatever terms) to customers is improved and costs are reduced.

experience the profit potential benefit of filling this capacity is never less than twice as large as the benefit in creating the capacity. In some cases the ratio can be as much as X to 10X.

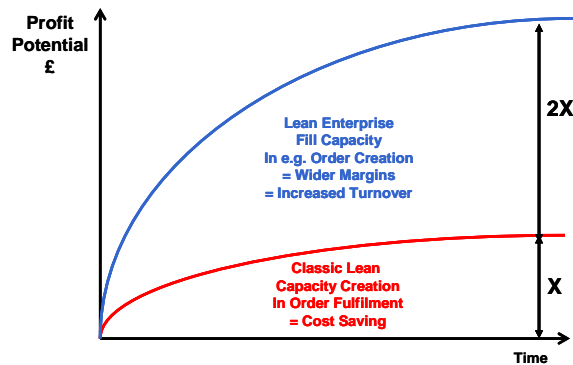


Figure 5: X and 2X Thinking

3. People

The area of people is misunderstood by many organisations applying Lean. One of my reflections on re-reading Womack & Jones’s *Lean Thinking* is that the key issue in the success of the case study firms was not the tools, shop floor improvements or *kaikaku* events. It was in the leadership of the senior executives. This reflection has been borne out many times in the times that I and my colleagues have witnessed effective and sustainable change.

Linked to leadership is the ability to engage people in the business. Toyota talk about Respect for People. This means allowing the people who know the work best – the people who do the work – to work out HOW we are going to improve. Developing a culture of Continuous Improvement is not sufficient without this fundamental respect for people (figure 6)¹⁰.

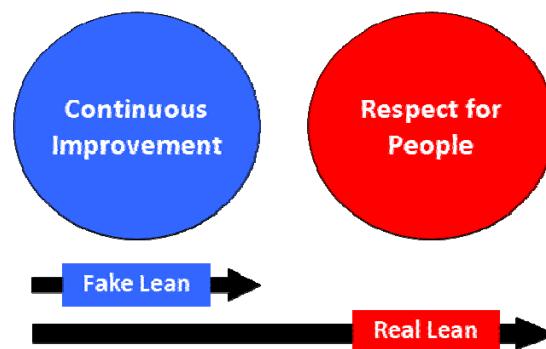


Figure 6: Continuous Improvement and Respect for People

The People principle is without doubt fundamental to the success and sustainability of any Lean transformation. I will highlight 8 areas that need to be addressed.

i. Understanding the difference between management and leadership

In general much of our career progression, HR policies and education system are designed to create high quality managers. This is essential to deliver **today’s** results and keep organisations

¹⁰ See: Jeffrey Liker, *The Toyota Way*, McGrawHill, New York, 2004

working. However, it is insufficient to create an effective **tomorrow**. It is not sufficient as Bennis shows (Table 4) to innovate, develop, inspire or challenge existing businesses. We need to manage **and** lead.

Manager	Leader
* Administers	* Innovates
* Is a copy	* Is an original
* Maintains	* Develops
* Focuses on systems and structure	* Focuses on people
* Relies on control	* Inspires trust
* Has a short-range view	* Has a long-range perspective
* Asks how and when	* Asks why
* Has his eye on the bottom line	* Has his eye on the horizon
* Imitates	* Originates
* Accepts the status quo	* Challenges the status quo
* Classic good soldier	* Is his own person
* Does things right	* Does the right thing

Table 4: The Roles of the Manager & Leader

Source: Bennis 2003

This dual role has most effectively been translated by Honda who use the concept of *Futatsue Shigoto* or 'two jobs'. By this they talk about Today's Job (managing what I need to do now to be successful) and Tomorrow's Job (leading in terms of what I need to do to be successful in the future). Honda emphasises that each one of them is equally important.

ii. Creating and deploying an inspiring vision

Part of the leadership role is to inspire people to want to change. It is about creating a vision, a direction, something for everyone to be inspired by. This can either be the avoidance of something bad, the 'burning platform', or better still a destination people want to achieve. In the publication *Staying Lean: Thriving not just Surviving* (2008) we describe how Cogent Power's CEO, Marcel Schabos created just such an inspiring vision by re-igniting a pride in the business right across the workforce.

iii. Defining, demonstrating and encouraging correct behaviours

The third area is about creating a culture where an appropriate behaviour set is instilled right across the business. The starting point is to establish which behaviours are appropriate, ensure they are 'lived' and demonstrated by the senior team and then find mechanisms to do this across the workforce. At Cogent, the HR Director, Peter Rose used Doug Howardell's 7 Lean Skills to achieve this¹¹.

