ENTERPRISE IRELAND
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BECOMING A LEAN SERVICE BUSINESS

Practical steps to build competitiveness, capacity & capability

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LEAN BUSINESS IRELAND
Global Leadership in Lean Enterprise Excellence

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- Becoming LEAN
- Becoming a Lean Service Business
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INTRODUCTION – Lean Service

Lean tools and techniques are helping companies across the globe to address competitiveness issues within their businesses, building the capability of their people to identify issues and improve their operations, increasing capacity as they improve efficiency and effectiveness.

Service businesses critically need to engage with their people and their processes if they are to provide high levels of service to their customers. The customer only sees the service delivered by the people in their operation.

Lean is shorthand for focusing on effectiveness and efficiency across all areas of a business. Lean works most effectively where it has become the way of doing business, where it is a fundamental part of the business strategy and not just "using some tools".

"Lean" is used widely in Service businesses, in both the private and public sectors. The focus of "Service Lean" is in helping the people in a business to "see" their processes, to find ways to do their jobs better and to provide a better, quicker, more effective service to their internal and external customers. Many people in businesses don't see or interact with the end customer but they do have internal customers, colleagues who provide them with input or who are dependent on their work output.

Lean was defined by the Americans based on what they saw in the Toyota Production System. The Americans were trying to understand what the Japanese were doing that made them so competitive. They tried to identify the trick, the magic wand that allowed the Japanese produce and sell products at high quality and at reasonable prices. The truth of the matter is that Lean is based on an Absolutely Focused and Relentless pursuit of efficiency and effectiveness. People in a business working together to improve their service. Successful Lean implementation requires the engagement of people to realise the potential of a business.

Service businesses are becoming ever more important to our national economy. We need our service businesses to be operating at the highest international levels if we are to sustain jobs in the Service sector. Lean Service can help you to achieve these levels of performance, working together.

This booklet provides the basics of Lean to help you on your journey to achieve world class levels of competitiveness. It outlines the first steps along the lean journey and signposts you to the next parts of that journey.

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What is Lean?

Lean is about doing what is right and doing it as well as can be done. It starts from the point of knowing what a customer wants, values and needs and works to find the best way to deliver that to them. Lean is focused on providing customers with the best possible service, at the best possible prices, at the best possible quality levels and when the customer wants it. Lean started in the manufacturing area and has spread right along the value chain from sales through logistics, manufacturing, purchasing, administration, product design and development and back to sales. This holistic approach is becoming known as Lean Business.

Companies need to understand where they are, who they are, what their customers value, what problems their customers have, and what problems the company has They need to identify what they need to do better to meet their customers, needs, wants and expectations while making and retaining profit. Lean does this by focusing on finding and removing waste. Nobody wants to do wasteful things, or spend their day doing no-value work. The Lean Approach provides

people with the tools to help them and their companies to find hidden wastes and to tackle them.

Toyota is known as the “Father of Lean”. On a recent visit to one of their factories, located in Wales, the Deputy Managing Director stated that Toyota benchmarked themselves constantly, always looking to see what the standards of competitors are and how well they compare against them.

Enterprise Ireland can provide our clients with access to the best SME benchmarking systems and data in the world through our Lean Service Benchmarking tool, providing clients with an objective view of just how good the competition is and where their own strengths and weaknesses lie, helping them to prioritise areas for action to improve competitiveness.

Becoming Lean is about becoming competitive, which can often mean that a business can grow its sales with the same number of staff. This is why the Lean Business approach includes the areas of sales, design, support and administration, to help the business grow. Sometimes there may be the need to reduce staff to ensure that the business can survive; there may be some people who will relish the opportunity of moving on to other challenges. The objective of Lean is to build sustainable competitive businesses, not to cut job numbers.

It can often be difficult to “see” the process in a service business, to see the movement of information from customer request to service fulfilment. The Lean tools give you a way to see your processes, to identify improvement opportunities and to tackle them, improving your customer service and staff engagement at the same time.

It is often hard to see the “hurt points” in a service business. Lean can give you and your people the tools to professionally capture these hurt points, the things that go wrong or make the job harder to do, in a simple and effective way. Once you have objectively identified the hurt points you can professionally move to fix them.

Lean is a Journey - LOOK, SEE, UNDERSTAND, THINK, DO - Again and Again

Innovation in service needs to be seen as a continuous effort. It is not enough to improve things once. The Lean journey can be represented as a spiral. The challenge is to move a business operation up the Lean Spiral of Performance (**Figure 1**), looking, seeing and understanding processes, thinking about how to improve them before acting to improve them – time after time. As an organisation moves up the spiral, it builds the capability to address ever more important and demanding issues and challenges. It moves to be truly World Class and able to compete on the highest playing fields.

This booklet provides you with Level 1 tools. There are further levels on the Lean Spiral of Performance, and these will be described briefly at the end of the booklet.

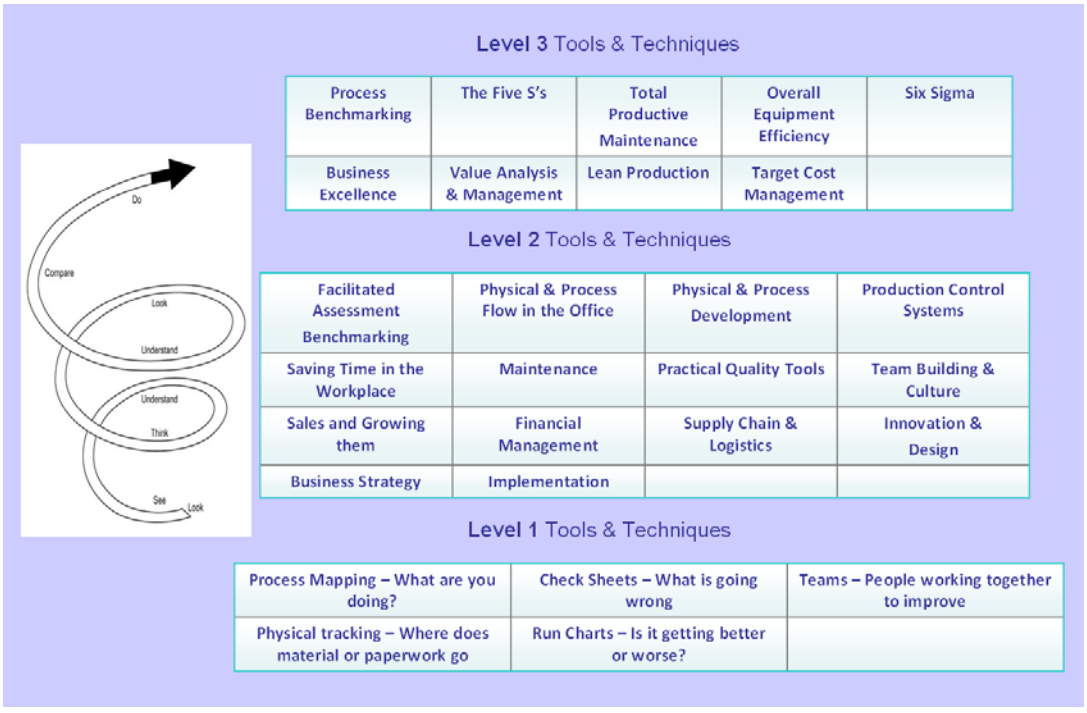


Figure 1: Lean Service - Spiral of Performance

LEAN PRINCIPLES, RULES & QUESTIONS

A number of Lean Principles, Rules and Questions have been identified to help you understand Lean and how to use it to build your people's capabilities and the competitiveness of your business.

LEAN PRINCIPLES

The three key Lean Principles are:

- Time
- Money
- Effort

Focus on **Time** to see how long work is taking to do, to see how long it is before a customer gets their service after they ask for it. Time is easy to measure and is understood by everyone, it can play a very useful role as a guiding principle for Lean implementation. How long does it take you to process an order, deal with a claim or provide a required service to your customer?

Money, your business exists to make money, use money as a key principle to help your people "see" wastes and put a value on issues, problems and delays. If you can increase the value adding of your people and your processes you can rebalance the cost/profit equation.

Effort refers to the amount of work that we have to do to get a job done. Lean focuses on finding ways to reduce the effort required to get work done, to enable you to do more value added activities, to better serve your customers.

