**LITTLE, BUT LEAN**

**Investigating the implementation of lean in smaller organisations**

Organisations featured in this edition include: Toyota, NHS Blood and Transplant, SCGM, Zingerman’s Mail Order, Black Widow

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- **Family value:** Family owned and run Black Widow manufactures vehicle storage solutions in Australia. Jason Oliver explains how family ties and dynamics can influence a lean implementation.

- **Mailed to order:** To be small often means to be nimbler and more responsive by nature. Tom Root discusses how US-based Zingerman’s Mail Order adapts to fluctuating demand.

- **The future of social housing:** One of the biggest challenges that social housing in the UK faces is streamlining the maintenance of buildings. But lean can help, says Cardiff Metropolitan University’s Nick Rich.

- **From 84 to 48:** Will Stirling reports on Toyota’s challenge of increasing volume by 40% at its Deeside plant in the UK without significant capital investment.

- **The Healthcare Watch:** NHS Blood and Transplant must ensure a reliable supply of blood and blood products to hospital around the United Kingdom. Joy Furnival, Debbie Camouche and Vaughan Sydenham explain how lean is helping the organisation deliver.
We are all familiar with the saying “Good things come in small packages”. My favourite version, I have to admit, is the Italian one. Not surprisingly, it has to do with wine. *Nella botta piccola c’è il vino buono*, we say back home – “Good wine comes in small casks”.

We live in a society where more is too often considered better than less.

Consumerism is our mantra, and we seem to be naturally drawn to think that the bigger the action we take, the house we live in, the statement we make, the money we earn, the better it is.

However, **when things don’t work out, the only big thing we are left with is our disappointment**. A simpler, more humble and spartan way of living would do us good.

Size is not necessarily everything. Just ask the Trojans: I bet they were very happy with their big present at first, until they figured out it was the vehicle for the city’s demise. I think we can all agree in saying that a hobbyhorse would have been better for them!

In business, too, *we tend to think that larger organisations have a better chance to succeed*. They have access to resources, both human and financial. They are less vulnerable than their smaller counterparts. We often hear that lean is more easily applied in large enterprises, and that their size makes streamlining and standardising processes a pressing need.

**Lack of resource can represent a big incentive to start a lean journey**

But smaller organisations have a couple of aces up their sleeves when it comes to lean.

First of all, they are naturally nimbler and more responsive entities. Secondly, in a small environment where everybody knows everybody, it is much easier to develop shared goals and nurture the creation of a culture of continuous improvement.

And, of course, lack of resource can represent a big incentive to start a lean journey.

In this issue, Lean Management Journal features a case study of an Australian family-run company called Black Widow, which will help us to understand how family ties and dynamics can impact on the way lean thinking is implemented.

We also speak with Zingerman’s Mail Order, based in Michigan, who will discuss the challenges posed by a volatile employment base to an SME trying to lean out.

In every area of the world, small and medium sized businesses outnumber large companies and corporations. In the European Union alone, over 20 million SMEs represent 99% of businesses.

**Imagine the untapped potential these companies represent.** Even if there were only a small percentage increase in the number using the guidance of lean thinking to thrive, the gains in terms of innovation, productivity and growth would be incredible.

Here’s another task for the lean community then: encourage more SMEs to realise the potential of lean.

Happy reading,

Roberto Priolo

Editor, Lean Management Journal
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Canadian Hospital Trains Staff In Lean

Ontario, Canada based Lake of the Woods District Hospital is lean training staff to improve the organisation’s performance and efficiency levels. Much of the focus will be on identifying inefficiencies, but an effort will also be made to find out what equipment is necessary. Red tagging will be used. CEO Mark Balcaen explains: “What red tagging does is it shows that we have a lot of stuff that sits here for years and never gets used. In general, the lean training is giving staff and managers the tools they need to reduce inefficiency and streamlining our processes.”