These involve:

- Customer consciousness
- Enterprise thinking
- Adaptation
- Taking initiative
- Innovation
- Collaboration
- Influence

¹¹ See <http://www.theacagroup.com/leanarticle.htm>

iv. Aligning support policies and procedures with purpose

When trying to implement a Lean approach it is necessary to ensure that the various supporting structures are aligned to the purpose. We have already talked about the right KPIs and their deployment. Equally important is the alignment of HR and accounting policies and procedures. As shown in Figure 7 below, this is necessary as these policies and procedures underpin the required workforce characteristics which in themselves underpin the commercial and cultural outcomes of a lean programme.

The most important of these HR policies and procedures is how people's performance is managed, their reward and recognition defined, their training and development undertaken and their succession planning run. We will return to the training and development area in the next section on Pull.

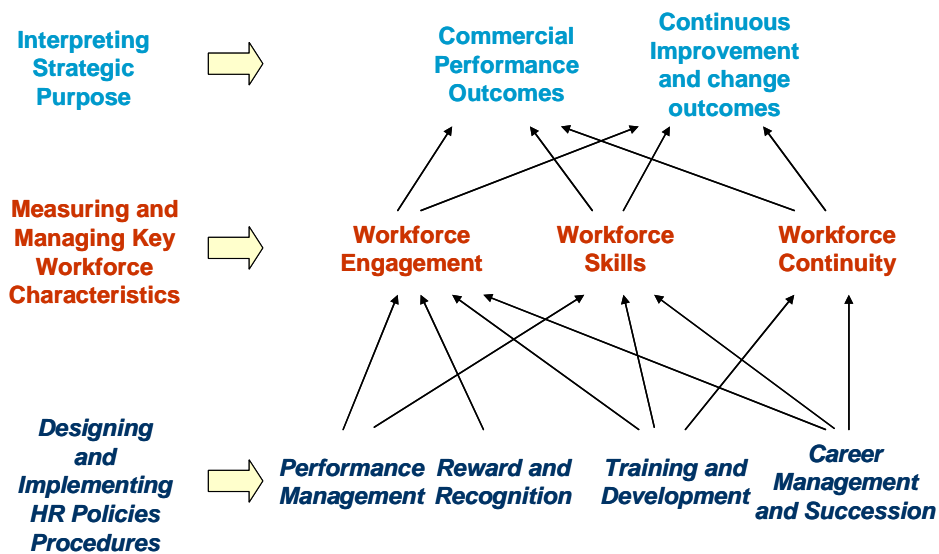


Figure 7: Aligning HR Policies

To illustrate the other areas, let's follow Cogent Power's use of the 7 Lean Skills. These were applied to the annual performance review. Each manager had one-to-one discussions with employee about how they had exhibited these skills. Decisions on reward, recognition and promotion were equally weighted. As a result people were promoted who had the right attitudes, not just firefighting skills.

v. Creating a dynamic communication system

In my experience the best performing organisations have the best communications systems, using a variety of methods to mirror different preferences that people have for absorbing information and providing feedback. What is important is that the communications are simple, well thought through, in a language and medium that are likely to be understood and are two-way.

I have often found that the use of visual cues with appropriate data works well as we saw in the yellow boards in Figure 3. As Cogent Power's CEO, Marcel Schabos, once said to me when reflecting on the reasons for their success, "it was all about three things: communication, communication and communication".

vi. Developing Situational Leadership

Another important area within the People principle is adopting the appropriate leadership style at each stage of a Lean transformation. As we describe in detail in *Staying Lean* a business goes through a journey when applying Lean. This usually starts with a rather ad hoc or reactive management system and progresses over time to an autonomous 'way of life' style where there is no longer a need to give the work a title such as Lean or Continuous Improvement.

At each stage of the journey a different leadership style is required (figure 8). Near the beginning a championing or driving approach is required. This involves senior managers and lean coaches getting things going, making projects work and getting early results. Later on the journey a more supportive or mentoring style is required to support the line in their lean journey. We will return to this change in style in the Pull section below.

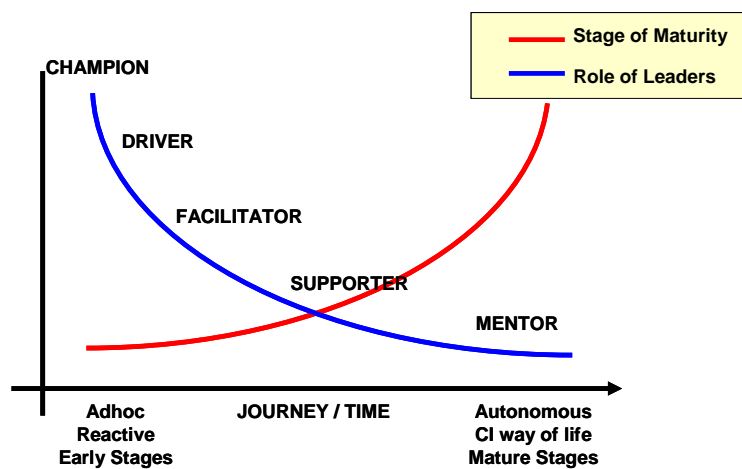


Figure 8: Situational Leadership in a Lean Journey

vii. Working on Job Design

In order to move the focus away from just doing the day job to thinking about creating a better tomorrow, it is also necessary to consider job design at all levels of the organisation. Consider the typical split of working time for executives, middle managers and operatives as shown in Figure 9.