LEAN RULES

The Lean Rules provide guidance on dealing with people and processes. Experience has shown Lean Rules to be very helpful in delivering real gains from a Lean implementation effort.

Lean Rules – People

Fairness - the lean process needs to be fair, fair to both staff and the business.

Firmness - Once you decide how things should be done, they need to be done that way.

Consistency - Be consistent with how you deal with people, problems and issues.

Lean Rules – Processes - Look, See, Understand, Think, Do

Much of people's time in business is spent handling the "day job", doing what needs to be done, or fighting fires, working hard to keep things going. Lean techniques ask the question "What are we trying to achieve here?" and then help the questioner to see what is actually being done – the difference between the question and the answer is the gap that needs to be bridged.

Look - look closely at your processes, go to the place where work is done and,

See - see what is actually happening, how things are actually being done to service your customers, it will often be quite different to what you think is being done.

Understand - understand what is being done, what are the underlying principles that affect the outcome.

Think - What can you do to improve things? Can you "Put Out the Fires" once and for all?

Do - do something to improve the process. You don't have to make it perfect, just better than it is now.

LEAN QUESTIONS

Five simple questions will help you to drive competitiveness on your lean journey. The first three questions focus on capturing FACTS of any given situation while the last two questions are focused on making things better.

Capture the FACTS

- What are you doing?
- How are you doing it?
- Why are you doing it?

Making things better….

- Who is going to improve it?
- When?

DOING THINGS BETTER – removing waste

If Lean is about doing the right things and doing them well, with all the people in a business it is also represented as a War on Waste. Taichi Ohno of Toyota is credited with identifying the "Seven Wastes", (**Figure 2)**. Today we recognise a significant eighth waste – People, or not utilising the abilities and capabilities of our people to improve our businesses. Today we recognise many more wastes than the core eight, but these are a good starting point for a Lean journey and the effort to be more competitive through removing waste and building the capability and capacity of your business, your processes and your people.

The "Seven Wastes + 1"

Figure 2: The 7 Wastes + 1

The seven wastes are Defective Service, Over Production, Inventory, Motion, Processing, Transportation and Waiting. It is possible to identify thes wastes in a service operation, but they are often observed as being different from the manufacturing arena. **Table 1** presents the 7 Wastes +1 for both a manufacturing and an office environment. The challenge for a service business is to be able to identify the wastes within their processes, to help people see them and then to be able to take the steps required to remove the wastes and free up people and processes to do more value adding business.

In a service environment our people's time is the main resource that we have to deal with the needs of customers and the business. The more of their time that can be freed up from doing wasteful jobs, the more time that can be allocated to adding value to the customer interaction.

Table 1. Wastes in Manufacturing and Service Businesses

Type of waste	What is it?	Manufacturing	Services
Overproduction	Processing too much or too soon compared to what is required	One process churning out parts and stock building up when not needed and may not be used.	▪ Producing documents that are not used. ▪ Implementing code and features that customer wont actually use.
Waiting	Processes, Employees and customers waiting	Machine waiting on an input because previous process is not producing fast enough.	▪ Code waiting to be reviewed by one tech lead on a large team, creates backlog and poor quality ▪ Engineers waiting to be asked if they are done and not proactively taking new work.
Transportation	Movement of items more than required resulting in wasted efforts and energy and adding to cost	Moving parts or finished stock to storage and back again when needed.	▪ CC---ing too many People ▪ Moving cheques in a bank to head office before branches.
Over-Processing	Processing more than required wherein a simple approach would have done	Creating unnecessary paper work and approval processes	▪ Too many Project Management Office templates made over complex. ▪ Slow departmental responses on planning and reports requires additional chasing emails and follow up meetings to get aligned
Waste of Inventory	Holding inventory (material and information) more than required	Producing too much inventory and then needing to pay for storage or sell off excess stock.	▪ Boxes of marketing brochures never used and dumped when New features created. ▪ Poor management of shared data storage – order more space rather than clear out rubbish.
Waste of Motion	Movement of people that does not add value	Poorly laid out factory Floors where people need to walk back and forth. Changing layout can reduce waste.	▪ Teams located in different areas, phones and email are used for communication when sitting next to each other would be efficient. ▪ One printer location in company and queue forms. ▪ Travel when video conferencing can be used.
Waste of Defects	Errors, mistakes and rework	Defective individual parts or defective end products that they end up, in the bin	▪ Code defects that require unbillable fix time ▪ Insufficient up front information for a code implementation ▪ Meaning the engineer makes assumptions that are wrong.
Waste of Under-utilized People	Employees not leveraged to their own potential	Manual tasks that could be Automated allowing person to do More skilled work.	▪ Engineers bug fixing other engineers code ▪ Duplication of work due to poor processes

SO, WHERE, AND HOW, TO START?

It is important to identify a problem or issue for the team that will be both challenging and achievable.

It needs to be challenging enough to allow people to feel that they have contributed to its solution and also needs to be achievable within a reasonable timescale. If the problem or issue is too big or too difficult, then the team may fail, with ongoing negative repercussions on future improvement activities.

SILENT BRAINSTORMING

Silent Brainstorming is an innovation on the traditional brainstorming approach. The process uses Post-Its stickers to facilitate the capture of issues facing companies, either at a business level or a departmental/team level.

The process starts with the CEO or MD or senior person outlining the overall objectives of the business and the issues in general that they are facing. Each member of the team is given a pack of Post-It stickers and a pen. They are given ten minutes to write down all the issues facing them and the company in delivering on the high level objectives outlined above. Only one issue/item is allowed per sheet. The actual time given can be extended beyond the ten minutes, dependent on the level of intensity of writing by the team. No team to go through the process has yet remarked on the fact that more than ten minutes elapsed. Most cases are kept to the ten minutes guideline.

Once the time has elapsed the team are asked to put their post-its on the wall. Their natural tendency is to return to their seats at this point. They are instead asked to remain “at the wall” and to read all the post-its. Once again their tendency is to sit down when they have read the wall. They are asked to remain standing. They are asked to say if the post-its are an accurate representation of their company? They are then given a further five minutes to add any further issues that may have occurred to them. The team now are asked to find duplicate

post-its and to put duplicate ones on top of each other. This usually starts quite slowly. They are then asked to group similar themed post-its. The pace of movement increases as the process continues.

The team end up with grouped post-its under specific themes relevant to their company. The analysis of the grouped issues on the wall gives them a basis to develop responses to address the issues and in effect becomes the basis for them to prioritise and plan to improve their processes.

FORMING TEAMS

Once the issue or problem has been identified, it is time to identify who should be on the improvement team. Practical experience has shown that the first efforts at team-building are the most important. If introducing team-working to help an improvement initiative, it is probably best to pick positive, **Type A** people, with some **Type B** "wait and see" people in the early teams. Some experts suggest including **Type C** people, the "nay sayers", in early teams. We believe that this is not the most effective approach. It is usually better to achieve success with a positive or neutral group of people rather than trying to convince the "nay sayers" to change their attitude.

THE FACILITATOR

Team-working can be a new way of working for many people. How do they do it? How is it different from what went before? These and many more questions can – and do – arise.

A facilitator can be very helpful when introducing team-working, providing answers to many questions and helping people to come to terms with the new approach. The facilitator can be a member of staff, but many companies and organisations choose to use an external facilitator in the early stages, taking the opportunity to learn from experienced people and also maybe to benefit from somebody outside the organisation "breaking the ice." The outsider can often raise issues and questions that would be difficult for someone within the operation.

Once the general objective and goals of the team have been identified and the team members selected, typically the facilitator's role involves:

- Leading the first team meeting
- Helping the team select detailed projects to deliver on the objectives
- Starting the process of open discussion
- Ensuring that all team members get the opportunity to contribute
- Letting the team set its own priorities
- Moving away by devolving power and authority to the team
- Monitoring the progress of the team towards its objectives

- Praising and reinforcing achievements
- Identifying areas where additional effort are required
- Withdrawing, leaving a functioning team in place.

As people become confident in the team-working environment, the power of the team develops, as they begin to see the success of their efforts, and the results of their teamwork. People can often be surprised at their team's effectiveness, as they find solutions to issues and problems that have often been worked around or ignored for a long time.

The role of the facilitator is a delicate and important one, demanding a high level of interpersonal skills and judgement. A key task for the facilitator is to withdraw from the team, leaving the team with the skill, understanding and ability to be self-sustaining.