Ontario Council To Review Its Processes

The Brighton Council in Ontario, Canada, decided to carry out a review of its service delivery process. The report will be presented to the committee in January 2014. The Mayor of Brighton, Mark Walas, commented: “In this time of increasing fiscal constraint and increasingly complex regulatory regimes, it is the duty of Council and staff to ensure that Brighton residents receive the most efficient, safe and cost-effective services possible. It is my hope that this review will enable us to do that.”

GM Trains Its African Parts Dealers

Carmaker General Motors explained parts dealers in Sub-Saharan Africa how important they are in delivering value to customers at a three-day workshop. Dealers learned about GM Difference, the means through which the organisation hopes to change the way services are delivered. The session was also designed to give dealers the skills they need to manage parts for the new Isuzu Pick-up – for example, it taught them about a live-update system they can use to order parts from the warehouse. Kevin Ackerberg, GM business manager for Sub-Saharan Africa, said: “It was truly important for the Dealers to meet the GM aftersales team at Parts & Accessories. With the implementation of the skills and experience gained through the workshop, they are on course to achieve even higher standards of customer service.”

Number Of Six Sigma Job Ads Grows

Executive recruiting firm The Avery Point Group published a study of over 7,000 web job postings, which revealed that the demand for continuous improvement professionals is still high. The research found that the combined demand for lean and six sigma for the third consecutive year remained more than double 2010’s levels and stayed almost flat to last year’s overall talent demand levels. For the first time since the firm started putting together this study almost a decade ago, demand for six sigma talent improved considerably (+27%, with no mention of lean). Six sigma also became an important feature in lean job postings. However, The Avery Point Group found that demand for lean still exceeds six sigma by over 24% (last year it was 68%).

If you have any news that you think would interest and benefit the lean community please let us know. Send submissions to the commissioning editor Roberto Priolo: r.priolo@sayonemedia.com
Our experienced editorial board members contribute to the journal providing comment against articles and guiding the coverage of subject matter.

More information on our editorial board, their experience, and views on lean is available on the LMJ website: www.leanmj.com
This issue of the Lean Management Journal proves to be another interesting edition as it explores how lean is adopted and adapted to suit the needs of small and medium sized enterprises.

There is a general perception that, given their size, SMEs are altogether more “inherently lean”. My previous boss used to say that you can tell how effective an organisation is by asking the question “How many people does it take to change a light bulb?”

In larger, more bureaucratic organisations, even such a simple task can involve many, as you seek to raise the issue, request a purchase order to pay for a new bulb, despatch a team to solve the problem, and then pay for the work that (you hope) will one day be completed. The whole process may take weeks and involve much nagging. The smaller the organisation, the more likely you are to spot that the light bulb needs replacing and have someone, who cares enough and is empowered enough, who just goes ahead and changes it.

If we follow that logic through, the smaller the enterprise the easier it is for all employees to share the same purpose and vision for the company. It should be easier for the senior team to be closer to “where the work happens”, to know the employees that work for them personally and to be closer to their customers to better understand what they value and need. When teams share a common purpose and desire to achieve, people are more likely to help each other out, job rotation increases and everyone has a better understanding of the organisation’s end to end value stream. All of these scenarios, we know, are desirable elements of a lean enterprise.

Does that mean that SMEs cannot benefit from the application of a lean approach? Of course not! SMEs are often so “lean” (lean in the worst sense of the word i.e. resource poor) that everyone who works within them is completely overloaded! Corners are cut, mistakes are made and everyone is so busy there is no time to understand what’s happening, conduct root cause analysis, improve and then analyse and embed that improvement. There never seems to be the time and space available in order to reflect and plan for the future.

This issue will explore how SMEs can and have benefited from the standards and structure that a lean approach provides. It will explore the challenges that SMEs face when adopting lean practices and will share how a number of different organisations have creatively met these challenges. Most importantly, it will remind us that no matter what size an organisation is, great things can always be gleaned by giving employees the time, space and opportunity to stop, reflect and improve their working practices - that when working, it’s not only your job to do a job, but to get better at doing that job.
Bite-sized lean

The European Regions for Innovative Productivity project was established to develop a lean change and implementation methodology that is suitable for small and medium sized organisations, which often find it difficult to implement lean tools and sustain results. A team of researchers from Norway and the UK describes this “bite-sized” approach to lean thinking by presenting two case studies.