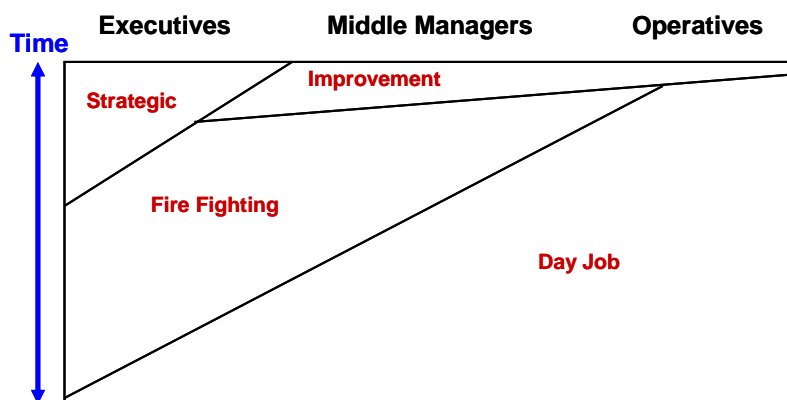


Figure 9: Typical Current State Job Design

What you typically find is that executives spend some time working on strategy, although frequently too much on big bang top-down HOW-focused programmes that are then handed to middle managers to implement. This means they need to engage operatives. However, the operatives' line managers are often reluctant to free them up as they do not want to see time wasted on what they perceive to be 'non productive' activity.

The result of this is that the day job predominates at these levels. However, it also means that any change that is undertaken is likely to be quick-hit with only a low chance of being sustained. As a consequence fundamental problems and weaknesses don't get properly addressed and much of the executive and middle manager time gets taken up in firefighting. Does this sound familiar?

In contrast, we could envisage an ideal state (figure 10) where everyone in the business spends some time working on strategy. This is not to say that everyone will work on high level strategy, but more on strategy as it affects them. In other words, within their environment, how can they make tomorrow better than today to achieve their part of the purpose? To make these improvements they will also need a formal time budget to achieve these gains. Even at operative levels these two elements may be as much as 15% of their working time. However, only by making this investment will the day job be improved and a continuous improvement mentality established.

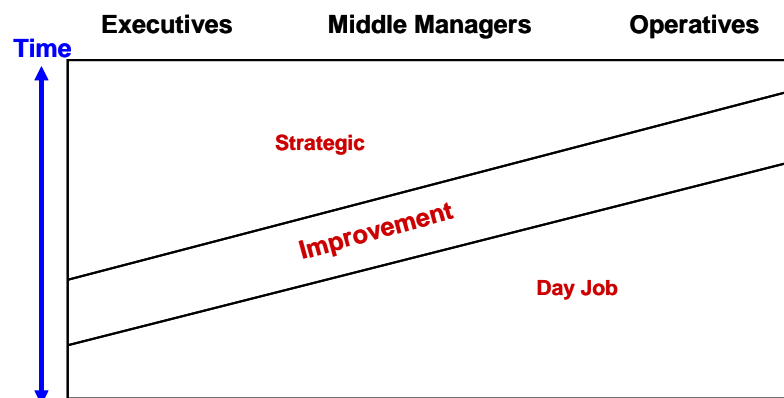


Figure 10: Ideal State Job Design

Clearly here we are looking at an ideal state that might take many years to achieve. Hence each business will need to define its own future states over successive Lean roadmaps towards this ideal state.

viii. Leading by not leading

The last area is leading by not leading, a paradox for the senior team. This relates to the activities of the executives in figure 10 within the improvement segment. Let's say that a business invests 10% of the formal time of all its employees on improvement. Within this, the senior team should minimise the amount of time they spend on big-bang top down (often disengaging) initiatives and maximise the amount of time they invest in small, local bottom up projects.

An example may be a plant or office manager spending 2-3 days a month taking part in local projects. The trick is not to lead the projects, nor facilitate them, nor manage them. It is to just be a team member asking permission of the team to just take part and offer outside-the-box suggestions, as they are the least likely person in the team to understand the work in detail. This 'not leading' approach however shows a great deal of leadership and is likely to inspire many across the business to want to improve as they see just how seriously Lean is being taken by the executive team. This may sound strange, but if applied well, certainly works.