ESSENTIALS FOR EFFECTIVE LEAN IMPLEMENTATION

The five fundamental tools to help you and your people start your lean service journey to competitiveness.

- Process Mapping – What are you doing?
- Physical tracking – Where does information or paperwork go?
- Check Sheets – What is going wrong?
- Run Charts – Is it getting better or worse?

Tools are useful but people are fundamental to an effective Lean Implementation:

- Teams- People working together to improve!

Practical experience has shown that, if a business wants to perform at a high level, then the basics of good operational performance need to be used, throughout all areas of the business, from first customer contact, through design, service delivery,

administration and finance. These are what we call Level 1 tools, the first turn of the Spiral of Performance.

The tools of lean range from the very simple such as the Level 1 Check Sheets and Run Charts to the very sophisticated Level 3 tools such as Six Sigma and Total Productive Management. These tools and techniques are well known and available to all, but not everyone is able and ready for the hard work required to use them well.

LEVEL 1 – PROCESS and PHYSICAL MAPPING

PROCESS MAPPING

"We are a service company, we don't make anything – How can Lean Service work for us?" It is too hard to see our processes. It is much easier in a manufacturing company, where you can see the widgets, and how they are made".

Many people think it is hard to use Lean ideas and tools in a service business because you can't see the process. But, using the first core tool of Lean Service – Process Mapping, you CAN see your processes. Process Mapping focuses on two questions:

What are you doing?,
How are you doing it?

Ask your people to write down what they do to deliver their part of your service, to capture what they have to do to provide their service to their customers. People often ask "what level of detail should we write down?" or, "should we use a formal process mapping technique?". In truth the level of detail will develop, as people realise themselves that they need more detail to see how they can improve their processes. Obviously "I answer the phone and do my job", is too low a level of detail to provide any basis for improvement of the process.

The use of a roll of wall paper has been found to be very helpful when a group of people are trying to map their shared process. They can write their process steps, together, capture samples of paperwork, screen shots and procedures and can effectively create "Their Process Map". The length of the wallpaper can be rolled out until the process is fully mapped. The length of the map can often be quite alarming and astonishing and can itself act as a stimulus to action to simplify the process.

The **Process Flow** tool is designed to help people see and understand what is happening in their operation and also to help see how things can be improved.

(see **Figure 2**). Managers frequently do not have the practical experience held by their staff – we have come to rely more on education rather than experience. This knowledge gap is important, if you are trying to improve a process. Before you can identify areas for improvement, you need to know exactly what is happening. This is an ideal task for a newly created team, which can map the process in their own areas and, together, build a complete map of the process. At this stage, this exercise should be carried out without judging whether a particular step is adding value – the aim is to capture the true facts of what is happening in the operation. As an example, let's look at a fulfilment process – dealing with an order. Figure 3 represents the steps in the process.

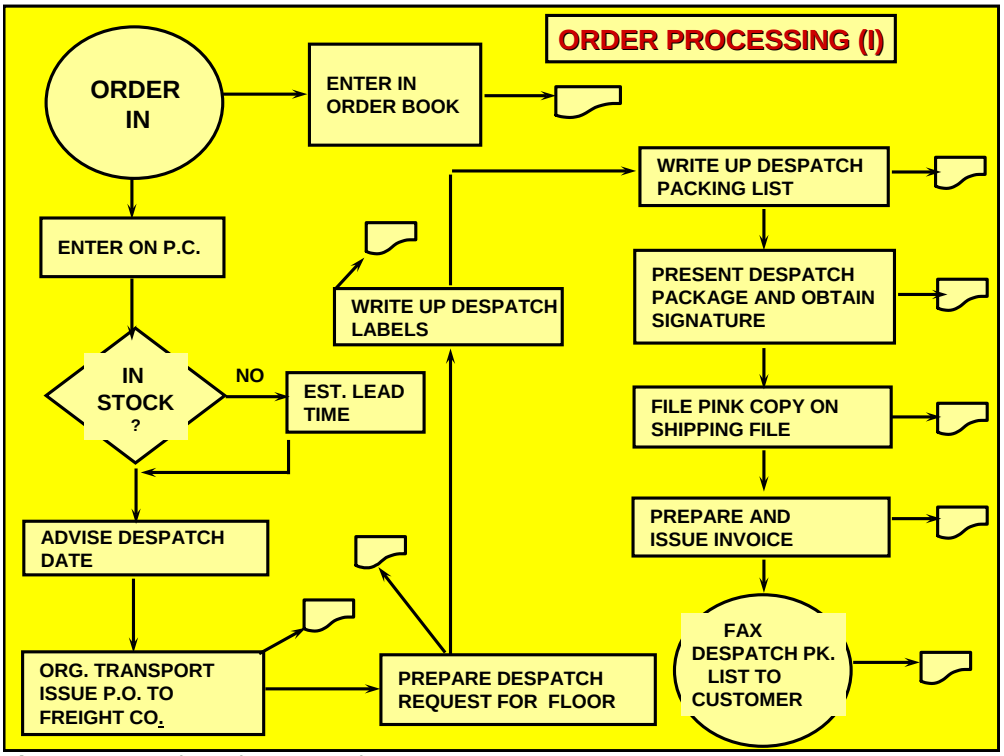


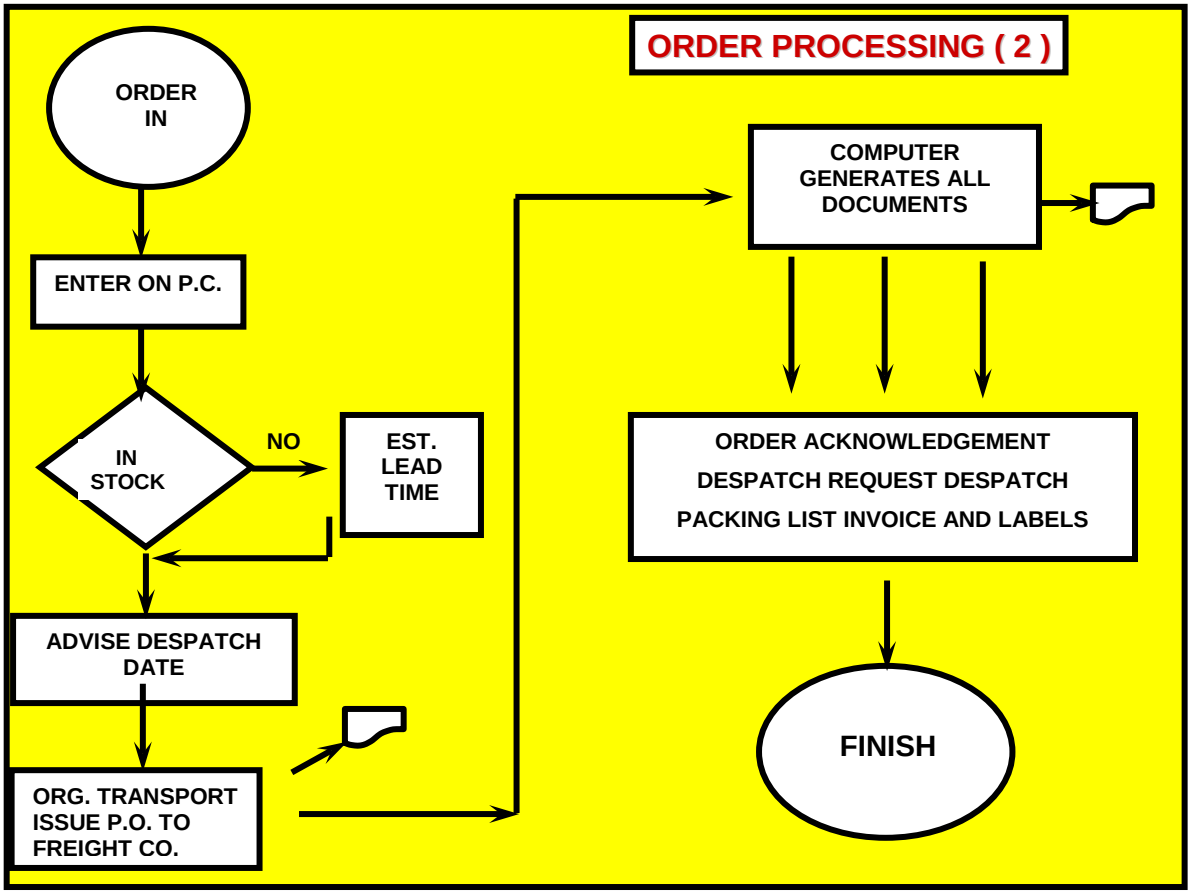
Figure 3. Steps in Order Processing

How does information move through the department? How many people work on each job? How many different work areas does each job pass through? Why? When we see the full process map and ask ourselves the "Why" question, we can begin to Think about changes that we can Do to improve the process.