A recent European Commission report identified that 99% of Europe’s non-financial companies are small and medium sized enterprises (SMEs), which account for 67% of employment in the European Union.

However, SMEs have lower labour productivity and lower profitability than their large counterparts. The aim of the EU-funded European Regions for Innovative Productivity (ERIP) project was to develop and test a methodology to help SMEs improve their competitiveness through lean change and implementation.

The initiative, which was funded through the Interreg North Sea Region Programme, was undertaken in the period 2008-2011. Collaborators came from Belgium, Germany, Holland, Norway, Sweden and the UK. There was an Innovative Productivity Centre (IPC) created in each country, which comprised an exemplar company, a regional development agency and an academic partner. Each IPC provided knowledge, training support and networking opportunities within its region. The overall project provided a mechanism for transnational collaboration. The method was applied in 24 companies.

The ERIP project includes collaborators from six countries from the North Sea region of Europe. Two of the regions (Norway and the UK) modified this methodology to make the use of staff time more manageable. Here are the authors of the piece:

Daryl John Powell
Institute of Production and Quality Engineering, Norwegian University of Science and Technology, Trondheim, Norway

Chris Hicks
Newcastle University Business School, United Kingdom

Tom McGovern
Newcastle University Business School, United Kingdom

Adrian Small
Newcastle University Business School, United Kingdom
In 1996, the UK Department of Trade and Industry supported the establishment of the Industry Forum by the Society of Motor Manufacturers and Traders. This was supported by the major automotive manufacturers. They seconded “Master Engineers” who were experts in lean production and who trained staff from large companies in best practice manufacturing tools and techniques.

Each Master Class provided a team with 15 days of shop floor-based, hands-on training in lean. The “common approach toolkit” included: the “building blocks” (5S, 7 wastes, standardised work and visual management); and supporting tools (data analysis, problem solving, set-up improvement and line balance). The objective was to enable companies to make significant improvements in quality, cost and delivery.

SMEs lack the resources required for such an improvement programme. The ERIP methodology was developed to provide similar training in a format that met their requirements (see Figure 1). It placed an emphasis on sharing knowledge of lean practices amongst the SMEs in each IPC region. This approach promoted networking between the companies that empowered internal change agents to train each other rather than having to rely on external change agents.

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**Figure 1: ERIP Lean Change Methodology (LCM)**

1. **Prepare for change**
   - S1. Formal Agreement
   - S2. Organize for change/diagnostic
   - S3. Learn about Lean

2. **Step by step improvement**
   - S4. Local area diagnostics
   - S5. Local improvements
   - S6. Kaizen showcase

3. **Make improvements sustainable**
   - S7. Rollout
   - S8. Networking and benchmarking
   - S9. Install management review framework
This methodology was tested in 24 SMEs throughout the North Sea region.

However, in both the Norwegian and UK SMEs, the ERIP methodology proved difficult to apply. The key problem was freeing staff to participate in the training. As a consequence, the workshops within the ERIP lean change methodology were spread over a longer time period to produce a “BiteSize” approach. Both the ERIP LCM and the BiteSize methodology were based on the IF Master Class, which uses the PDCA cycle and comprises pre-diagnostic, diagnostic and improvement workshops.

The BiteSize workshops in the UK (see Figure 2) were delivered in half-day sessions rather than as a 15-day block as used by Master Classes and the LCM. The Norwegian IPC’s BiteSize approach comprised a half-day pre-diagnostic workshop, a two-day diagnostic workshop and three one-day improvement workshops. This variation was necessary to meet the requirements of the SMEs in both countries.