4. Pull

There are three main areas of pull that are necessary to consider within a Lean Business System. These will be discussed in turn:

i. Pull-Based Delivery

Within the traditional Lean approach airtime is rightly given to the creation of flow and pull¹². One of the problems here is that much of the Lean literature tends to be written by, or for, people working in a high volume manufacturing environment where demand variability is low. Example of this might include the car or electronics industry. People who do not work in these environments can find the concept of pull difficult to interpret and apply, a prime example being the office environment.

Hence, it is my belief that although pull-based delivery is desirable, in many cases it is hard, if not impossible to achieve. In addition, in a transition to a full Lean approach, it may not be the first and most important focus for activity. I have seen too many manufacturing firms attempting to create a pull system in an unstable process environment leading to disaster. We will return to this area in the Prevention section below.

So why might pull be hard or impossible to achieve? Consider figure 11. In some industries the quantity of product or service is very high and the variability of demand very low. Typical of this might be industries producing components or products for mass markets such as bread, toothpaste or milk. We call such cases **Runner** products.

In other extreme cases we might find that volumes are very low and orders highly variable. Industries such parts for classic cars or the space industry may be regarded as producing **Stranger** products.

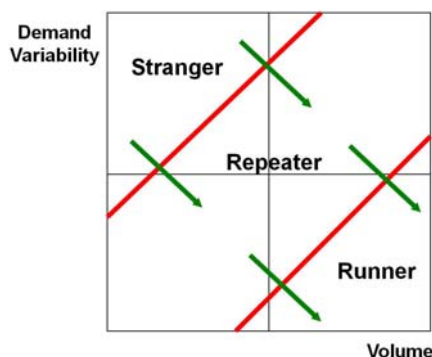


Figure 11: Runner, Repeater & Stranger Products

¹² See for instance: James Womack & Daniel Jones, *Lean Thinking*, Simon & Schuster, New York, 1996

In between these extremes a range of products or services with intermediary levels of demand and variability may be regarded as **Repeater** products. The majority of Lean literature assumes we all live and work in a 'runner' world where well constructed kanban-based pull systems can operate. Clearly this is not true.

Ideally the first job in a Lean environment is to understand the customer and their pull-based demands. Before even doing this it might be useful to differentiate between real demand and created demand¹³. Consider, for instance buying a car. On entering the dealer you see the car you want but the showroom model is red instead of blue. You enquire about getting a blue one and are quoted a 6 week lead time. As an alternative you are offered the red car with a 10% discount. You decide to buy the red car. Is this real demand or created demand?

In most companies this would be treated as real demand and hence under a kanban system, particularly if replicated many times, could lead to major distortions of supply. In fact, we would be dealing with a distorted demand rather than the true Voice of the Customer. So the first step might be differentiating between real demand and the created demand resulting from a failure of the system.

The second task might then be to try to find ways to reduce the variability of demand (for instance by reducing the lead time) or increasing the effective volume of demand (for instance by standardising or modularising different offerings). This is illustrated by the arrows in figure 11. The third task would then be to establish the appropriate type of supply system for the resulting product or service. Here a kanban-based **pull** system might be most appropriate for a runner and a make-to-order **flow** system for a repeater. However, in the rare occasions where it is not possible to move the product or service out of the stranger zone it may still be necessary to operate under **push** based conditions.

ii. Pull-Based Improvement

In far too many organisations that I visit I cannot find a link between the improvement activity that is going on and the needs of the business, the customers, the employees or wider society. In many cases what is improved seem to be more a whim of a particular, usually senior level, person. Indeed, when I look in detail at the programme of improvement set out by many firms I can see little or no link to their professed strategy. The question is, are we solving the right problems? If not, it seems almost inevitable that even a well delivered improvement programme will be ultimately considered to be a failure.

I also observe in many organisations that projects or programmes are conceived by senior management and, as we saw within the People principle area, are then imposed on local people by full time change agents. If this situation is particularly severe or continues for a protracted time I hear complaints from people lower down in the organisational structure that they have been 'Leaned'. This push based mentality rarely has little to do with the needs of the business, customer, (local) employees or society. It is more often driven by flawed metrics such the need for so-many kaizen events or black belt projects in a given time period. This piecemeal approach is likely to lead to disengagement, frustration and poor sustainability. Unfortunately I find these symptoms far too often within organisations employing push-based improvement.

¹³ See Peter Hines, Riccardo Silvi & Monica Bartolini, *Lean Profit Potential*, Lean Enterprise Research Centre, Cardiff, 2002

To create an effective Lean Business System, it is necessary to move as quickly as possible to a pull-based improvement system. This does not necessarily mean immediately, as the speed and priority of moving quickly to a pull-based approach will vary depending on the business situation, the Lean maturity of the business and the competing needs for rapid development of other areas of the Lean Business System (see the section on Perfection below). However, in general, I would say the transition should at least start within the first two years of any transformation.