The second part of the exercise is to determine the theoretical optimum process – what should be happening. The team can brainstorm this part of the exercise. The real challenge is to make the actual process used as close as possible to the

theoretical optimum. Once the actual steps of the process have been captured and the theoretical optimum has been determined, the team can move towards identifying and reducing the wasteful, non-value-added steps. A development of the process flow is shown in Figure.

Figure 4: Developed Process Flow



A lot of un-necessary steps are removed from the process. But the question raised is how can we do this?

These questions suggest the need for **Physical Flow** analysis, which, in simple terms, means looking at the physical movement of things and information within an operation. The first step in using the tool is to sketch the general layout of the area under investigation. The second step is to sketch the physical movements of information and paperwork through the process. These sketches are known as “spaghetti diagrams”, for obvious reasons. Most operations are laid out in an efficient way when they are first installed. However, over time, and with changes of

equipment or new people arriving, the physical layout of office areas can move away from the optimum.

A feature of most spaghetti diagrams is that, at the end of each movement line, there is a build up of work-in-progress (WIP) – a bundle of invoices to be processed, a batch of orders to be entered or a box of claims to be handled. In any case, there is a build up, which provides the people working there with a degree of comfort that they have work to do. However, these piles of WIP are costly, in terms of time to process jobs as well as in terms of cash. The key objective of the physical process flow exercise is to find ways to remove, or at least reduce, movements from the operation. A useful measure in the office environment, how many kilometres is paper moved each year? Obviously, no customer willingly pays for these movements, so who is paying for them? The business is, because it is paying for these wasteful movements through reduced margins.

Figure 5 below represents a typical departmental structure. Documents are passed from one department to another and back again.

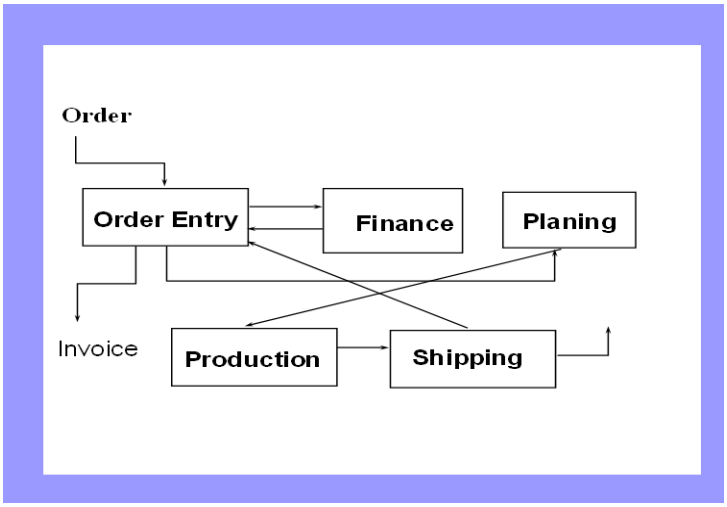


Figure 5: Physical Flow Diagram

Photo 1: Multi-functional team, located together

The work is broken up by departments. In Photo 1 we see a number of people sitting in an office together. These people work in different areas of the business, in fact they represent product design, purchasing, accounts and production planning. They have been brought together to allow them to communicate freely, to understand what is happening, not just in their "department" but in the process they are responsible for. This arrangement ensures good communication and rapid response if issues arise, and is represented in **Figure 6**.

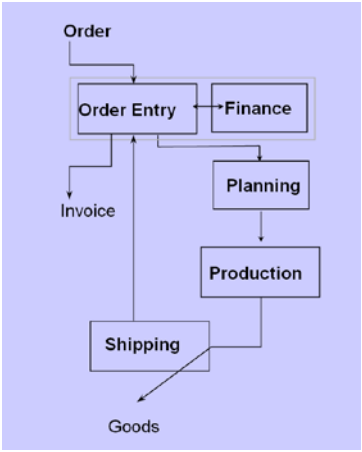


Figure 6: Physical Flow Diagram – Developed

Photo 2 shows, on the wall, all the paperwork involved in producing a batch of product. Each piece of paper was in the "System" and they were never seen grouped together in one place, at one time. The company gathered all the paperwork together form each of the engaged departments and immediately saw that there was duplication and extra effort involved for them to produce their product. They realised that they were producing vast amounts of paper as well as

their food product. You will notice that very many of the pages on the wall have Post-Its on them, indicating that the page will either be eliminated, simplified or reworked to remove un-necessary tasks from their process.

Photo 2: Process Paperwork collated

A quick way of achieving a similar insight – before going to the trouble of committing it all to paper – is to stand on a balcony, up a stairs, or in some other place where an overview of the place can be seen. People are often surprised at the impact made by looking at their operation from this unusual perspective and looking to see the numbers of people constantly walking!

The close links between the Physical Flow and Process Flow tools should be clear now. Together, they can help highlight improvement opportunities.

LEVEL 1 – CHECK SHEETS

We need to improve. We want to improve. What is holding us back? If we ask staff for the cause of delays in providing service to customers, or the reasons for defects or poor service, quite often the reason given is not the real reason for poor performance. It is an "opinion", not a "fact". It is often difficult to remember why a report or a transaction was delayed. It is very difficult to try to improve processes without having the facts of what the **hurt points** actually are, those things that make it difficult for us to do our jobs right, first time.

The **Check Sheet** is one of the simplest quality tools – and one of the most powerful. When faced with the task of improving a process, the challenge is often in knowing what is actually happening as the process runs – what are the facts of the situation rather than people's opinions, since opinions and instinct can be wrong. The check sheet provides a simple way to record the facts of the situation.

If faced with improving a sales operation, some basic facts are needed:

- Who is buying what?
- When?
- In what quantities?
- From which sales people?

If one's focus is on improving an administration group's effectiveness and efficiency, it is probably important to know:

- Who is accurate in their work and who is not?
- What types of interruptions occur?
- At what frequency?

These and many other questions are easily captured using check sheets. A check sheet captures facts without imposing a significant workload, by recording, using a simple mark on the sheet, of the number and types of errors in a process or in a service.

When developing a check sheet, consider:

- What is to be recorded?
- Over what time period?
- Who will record the data?
- Who will act on the data to improve the process?

The fourth step is probably the most important. If time and energy are spent in capturing and recording data, then action to improve the process afterwards is necessary. Otherwise, the exercise is simply an additional waste. As an example, let's look at an administration case in **Figure 7**, where a check sheet captures data on the process.

FIGURE 7: Administration Check Sheet

Telephone	IIIII IIIII IIIII II
Visitor	IIIII I
E-Mail	IIIII IIIII III
New Query	II
Rework	IIII
Other	III
Person	**J Murphy**
Date	**4/04/2012**

By looking at the check sheets for all staff in the group, one can determine whether there are problems with telephone-answering or the handling of visitors. Any improvements would then be based on facts. Experience has shown that six to seven items per check sheet – one of which should be "Other" – is an optimum. Obviously, if "Other" has many marks recorded against it, the list needs to be developed further to capture more useful information. In analysing the data from a check sheet, do not assume that, because something happens most frequently, it is the most important problem – it is merely the most frequent and certainly, because of that, deserving of attention. But one must gauge the impact of each fault to determine what, in fact, are the key issues identified by the check sheet.

Using a Check Sheet to capture "Hurt Points"

Many people are frustrated in their work. They don't have all the information they need to complete a task or they don't have all the right information. Very often the people who provide the information are not aware of the "Hurt" they are causing their colleagues. Using a check sheet to dispassionately record when something is not right gives people working in the processes a clear voice, to help themselves be heard. Very few people set out to do a bad job or to make life difficult for their colleagues. The Check Sheet provides a way to help share with each other where the **hurt points** are so they can be addressed and removed, together. The Check Sheet gives us the basic facts of what is happening in our processes.