**Pre-diagnostic workshop (UK 1 day, Norway ½ day)**
The pre-diagnostic phase included an initial meeting with company management. A standard presentation outlined the lean philosophy and the potential benefits of continuous improvement. The owner/general manager was required to demonstrate commitment to the project by signing a contract and by identifying a change agent(s) to lead the improvement activity.

**Diagnostic workshop (UK 3 x ½ days, Norway 2 x ½ days)**
The next step was to determine the area for improvement and to identify appropriate KPIs to measure success. These were selected from the seven UK DTI measures (floor space utilisation, value added per part, stock turns, OEE, not-right-first-time, schedule achievement and operator productivity). However, in many of the 24 ERIP SMEs, these fundamental KPIs were not being collected or used. Therefore, in some case these were replaced with other measures that were being routinely collected. The overall objective of the diagnostic workshop was to devise a plan for the subsequent improvement activities.

**Improvement workshop (UK 4 x ½ days, Norway 4 x ½ days)**
Lean tools, such as 5S, waste reduction, process mapping and layout reorganisation, were applied within a PDCA cycle. These activities focused on the implementation of lean practices that acted as countermeasures to the problems identified during the diagnosis. For example, standard work was applied to reduce and eliminate variation in processes, and the single-minute exchange of dies (SMED) system was applied to reduce set-up and changeover times to improve flow.
CASE STUDY ONE: HAGEN TREINDUSTRI, NORWAY

Hagen is a producer of residential staircases and produces a broad spectrum of customised solutions. It was established in 1934. It has approximately 100 employees and an annual turnover of £11 million (2010). The organisation serves the domestic Norwegian market, but also exports to Sweden. Its strategy is to combine high technology with craftsmanship. It has recently introduced robotics, CNC and automatic guided vehicles within its factory. This lean intervention was led by the technology and process development manager at Hagen and researchers from the Norwegian University of Science and Technology and SINTEF.

Pre-Diagnostic Meeting (½ day)
An initial half-day meeting was held in order to identify current challenges and problem areas on the shop floor. Having gained the interest and commitment of the management, a formal agreement was made between the company and the research team. Primary issues for improvement were identified, which were mainly related to quality.

Diagnostic Phase (2 x ½ days)
A two-day diagnostic workshop was carried out to introduce the team to lean and the PDCA cycle. This was subsequently used to identify the root causes of the most prevalent problems. Team members included the production manager, logistics manager and process engineer. Initial measurements of not-right-first-time were 31%. By using the PDCA cycle, it was quickly identified that the quality problems were due to the unavailability and poor conditions of tooling.

Improvement Workshop (4 x ½ days)
The organisation implemented 5S and visual management to eliminate several of the root causes of the quality problems. A pilot area was selected for an implementation, which was followed by a full-scale deployment throughout the factory. Hagen also developed a simple visual control board that was used daily to highlight and solve problems. Since the introduction of lean, NRFT improved by 10%, to 21%, while OEE increased by 25%.
The approach concentrated on achieving improved performance. It proved to be much more effective in deploying lean change in small companies, but the companies did require external support to achieve sustainable continuous improvement.

CASE STUDY TWO: SHOECO, UK
ShoeCo, established in 1947, is a family owned and controlled firm that produces orthotic equipment for the healthcare sector. The organisation delivers services and equipment to the NHS and the private sector on a national scale. It employed 167 direct and 60 indirect employees and had a turnover of £12.5 million in 2010. The lean implementation here was led by an external change agent from the Manufacturing Advisory Service (MAS) and researchers from NUBS.

Pre-Diagnostic Meeting (1 day)
The MAS engineer met the management team to outline the ERIP project and its potential benefits. He toured the factory and had discussions with shop floor employees about their work and the problems and the constraints that they faced. This was followed by a productivity needs analysis (PNA), which identified key performance measures, a manufacturing needs analysis (MNA) to evaluate plant processes and identify appropriate lean tools and metrics, and a training needs analysis (TNA) to identify staff development requirements.