So what are the key ingredients of a pull-based improvement system?

First, there needs to be absolute clarity on what the business is trying to achieve (including a focus on the customer, employees and society). Second, this WHAT needs to be communicated in a highly effective way so that everyone in the organisation can understand what the business is trying to achieve, what this means to them and their team (including their contribution to it) and an effective, aligned and engaging set of KPIs. Third, and perhaps most crucial, is that the problems being solved and projects to be worked on have been selected by the team at that level. In other words that the ownership resides locally **pulled** by the local needs for improvement rather than **pushed** by a senior management group who might be quite remote from the workplace.

An example of such an approach can be seen in Figure 3.

iii. Pull-Based Training

Closely linked to pull-based improvement is the concept of pull-based training. This contrasts with the classic push-based training seen far too frequently in business. Within push-based training the topics, duration and timing of courses are pushed by the needs of some senior management group, typically the training manager.

In contrast, within a pull-based approach, training is undertaken according to the needs of the local team and is decided by consultation of the team leader (at whichever) level and the individual. It is based on a skills and competency needs that the team have in order to make their contribution to the success of the business.

It is hence impossible to have pulled-based training unless pull-based improvement is in place. The first time I observed this element of the Lean Business System was when working with the Toyota supply chain in Japan¹⁴. When I benchmarked their performance against a similar supply chain in Europe I found that the gaps were enormous. One surprise was the fact that the employees in the Japanese firms spent on average only half the amount of hours doing training but clearly hugely outperformed their western counterparts in terms of results.

The reason for this was two-fold. First, the Toyota suppliers in Japan were operating a pull-based training approach and second 90% of their training was On-The-Job (or as they called it OJT) rather than less than the 10% more typical in the west.

¹⁴ Peter Hines, *Benchmarking Toyota's Supply Chain: Japan vs U.K.*, *Long Range Planning*, February, Volume 31, Number 6, pp. 911-918, 1998, ISSN 0024-6301

5. Prevention

One of the most serious errors I see in the use of Lean is an excessive focus on tools and techniques. Not only this, but in many cases this focus is highly skewed towards a few tools. Among the ones I most frequently encounter are:

- Big Picture Mapping (as popularised by Rother & Shook¹⁵ under the term Value Stream Mapping)
- 5S
- Kanban &
- Quick Changeovers (SMED)

These are all good tools. However, they are often applied in a slavish, A before B before C, approach. Worse still, little allowance is made to whether they are the right tools or other more appropriate tools are required.

The most serious omission is usually tools within what in Figure 12 are described as the Standardised and Stable Process & Quality boxes. These tools are focused on preventing variation, problems and subsequent rework or quality failures for the customer.

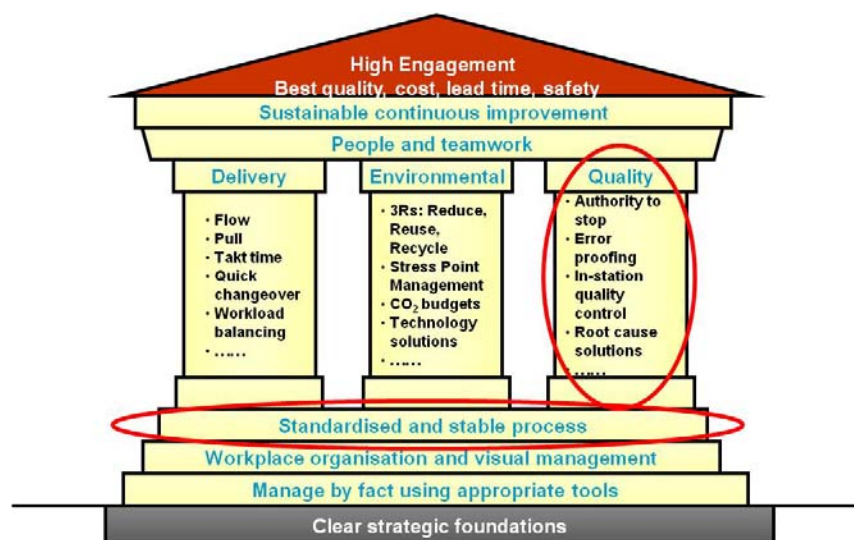


Figure 12: Working on Prevention within the Tool House of Lean

The result is that organisations are trying to improve the flow of an unstable system. This is very unlikely to work. This failure within the traditional Lean approach (as applied by many) has led more enlightened organisations to try to fill the gap by collecting a series of tools to address the problem. The most prominent of these are the Six Sigma tools first collated by Motorola in the 1980s. Although this was a good reaction to the problem they saw in many limited lean organisations, their mistake was to then not employ the other tools that were being used. Hence, there became an imbalance with an over focus on the Quality pillar side of the true Lean Business System.