LEVEL 1 – RUN CHARTS

The **Run Chart** presents trends over time. If an improvement process is underway, one hopes to see improvement over time, either in increased productivity or sales or in reduced defects and complaints. Many companies do not record their performance over time – in effect, every day is "another day in the mines" for their staff. There is no means of knowing whether their performance is getting better, staying the same, or even deteriorating. Run charts can be used to monitor performance on areas that are important to the business.

If customers value response time, or accuracy in paperwork, performance in these areas should be measured over time. These measures should then be made available to the people who can affect change.

> *There is no harm in letting people see what they have done – and what they have to do* Denis Keegan

With the simple inclusion of a target line, the run chart is not only a record of what performance has been achieved but also a challenge to all to reach the target. It is now a simple, but effective, motivator.

A run chart displays trends over time. It can be difficult to remember last week's performance, never mind performance two months ago. The run chart is most often used to record sales levels, outputs or complaints received but can be used for any measure that can change over time.

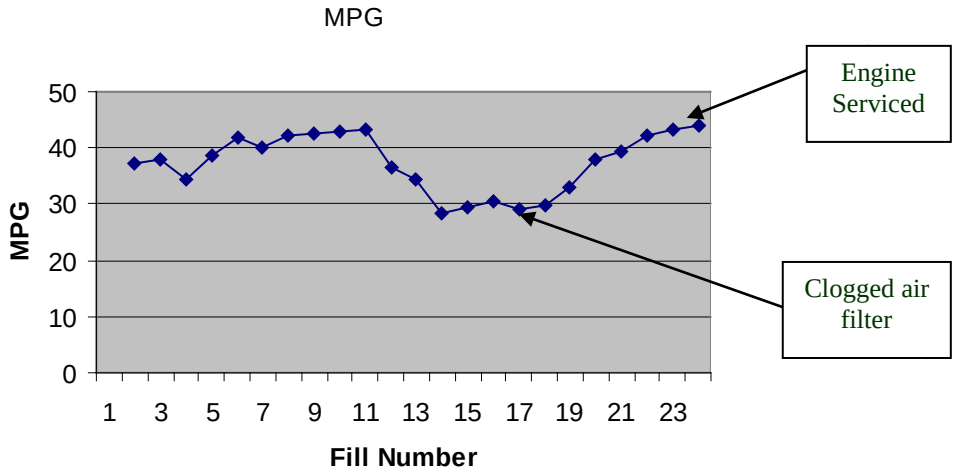
As an exercise, see whether you can visualise what the numbers in **Table 2** show.

Fill No	Date	Km	Sum Km	Litres	Station	€	MPG
1	30-Oct			21.7	ST	11.98	
2	02-Nov	277	277	20.8	E	11.42	37.1
3	05-Nov	285	562	21	T	12.53	37.8
4	09-Nov	250	812	20.2	ST	11.17	34.5
5	11-Nov	267	1079	19.2	E	11.36	38.7
6	14-Nov	312	1391	20.8	ST	12.67	41.8
7	24-Nov	218	1609	21	E	11.57	28.9
8	25-Nov	304	1913	20	T	11.99	42.3
9	03-Dec	244	2157	19.5	SH	11.51	34.8
10	04-Dec	253	2410	16.4	E	10.14	42.9
11	04-Dec	340	2750	21.8	E	12.08	43.4
12	09-Dec	272	3022	20.7	ST	12.05	36.6
13	17-Dec	268	3290	21.6	E	11.72	34.5
14	22-Dec	198	3488	19.4	ST	10.46	28.4
15	02-Feb	221	3709	20.9	E	11.26	29.4
16	03-Feb	291	4000	20.3	E	10.77	39.9
17	03-Mar	208	4208	20	E	10.55	29.0
18	16-Mar	217	4425	20.2	ST	10.38	29.9
19	23-Mar	255	4680	19.3	T	10.98	36.8
20	25-Mar	269	4949	19.7	SH	10.78	38.0
21	13-Apr	242	5191	21	E	12.4	32.1
22	15-Apr	259	5450	20	T	12.07	36.0
23	15-Apr	270	5720	19.4	T	11.07	38.7
24	16-Apr	251	5971	19.8	M	10.9	35.3

Table 2: Numeric Data Capture

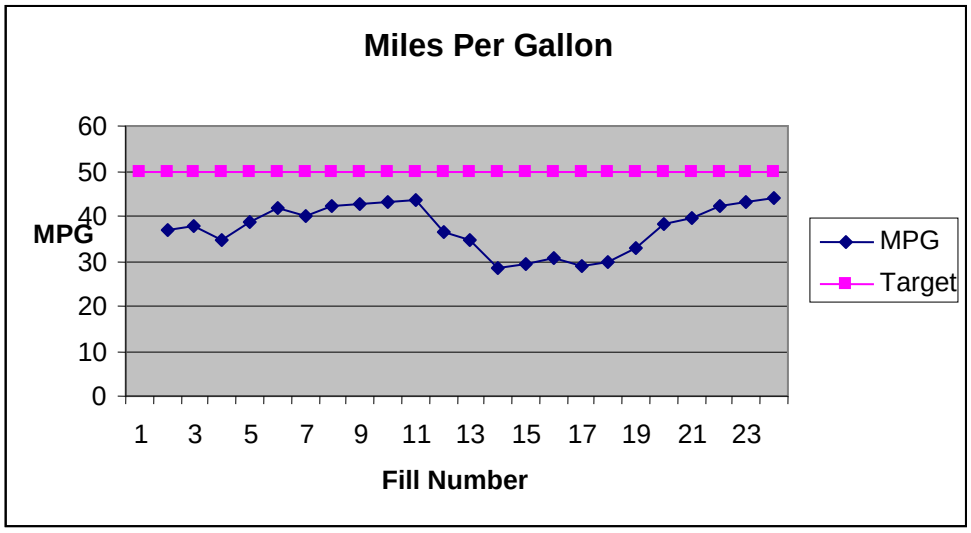
Then, look at the same data presented in a run chart, in **Figure 8**. Now, changes in performance can be seen clearly. If performance deteriorates, then questions can be asked to find out why. On a more positive note, if people have been working to improve a process, they will be able to see an improvement in performance on the run chart. This can act as a very positive reinforcement for the team.

FIGURE 8: Miles Per Gallon - Run Chart 1



The run chart can be further developed as a challenge to the team. The addition of a target line will give the team an objective, and also the means to measure progress towards this objective, as in **Figure 9**.

Figure 9: Run Chart - With Target Line



Using run charts with target lines, and highlighting key actions taken to secure improvement, may also help to develop an innovation culture in the business. The ever-present challenge is to ask what can be done next to bridge the gap between present and potential performance.

LEVEL 1 – TEAMS and PEOPLE

The Lean approach places an emphasis on teams and team-working, which is essential in today's highly competitive working environment, where the power of a well-functioning team can be the difference between success and failure. Most companies can afford to buy or lease good equipment. The difference between successful and unsuccessful companies often lies in how well they use these assets. The people working in a business or organisation add the value to its services. In the developing knowledge-based economic environment, those businesses that harness the potential of their people will thrive, those that do not will find it difficult to survive. We know this harnessing of individuals as building teams. There are clear and effective ways of bringing people together, to work together, for a common objective. This is the central point in relation to team building – people need to have a common objective, a reason to work as a team, a goal. One can often see volunteers doing work, for free, that they would never do if they were being paid, because they are working to achieve an objective, a shared goal.

Skills Register

Tools and techniques are important but, if they are to benefit an operation, they need to be used and implemented by people. Business depends on people. People work the systems and processes and computers that deliver customer needs. The skills, experiences and expertise of the people in a business will define the quality of service offering. But how can a business develop its people to allow it to operate at the highest levels of performance? It can be very difficult to identify individuals' abilities objectively. The Lean approach provides a tool known as the "**Skills Register**" to help with this process.

An example of a skills register for administration and customer support is presented in **Figure 10**.