The MAS engineer analysed the outcomes after the pre-diagnostic meeting and shortlisted a number of areas where improvements could be made: inventory management, purchasing of inventory and how the shop floor was organised and run. These issues became the focus of the diagnostic.

Diagnostic Phase (3 x ½ days)
Team members included the production manager (full time), the team leader, the assistant team leader, and a technician. They were taught about lean, particularly the seven wastes. The diagnostic identified that the floor space needed to be utilised more efficiently and that procedures were required to control inventory and its release onto the shop floor. These issues became the focus of the workshop.

Improvement Workshop (4 X ½ days)
The flow of materials was mapped to identify problem areas that would be the focus of the improvement activities that removed excess inventory from the shop floor and streamlined flow. Stores personnel and shop floor employees investigated inventory control and found that releasing inventory as kits per job helped reduce material wastage by 30%. A one day check was then carried out to support the team once the workshop had been completed. A final one-day meeting was held to review the work and to identify the outcomes for the company.

DISCUSSION AND CONCLUSION
The ERIP project developed a methodology based upon the format of the Industry Forum Master Class that satisfied the requirements of SMEs. The ERIP Lean Change Methodology was based upon a networking model in which change agents within each Innovative Productivity Centre trained each other with the support of an external change agent.

However, this methodology proved to be problematic in that the diagnostic workshop was intended to last for three consecutive days and improvement workshops for five consecutive days. The lack of available human resources and time meant that working to the ERIP methodology would have hindered work within these small organisations.

Thus, a BiteSize approach that spread activities over a longer period was developed, which continued to be based on the core three phases (pre-diagnostic, diagnostic and improvement workshops). The ERIP LCM focused on training the change agents so that they would facilitate continuous improvement.

The approach concentrated on achieving improved performance. It proved to be much more effective in deploying lean change in small companies, but the companies did require external support from an IPC or an external change agent to achieve sustainable continuous improvement.

FURTHER READING

Vehicle storage solutions manufacturer Black Widow Enterprises faces the challenges that most small, family-run businesses need to deal with. CEO Jason Oliver speaks with Roberto Priolo about the application of lean in small organisations and about what it means to gain leadership buy-in when your boss is your own father.

Roberto Priolo: Tell us a bit about Black Widow’s lean journey.

Jason Oliver: Years ago, while on a trip to Singapore, I came across the book *The Toyota Way* and decided to read it. A lot of it made sense. I took it back to Black Widow and talked about it with my father, who was then very hands on in the business. He said: ‘We are not going to do that, it is just rubbish!’ It’s the common story of resistance to change in favor of a more traditional batch and queue system.

A year or two later, we ran into trouble with cash flow and our lead times started to increase. It seemed we just couldn’t get the product out of the door and find the efficiencies that we needed. At that moment, I suggested lean again – but that attempt failed, too.

In the meantime I had started to contact a few TAFE training providers [which award certificates for lean manufacturing in Australia] and asked them to come in to provide training on site. Again, I had to deal with my father’s resistance.

But after another year, he finally agreed to give lean a try. ‘It can’t get much worse than this,’ he said. We had got to that shut-up-and-do-it point. We launched the implementation, with a monthly visit to our site from the training provider to teach us the fundamentals of lean.
We cut all overtime, went back to standard 38-hour weeks from 45-hour weeks (cutting all overtime wages) and got 40% more products out, with three people less working with us. There were very big wins in that first year.

RP: What were the quick wins you got in the first year?
JO: Black Widow’s productivity went up 40%. We moved from a batch and queue system to one piece flow and we introduced standard work. That created a lot of efficiencies. At the time, we were able to get 40% more production out with three less staff – we went from 18 to 15 employees. Those who left were the troublemakers, those who resisted. As soon as we made them accountable and measured them against standard work they couldn’t handle it and decided to go.

We cut all overtime, went back to standard 38-hour weeks from 45-hour weeks (cutting all overtime wages) and got 40% more products out, with three people less working with us. There were very big wins in that first year.