¹⁵ Mike Rother & John Shook, *Learning to See, The Lean Enterprise Institute, Brookline, 1998*

What is required is a balance of tools from the Tool House of Lean. This balance should be pulled by the needs for local improvement where there is a “daily habit” of continuous improvement that uses simple, visual technologies, tools and techniques that have been chosen and adapted for effective use. Hence, the specific tools to be used should be contingently selected according to specific needs.

6. Partnering

No company or organisation is an island and to create a world class organisation usually requires the creation of a world class supply chain. Indeed, the leading practitioners of Lean worldwide such as Toyota and Tesco have also heavily focused on creating a high performing supply chain.

Indeed, when I compared the relative performance of Toyota’s Japanese supply chain with a comparative one in the UK I found that the management of the supply chain was Toyota’s key competitive advantage¹⁶. As can be seen in Table 5, based on comparative productivity figures for the whole supply chain, the major competitive advantage did not lie at the car producer but more at the 1st and 2nd tier suppliers.

	Japan Cost Added	Competitive Gap	European Cost Added	Indexed Competitive Gap Apportionment
Assemble	22.2	1.82	40.4	18.0%
1st Tier	22.1	2.84	62.8	40.2%
2nd Tier	9.6	4.35	41.8	31.8%
3rd Tier	2.8	4.35	12.2	9.3%
4th Tier	0.2	4.35	0.9	0.7%
Raw Materials	43.1	1.00	43.1	0.0%
Total	100%	2.01	201.2%	100%

Table 5: The Competitive Gap When Partnering

The question is, why? After three months of extensive research I discovered that the reason was that Toyota invested a huge amount of effort into partnering with their suppliers. In doing so they made dramatic improvements to their performance. Not only that, but Toyota had also taught their suppliers how to do the same using an approach they call *Kyoryoku Kai* or Supplier Association¹⁷.

Unfortunately, although this inter-company development and coordination is at the heart of a true Lean Business System there are few companies in the West outside of the automotive industry that have got anywhere near achieving the type of results we see from Toyota in Japan. One of the main reasons is that insufficient focus has been given to the Partnering Principle in traditional Lean businesses.

¹⁶ Peter Hines, *Benchmarking Toyota’s Supply Chain: Japan vs U.K.*, *Long Range Planning*, February, Volume 31, Number 6, pp. 911-918, 1998, ISSN 0024-6301

¹⁷ See Peter Hines, *Creating World Class Suppliers*, Pitman, London, 1994

7. Planet

It was just after the turn of the millennium that Jim Womack wrote:

“Lean thinking must be “green” because it reduces the amount of energy and wasted by-products required to produce a given product...Indeed, examples are often cited of reducing human effort, space, and scrap by 50 percent or more, per product produced, through applying lean principles in an organisation....this means that...lean’s role is to be green’s critical enabler as the massive waste in our current practices is reduce”.

However, apart from a strong movement in the west coast of the United States, progress seems to have been slow on adopting the Planet as part of a wider set of Lean Business System Principles. This is in spite of the relentless march of Lean across industry sectors and the heightened awareness of the environment.



Figure 13: A Balanced Approach

One of the first to put the green agenda on the map was the then Norwegian Prime Minister, Dr Gro Harlem Bruntland when she introduced the concept of sustainable development, describing it as being made up of three areas: economic, social and environmental sustainability.

For a company we might translate this as a focus on a ‘respect for profit’ (economic), ‘respect for people’ (social) and ‘respect for environment’ (environmental). To think in very simple terms:

- A traditional Lean approach might be described as understanding customer’s needs and values and then reviewing the system and processes that produces them so that the traditional eight wastes can be minimised
- Green might be described as understanding society’s needs and values and then reviewing the system and processes that delivers them so that the eight environmental wastes can be minimised

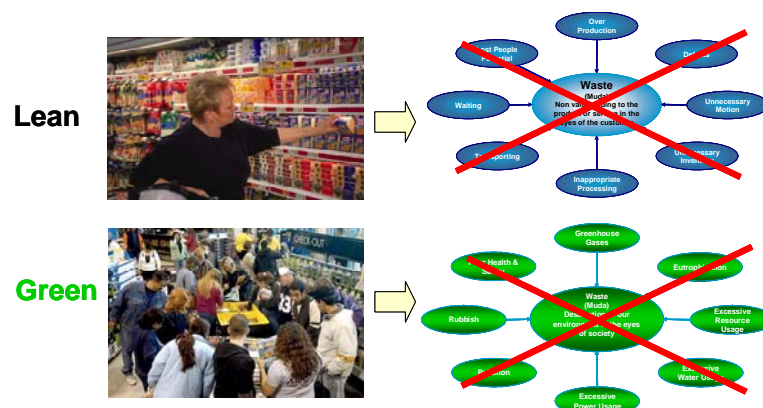


Figure 14: Lean and Green

So what is the difference? Well apart from the fact that individual customers are multiplied to become society and the environmental wastes have a slightly different character than the traditional lean wastes, not a lot.