FIGURE 10: SKILLS REGISTER

Job Area: Administration and Customer Support

Job Details	Telephone		Computer Skills			Administration		Other Skills
	Answer	Transfer	Word	Excel	System	Order Entry	Customer Complaints	
Richard								
Paddy								
Mary								
Joan								

Each staff member has a four-box square under each of the key job skill areas. The skill level of each staff member is represented by the number of filled boxes. Extend the skills register by capturing other skills that staff may have that are not directly related to their current job. You may well have staff with significant skills and experience that you are not currently availing of. The standard interpretation of the skills register is shown in **Figure 11**.

NO BOXES:	Staff member is untrained or unskilled
ONE BOX:	A basic introduction to the topic has been given
TWO BOXES:	Staff member is able to perform the task, under supervision and with support
THREE BOXES:	Staff member is largely capable of performing the task, although they may require some support and light supervision
FOUR BOXES:	Staff member is fully capable

Figure 11: Interpretation Of Skills Register

The system is very simple: gaps in skills are easily seen and recognised and can be addressed. The skills register is often used on an individual basis as part of personal development plans and can also be used in a more general way where the register is displayed in team meeting areas. This approach can be helpful where team members realise they have gaps in their skills that they can take training for.

Why People Work together

For people to work together as a team, there needs to be a reason to do so. Just bringing people together and calling them a team will not deliver teamwork. It is essential that a real reason exists, or is created, for them to work together. Without this reason, they will continue to work as they had before – as individuals. The introduction of a shared objective, one that cannot be achieved by individual action, is useful to get the attention of all concerned. A key factor for success, when trying to form a team in a business environment, is that management show an ongoing interest in the activities of the team, as well as in the progress and results of the team. Unless people see that their efforts are both significant and important, they are unlikely to put much effort into developing this alien form of working. On the other hand, if management show an interest in the effort, if they monitor progress and introduce measures to ensure team working is happening, people will respond and deliver on the benefits of team-working.

Different Types of people

People in general fall into a number of categories:

- **Type A:** Those who are inherently positive, who will try to deliver, who will take on new challenges and new ideas. These account for about 10% of a workforce.

- **Type B:** The main body of people in a workforce, at both management and operational levels, accounting for about 85% of the workforce. These people want to see how things will work out before they commit to a new way of working. When, and if, they see the new way working, they are usually happy to join in.

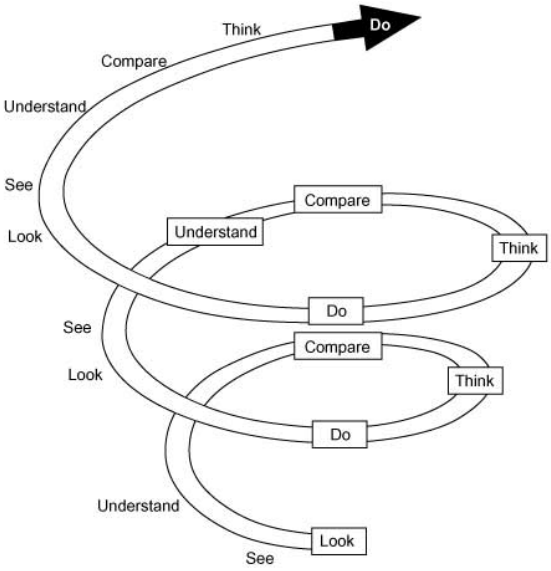
- **Type C:** The negative group, those who always seem to say “That won’t work!” Quite often these are experienced people, with lots of skill and ability. Maybe they are right, maybe the new way won’t work, because they have seen a serious flaw. Maybe they also see a solution to the flaw! This can be a hard group to win over but also a very rewarding one. Unfortunately, experience has shown that while many within this group can and do change to be positive contributors, some of these people find it impossible to embrace change and generally tend to pursue alternative careers.

LEVEL 1 – COMPETITIVENESS BENCHMARKING - Company Health Check

How do I compare? Enterprise Ireland offers a straightforward benchmarking service called the Company Health Check. This service allows you to compare your performance against your peers and to find out, objectively, where you are strong and where you are weak. We use the largest databases of relevant company information in Europe to answer your question – How do I compare?

Contact Enterprise Ireland Competitiveness Department or your Development Advisor to avail of this free service. The appendix at the back of this booklet provides you with a simple self-assessment form to start you on your benchmarking journey.

Self Assessment is the easiest and simplest form of benchmarking. It is a first step in objective diagnosis of the performance level of a business in an effort to prioritise improvement activities. This type of benchmarking is easy to do.



The difficulty with Self Assessment is the "self" part. How many people can recognise their own failings? International experience shows that, where companies use Self Assessment alone they tend to be overly positive in how they see their own performance. However, as a means to find ways to improve a business, Self Assessment can be a useful first step on the road to improved performance. The Enterprise Ireland Company Health Check is facilitated by a trained and accredited member of Enterprise Ireland staff who will help you understand the questions and facilitate your objective answers.

LEVEL 2 - The Fundamentals Underpinning Lean

The fundamentals underpinning Lean are about providing a service or making a product: **Quicker, Better, Cheaper ...Together**.
Often we see that where businesses work quicker, they are also better and, consequently, are cheaper. The key elements of Lean all work together to deliver improved performance.

In Level 1, we looked at some basic, fundamentally important tools to help achieve effectiveness and efficiency. By now, people in the operation should be comfortable with working in a team, using quality tools such as check sheets and run charts to identify issues and monitor performance and they should have experience looking at the realities of processes.

At Level 2, we move to the next level of complexity. Many of the techniques used at this stage are natural developments of the Level 1 tools. Others are new and will demand effort to understand them and to make effective use of them, see **Figure 12.**

The tools and techniques of Level 2 include:

- Development of the Physical Flow and Process Flow tools
- Different types of service delivery systems
- Simple time-saving approaches
- Maintenance

- Quality tools for the effective starting, running and improvement of processes
- Supply chains and stock management
- Clusters
- Team-building and structural development

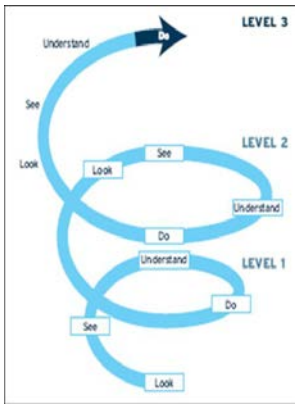
For businesses to be truly effective, they need to be able to sell their products or services. Level 2 includes a straightforward approach to developing sales, addressing forecasting and targeting and capturing new customers and sales. Understanding finance and some core measures and how they may help managers to understand and manage their operations is important. Equally, it is important to understand how bankers and potential investors view an operation, therefore Level 2 Lean tools provide some insights into financier's ratios.

Strategy is presented at the end of Level 2, because most businesses are already in a chosen sector, with products, processes and customers. They can often improve the effectiveness and efficiency of the existing business more easily than they can move the business to a new area of operation. Of course, in some circumstances, a business may find it appropriate to consider strategy at the start of Level 2.

FACILIATATED ASSESSMENT

Note that, at Level 2, Facilitated Assessment, rather than Self Assessment, is the appropriate benchmarking approach for companies at this stage of their development. The introduction of a trained facilitator into the benchmarking process can greatly increase the level of objectivity.

The facilitator will guide the company through the process, ensuring that all questions are fully explained and understood and that the company takes a realistic view of its capabilities and performance. The facilitated approach can provide a good, simple, effective and secure introduction to international benchmarking. In Europe today, thousands of companies have undergone facilitated benchmarking exercises providing databases of information that is secure, comparable and truly international using the Microscope/Probe and Benchmark Index tools.



Level 2 Tools and Techniques	
▪ Facilitated Assessment Benchmarking	▪ Practical Quality
▪ Physical & Process Flow Development	▪ Teams & Team Building
▪ Service Delivery Control Systems	▪ World Class Sales
▪ Saving Time	▪ Financial Management
▪ Maintenance of Software and Servers	▪ Supply Chain and Logistics
▪ Innovation & Service Design	▪ Strategy

Figure 12. Level 2 Tools & Techniques

LEVEL 3: TOOLS and TECHNIQUES

The business has now mastered the fundamental tools and techniques of Levels 1 and 2. It is competing well at national level and has started to sell in the world market. So, what comes next? [See **Figure 13**] By this point, both managers and staff should be aware that, although they have achieved significant improvements within their operations through their own efforts, there are some really strong operators on the world stage and that the real challenge has just begun. They will be running with the big dogs now!