What is necessary is to include a set of diagnostic mapping tools and implementation tools that addresses the wider Planet issues and the Voice of Society. In other words, as seen in Figure 15 an extra Environmental pillar has been added to the traditional Lean House.

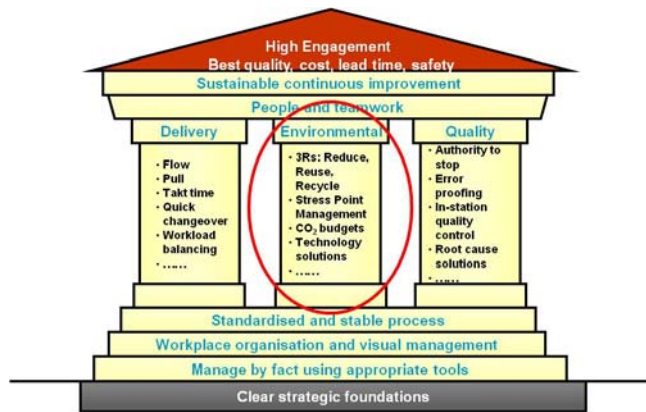


Figure 15: Planet focus in the Lean Tool House

8. Perfection

Perfection has been the ‘holy grail’ for Lean businesses since Womack and Jones encapsulated this principle in the mid 1990s. This focus was the result of a revision in thinking after a great deal of benchmarking work. The 1990s automotive research work showed us that there were huge gaps between the best and other companies. The gap, as we have seen above, was often between Toyota (or its supply chain) and western equivalents.

This benchmarking gave many western companies a wake up call. However, it had two major problems in terms of energising organisations. First, partly because the gaps were so big, many organisations, particularly outside of the automotive sector, found it hard to accept the data. This led to reasons for inaction such as “they have a different culture, “it is a different industry” and “we are different”.

Second, even those who were compelled by the data, lacked a roadmap of how to move forward. As a result many organisations, often guided by external consultants, simply followed the quick fix kaizen blitz route leading in many cases to a poorly sustained short-term Lean initiative.

To counter this piecemeal approach, we believe that organisations should create their own Lean Business System. This requires them to develop a vision of their specific perfection and their own bespoke roadmap on how to move towards it. But how?

Simply put, the process is similar to best practice Value Stream Mapping, except here we are working at the business, rather than the Value Stream or process level. As seen in Figure 16 you start with establishing the Current State for the business. You then envision Perfection, or the Ideal State (or what you think is the best possible position you could possibly reach). You

then back off from this to a point that your team believe is feasible in the long term. This Feasible Future State might be 3 to 5 years away.

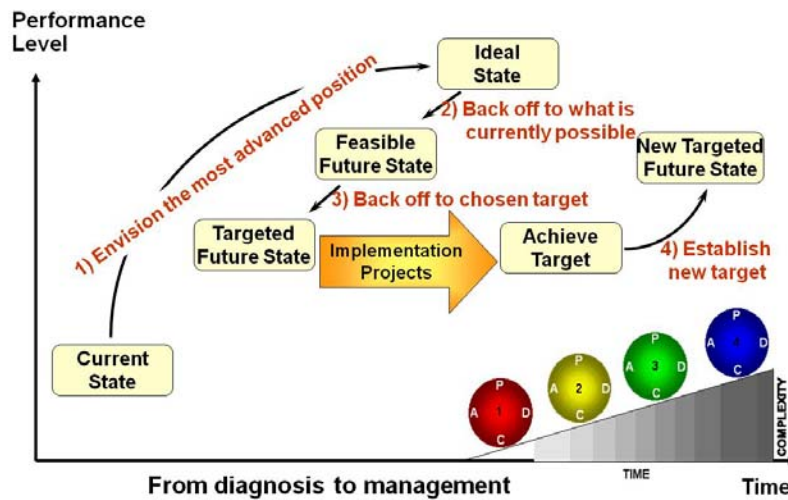


Figure 16: Moving Towards Perfection

The next step is then to create a realistic point that can be reached within a sensible engaging timescale (usually around 18 months). This is the Targeted Future State that then requires a Roadmap. Once this Targeted Future State position is achieved, a further Roadmap towards the Ideal State may then be created and deployed.

To help, we have developed the Lean Business Model® (Figure 17) which not only provides a framework for an organisation's particular Lean Business System but also an associated diagnostic tool that helps the organisation to see where they are in a journey and which interventions should be done early and which done later.