At Level 3, a business should be seeking to make Continuous Improvement the bedrock of the operation. Management and staff must realise that they have two jobs to do:

- The “day job”
- To find ways to improve the effectiveness of the operation.

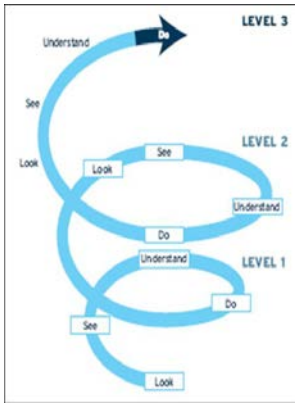
Managers can achieve real benefits for all by building this realisation and fostering the enthusiasm of all concerned within the business. Level 3 Lean tools are more challenging and can include:

- Process Benchmarking
- The 5 S system
- Six Sigma
- Business Excellence Model
- Value Management, Analysis, Engineering
- Lean Service Delivery

And finally, it is no surprise or coincidence that the best businesses in the world use or have used one or several of these approaches to achieve superior performance over the years.

Excellence is no accident, it is the result of strong leadership identifying a goal and harnessing the combined strengths and abilities of other people and the available assets to achieve that goal. By focusing people’s attention on stretch targets, the

world's best companies build their people through constant innovation. These tools and techniques support this effort. It is not magic – it is hard work – but it is rewarding for all.



Level 3 Tools and Techniques

- Process Benchmarking
- The Five Ss
- Total Productive Maintenance
- Overall Equipment Efficiency
- Six Sigma
- Business Excellence
- Value Analysis, Management and Engineering
- Lean Service Delivery
- Target Cost Management

Figure 13. Level 3. Tools & Techniques

CASE EXAMPLES

USE OF LEAN TOOLS AND TECHNIQUES
IN THE NON-MANUFACTURING AREAS OF BUSINESS.

Lean Business Offer Case Study

E.I Client	DA	Sector	Location
BMS	David Butler	Manufacturing	Longford

Consultants Name & Location	John Killeen Lean Business Systems, Limerick

Company Background

Name:	Location:	Employee #:	Turnover:

Butler Manufacturing Services is a specialist designer and manufacturer of wastewater treatment products. The company is located in Longford.

Project Objectives:

The LeanStart initiative focused on :

- Establishing a cost of sales model covering materials and labour for main products
- Developing a P&L for 2011
- Identified and Quantified improvement programmes to bring company costs back into line
- Objective was to identify improvements that would bring company into breakeven situation

Work Programme:	Leanstart
Approximate Project Duration	12 weeks
Approximate Consultancy Days	7 days
Date Completed:	9th February 2011

Project Outcome/Results:

The key improvement measure used was **Operating Expenses as a % of turnover**. This was tracked back on various P&L's to 2008. Based on the status quo, Operating Expenses will account for 64% of sales. As a result of implementing agreed initiatives this Operating Expenses will reduce to 41% of sales. The initiatives include:

- 20% Reduction in overheads
- 10% reduction in material costs
- 25% increase in productivity
- 30% increase in sales
- 5% increase on selling price

Meeting these objectives in 2011 would result in the company achieving a 10% net profit.

Lean Business Offer Case Study

E.I Client	DA	Sector	Location
Litho Circuits Ltd	Barry O'Driscoll	Manufacturing	Limerick

Consultants Name & Location	Desmond Butler; Almir Business Ltd, 2 Mungret Street, Limerick

Company Background

Name:	Location:	Employee #:	Turnover:
Litho Circuits Ltd	Limerick	11	

Litho Circuits established in 1986 is a complete PCB solution provider in the electronics industry. Litho Circuits can manage the PCB supply chain from PCB Design, Quick Turn prototypes to Production quantities, component kitting and Assembly.

Project Objectives:

The focus for the Leanstart assignment was initially introducing lean principles and lean thinking and then applying this methodology to the Order Fulfilment value stream with specific focus to the CAD Design process.
Specifically, the objectives of the Leanstart Assignment;

- Explain the Benefits of Lean Thinking,
- Understand the different types of waste,
- Define the Value Stream to develop understanding of current state,
- Improve internal communication between business functions,
- Improve the flow of information from Design to subsequent downstream activities,
- Improve company cash flow,
- Implement preventive measure to reduce the impact of the Cost of Poor Quality,
- Identify further areas of improvement.

Work Programme:	Improve internal communication and Cost Reduction project
Approximate Project Duration	12 weeks
Approximate Consultancy Days	7 days
Date Completed:	28th March 2011

Project Improvements:

1. 7 % labour cost saving as % of sales particular to US semiconductor 'complex' design projects
2. Improved communication flow resulting in a labour cost saving of 2.5% for the assembly and design functions
3. 38% reduction in the € value of design hours not billed (period Qtr 1 2011)

Project Outcome

Coordination of tasks and activities within the value stream has been improved. Roles and responsibilities are better aligned to support each project resulting in the removal of duplicated and redundant effort. 2 (two) day reduction achieved in lead-time for 'complex' semiconductor design projects.

Poka-yoke (mistake proofing) methods have been identified as part of the 'future state' design process to prevent errors reaching customers, thereby reducing the cost of poor quality.

Lean Business Offer Case Study

E.I Client	DA	Sector	Location
Erin Recycling	Maria Gavin	Waste Recycling	Sligo

Consultants Name & Location	Tecknic Performance Leaders Ltd, Dublin & Derry

Company Background

Name:	Location:	Employee #:	Turnover:
Erin Recyclers	Sligo, Co Sligo	26	

Project Objectives:

The overall aim of the project was to reduce operating costs and improve productivity at Erin Recyclers. Also to profile cost competitiveness within the wider business and to determine opportunities for additional and ongoing cost savings linked to strategic plans. The focus for the lean start was the process of order fulfilment, where customers arrive on-site to weigh and sell their recyclables. The data entry and software for this process was in the process of being updated and so a leaning out prior to being hardcoded into a new IT system was seen as very opportune.

Work Programme:	Lean Start
Approximate Project Duration	2½ Months
Approximate Consultancy Days	7 days
Date Completed:	30/03/2011

Project Outcome/Results

The value stream review of the order fulfilment process flow with the team highlighted weaknesses in waste capture and process management. The process was redesigned with value adding steps made more robust utilisation of capital equipment was improved through OEE measurement, labour productivity and shifts rearranged to improve machine uptime. Labour efficiency was measured for value adding and waste activities with the result that operations were refocused on value adding activities, i.e. running the de-polluting bay closer to capacity. The company finances were analysed and split into variable and fixed costs and assigned to appropriate cost centres. This resulted in highlighting of a significant outsourcing cost savings opportunity. The annual savings realised during this stage of the project was €40,000.

The business was also assessed for the Lean Plus programme, which identified the following areas of focus:

1. Additional Control of waste in the customer material purchase process
2. Better utilisation of de-polluting bay to maximise return on assets
3. Outsource Fleet Maintenance by competitive tender with a focus on preventative maintenance
4. Productivity and labour standards development leading to a labour efficiency KPI
5. Additional OEE KPIs on key equipment
6. Newly designed organisation structure, focusing on additional material procurement opportunities and the other challenges identified.

Annual savings of €215K have been identified for the Lean Plus programme.

Self Assessment Questionnaire

Introscope is a simple benchmarking tool, designed to introduce people working in a wide variety of businesses and organisations to the power of benchmarking. Using a sample of questions drawn from some of the best available benchmarking tools, Introscope invites you (perhaps with a few colleagues) to assess some of your organisation's key practices and performance aspects against a model of "best practice", and to discover how your assessments compare to those of hundreds of other organisations.

Start by confirming the scope of your assessment, which could be a department, site or the whole organisation – it will work at any of these levels, so long as you are consistent. If you find Introscope and its outputs useful, ask about the range of more sophisticated benchmarking tools from which you can select one suitable for your needs. You will have to invest a little more effort, but you are likely to find this well worthwhile as benchmarking results help you to shape your improvement plans with confidence.

HOW TO SCORE

You choose the statement most appropriate to your organisation/site and this gives you a score – the number in the grey band above, 1, 3, or 5.

Sometimes, you may feel that your organisation is between two statements. In this case you choose the number between the two statements, 2 or 4.

If you see differences across the organisation, where some areas are more advanced than others, it is best to assess an average position. For example,

a pilot implementation does not warrant the maximum score of five. We seek to assess your position TODAY, not where it will be when current plans and projects deliver the results you expect.

Benchmarking will only ever be of value to you if assessments are true reflections of the practices and performance of the organisation as it is NOW.

THE INTROSCOPE QUESTIONS

INTROScope questions are drawn from the longer questionnaire scripts used by five of the best available benchmarking tools:

- Manufacturing Microscope
- Service Microscope
- The Micro Business Review
- Manufacturing PROBE
- Service PROBE

		1	2	3
1	**Role of leadership in developing customer-focused culture**	Little attention paid by top management	Supported by top management, delegated down	Top management visibly promotes and actively participates
2	**Service meeting customer needs**	Service does not consistently meet the customer needs	Service generally meets customer needs	Service produces results that consistently meet and exceed customer needs
3	**Quality performance, relative to sector**	Poor overall quality record, compared to sector	Achieved levels about equal to the sector standard	Achieved a reputation for excellence in quality services that is notable in the sector and significantly better than the competition
4	**The time it takes**	We lose some business because it takes longer than customers want to wait to deliver our services	Our speed is neither a strength nor a weakness for us in gaining business	We win business because we are quicker than the competition
5	**Quality mind-set**	Problems will happen. Deal with customer complaints.	Inspection and control with some data collection.	Total quality mindset. Quality is everyone's job, and employees take ownership of process.
6	**Training and education**	Ad hoc, no plan	Some skills and development training for all employees	More than 5% of each employee's time devoted to training with strong emphasis on quality
7	**Problem-solving**	Crisis mindset, confusion, finger-pointing	System for recognizing and responding to problems, emphasis on process not people, teamwork	Problems viewed as opportunities for further improvement, employees empowered to correct
8	**Employee morale**	Pressure and stress, anxiety about future, cynicism	Stability, status quo or moderate progress, occasional stress situations	Controlled environment, growth opportunities, consensus on direction, optimism and confidence.
9	**Innovativeness**	No recent innovations in service concept and process	Regular innovations in service and an occasional major breakthrough innovation	Many innovations; recognised as a leading innovator in segment
10	**New service design and development process**	No identifiable process for improving existing services or for new service development	Ad hoc basis; services developed and improved regularly but no set process	Formal and reproducible process for developing new and enhancing existing services
11	**Management of business processes**	No attention to business processes (for example, customer billing	Key processes defined and mapped; initial steps taken toward redesigning	Key business processes managed and redesigned where needed; process owners in place; process

		1	2	3
		process)	and improving these processes	performance measured
12	**Reliability of Office equipment and software**	We only maintain things when they break down. Perhaps this is why we have frequent problems with equipment (computers; equipment used in delivery of our services)	Maintenance is carried out to the maker's instructions. We plan time for this in order to reduce the risk of failure. We have adequate data security and back-up procedures	We take maintenance seriously. We try to anticipate problems and are prepared to invest time/money to prevent them. The people who use the equipment day to day take responsibility for looking after it
13	**Housekeeping**	Cluttered and disruptive	Organised	Clean, orderly, minimum work-in-progress, self-maintained, always 'tour ready'.
14	**Relationships with Suppliers**	Many vendors, seek low bid, no certification programme	A few certified suppliers, Just-in-Time for hardware and consumables	Partnerships with certified suppliers, Just-in-Time deliveries, involved in service and process design improvements
15	**Service Provision Operating costs**	Service provision costs greater than the competition	Competitive	Service provision costs lowest in the industry
16	**Level of customer satisfaction**	Customer expectation often not met; some customer complaints	Little customer dissatisfaction; expectations met, but rarely exceeded	Many delighted customers; customers will enthusiastically recommend the service/product to others; expectations often exceeded
17	**Customer Satisfaction measurement**	Limited measurement of customer satisfaction	Regular measurement of customer satisfaction in large, broad-based samples of customers	Careful identification of the dimensions of customer satisfaction by segment, using a broad range of measurement tools
18	**Performance measurement and reporting**	By costs and sales volumes (accounting/finance-driven	By costs and non-financial measures of process outcomes	Using multiple measures (a balanced scorecard such as customer satisfaction, market share, employee morale and financial)

Enterprise Ireland's Lean Business Offer

Enterprise Ireland's core mission is to work in partnership with its client companies to develop a sustainable competitive advantage leading to a significant increase in profitable sales, exports and employment. Lean tools and techniques are helping companies across the globe to address competitiveness issues within their business, building the capability of their people to identify issues and improve their operations. Enterprise Ireland's Lean Business Offer is designed to encourage clients to adopt Lean business principles in their organisation to increase competitiveness. The programme is based on 3 levels of intensity of interaction with clients.

LeanStart: focus on value

A short in-company assignment of up to 7 days by an external business development consultant, which will introduce Lean principles and agile processes and complete a specific cost reduction project. Assignments typically extend over eight weeks.

LeanPlus: performance improvement

A medium-scale business process improvement project by an external business development consultant, which will result in sustained use by the company of Lean techniques and related methodologies and will achieve significant measurable gains in company capabilities and competitiveness. Assignments will typically be not less than 6 months duration.

LeanTransform: business transformation

An extensive, holistic company transformation programme by an external consultancy team of international reputation. It will embed the culture and competences in the company necessary for on-going competitiveness gains, sustainable continuous improvement and business transformation across the business and its supply chain. Assignments will typically extend for at least 1 year. The assignment is preceded by a diagnostic evaluation.

Enterprise Ireland - Lean Business Offer

Lean Programme	Project Summary	Key outcomes	Eligible cost elements	Client Project cost	EI grant
Lean-Start	Short cost-reduction project delivered by external Lean provider. Introducing basic Lean principles and techniques 7 consultancy days Assignment duration ~ 8-12 weeks.	Cost reduction targets achieved. 'Lean' approach successfully piloted. Foundation for further lean or productivity project.	'Lean' consultancy Fee rates at max. €900 per day	€6300	€3150
Lean-Plus	Medium-scale business improvement project (s) delivered by external Lean provider. Significant learning and use by company of Lean techniques, and/or other proven business process improvement methodology which can deliver cost reduction. Typically 30 day (in company) assignment days over 6-9 month period.	Significant productivity improvement targets achieved. Embedding of business improvement culture and lean techniques; cohort of trained staff. Programme to pursue company-wide improvement	Lean' (& specialist) training fees at max. €900 per day. Cost of company 'lean project champion' must not exceed external trainer costs or €20k	Up to €70 k	Up to 50%
Lean Transform	Holistic company transformation programme by external consultancy team of international reputation. 1-2 year project duration.	Company-wide transformation in culture and performance. Business improvement and productivity targets achieved, and sustainable continuous improvement programme established, across the business and its supply chain.	Training fees (at max. €900 per day), training costs, company staff costs and other costs as may be approved by EI Investment Committee.	>x €100k	As set by EI InvestmentCommittee. < 50%

Department Contacts

Interested companies should contact their Development Advisor, or

The Lean Programme

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Company Health Check

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National HQ Entrepreneurship & Regional Development		(061) 777 000	(061) 777 001	4500 Atlantic Avenue, Westpark, Shannon , Co. Clare
Dublin/Mid East	Dublin	(01) 727 2000	(01) 727 2020	The Plaza, East Point Business Park, Dublin 3
Midlands	Athlone	(090) 648 7100	(090) 648 7101	Auburn, Dublin Road, Athlone, Co Westmwath
North East	Dundalk	(042) 935 4400	(042) 935 4401	Cinnabar Industrial Park, Dundalk, Co Louth
North West	Sligo	(071) 915 9700	(071) 915 9701	Finisklin Business Park, Sligo
	Letterkenny	(074) 916 9800	(074) 916 9380	Portland House, Port Road, Letterkenny, Co Donegal
Mid West	Shannon	(061) 777 000	(061) 777 001	4500 Atlantic Avenue, Westpark, Shannon, Co. Clare
	Tralee	(066) 714 9394	(066) 714 9380	13/14 Denny Street, Tralee, Co Kerry
South/South East	Cork	(021) 480 0200	(021 480 0271	Industrial House, Rossa Avenue, Bishopstown, Cork
	Waterford	(051) 333 500	(051) 333 501	Waterford Industrial Park, Cork Road , Waterford
West	Galway	(091) 735 900	(091) 735 902	Mervue Business Park, Galway