Figure 17: The Lean Business Model®

Think of the 5 elements of the model as 5 pieces of a jigsaw. The benefit of getting all of the pieces in the right place at the right time is that you are able to see the whole picture. The same is true of the Lean Business Model®. Over the course of a transition to develop a Lean Business System, organisations must systematically complete the whole of the jigsaw to get all of the benefit from their investment.

To start creating the Lean Business System¹⁸ it is necessary to follow the steps described above (Figure 16) for each element of the Lean Business Model®. It is not just about taking each element a bit further in each Roadmap, but about making discriminating choices of what to do at what point in time. Indeed, the more difficult choice is what not to do in the first Roadmap, as trying to do everything at once will lead to delays, frustration and poor sustainability.

¹⁸ For more details of the Lean Business System, please see the white paper *Creating a Lean Business System* at <http://www.sapartners.com/content/blogsection/6/87/lang/>

The Measurement System (Figure 18) associated with this is based on the academically proven Five Key Milestones of Continuous Improvement Maturity from “ad-hoc” through to “way of life”. Each of the core elements of the Lean Business Model® is assessed not only from a quantitative viewpoint of - systems and procedures - but also from a qualitative viewpoint of - values and behaviours.

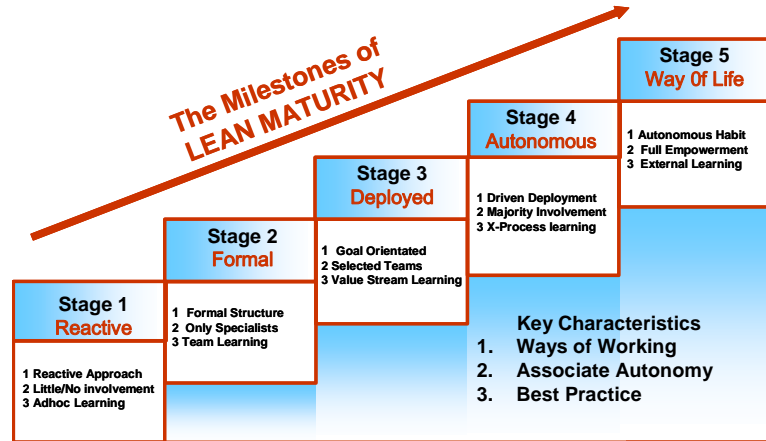


Figure 18: Stages of Lean Maturity

In other words we need to measure not just what you do but also (and more importantly) the way that you do it. This helps to build a learning organisation that not only has the capability to maintain the gains of the improvement but is also self-propelled continuously to improve the continuous improvement process until it becomes a daily habit for everyone.

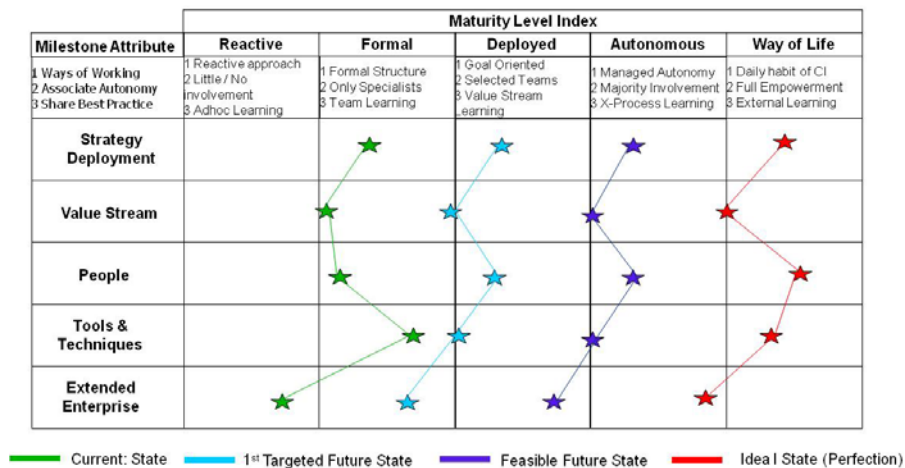


Figure 19: The Road to Perfection

Summary & Conclusions

In this white paper I have sought to reflect on the state of Lean as it is today, through the lens of the traditional Lean Principles. These reflections have led me to conclude that some updating is necessary if organisations are to get further than the often tool-based approach that I see.

I believe that the journey and the newly modified set of Principles I describe here are an essential part in creating for each organisation their own unique Lean Business System. Such a system can be used to create an holistic, integrated and engaging journey that will lead to sustainable long-term success. I wish you good fortune on your own particular journey.

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Further Information

Relevant Linked In Groups led by Professor Peter Hines:

Lean Business System

<http://www.linkedin.com/groups?gid=1801885>

Lean Business System Asia Pacific

<http://www.linkedin.com/groups?gid=1819060>

Lean Business System Benelux

<http://www.linkedin.com/groups?gid=1842070>

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