RP: What are the main challenges you face as a business?
JO: Ours is a pretty unique product, which we supply to a niche market. In the past we only had one major competitor, based on the other side of Australia. When we started lean, we had a 50% market share. That company is no longer in business, but four or five other competitors have now popped up. We are faced with competition from more angles (the Chinese included), so we always need to find ways to innovate and make better products.

Lean is challenging us every day to push forward and keep those competitors out of this limited market. We need to keep ourselves relevant to our customers.

RP: How often do you create new products? Is lean applied to your product development activities as well?
JO: My father may be a little old school, but new ideas and innovation are definitely his forte. We are very lucky to have him in the organisation.

We launch six to ten new products per year. Our weakness is not coming up with new ideas, but going through the product development process and then commercialising our products.
We have often found ourselves trying to work on too many products at any one time and not getting any of them done. When we do get them done, there are some basic things, like instructions and bills of material that should be in place but are not. Team leaders then have to sort it out. For the first six to 12 months of any product we launch, we are often facing big difficulties and sometimes lose market share because of that.

About 12 months ago, we started to benchmark against other companies (we went on a tour of a tier 1 Toyota supplier, for example) — we met their engineering manager who had had Toyota come out and step into the organisation’s product development process, which I asked them if I could borrow.

I applied that system to our own process. We are turning products around with a lot more clarity, because we have a structured approach. We have the next six months worth of engineering and development time booked out and we are working on two projects at the time.

Essentially, we are working products through and taking them to market in a more prepared and faster way. For our latest product, for instance, we spent a lot more time in the design phase than usual, working on lean before releasing the item to the shop floor. It’s only been in the market for a month, but we were definitely more efficient in its production and smoother in its release and launch.

“Lean is challenging us every day to push forward and keep those competitors out of this limited market. We need to keep ourselves relevant to our customers”

RP: What are the challenges that you face as an SME trying to apply lean thinking?

JO: Bigger players have off line resources (process engineers who can study the process, financial backing to invest in equipment, etc). On the flip side, small companies are not slowed down by bureaucracy, approval processes, and red tape. They can just get on and do it, because they are more nimble and reactive. We did find this to be an advantage for us. I do a lot of factory tours and talk to a lot of people: many have been very impressed by some of the results we have got. ‘We wish we were a small company… just to get it done,’ they tell us.

What I’d say is that lean has given structure to Black Widow’s growth. Over the years we have doubled our workforce.

RP: What impact do family ties and dynamics have on the way lean is implemented? Culture-wise, are they a challenge or a point of strength?

JO: Family businesses are always fun, but also present many challenges. Lean, when applied, is one of them. My personal view is that in family businesses it is common to see a father or grandfather who are very old school and set in their ways, while the young generation tends to be too ambitious at times.

My father has pulled me back on a number of occasions, when I was going too far. Family dynamics have slowed us down too much in the past, but have also helped to strike the right balance between the aspirations and ideas of two very different generations. I found it challenging to have my father in the business. In my opinion, companies could often get traction a lot quicker if they weren’t held back by this kind of situation.

RP: Does camaraderie have a role to play in the implementation of lean in a small organisation?

JO: For sure. Thinking back at that time, five years ago, I can honestly say our business culture was not good. Half of the group was hard working, the rest was made of bullies and even company detractors. That’s old school
We are working products through and taking them to market in a more prepared and faster way. For our latest product, for instance, we spent a lot more time in the design phase than usual, working on lean before releasing the item to shop floor. It’s only been in the market for a month, but we were definitely more efficient in its production and smoother in its release and launch.

In the early days I think I was a little too soft with lean. I didn’t tell people to either get on board or get out. In hindsight, I should have been stricter. Once the more problematic staff left, engaging the rest was easy: they were loyal to each other and took part in fostering a new culture. We soon found out that this culture was self-reinforcing. We had high turnover of employees back then, while now most of our staff have been with us for a good three years. The culture of Black Widow is open to change. People are engaged and happy to get on board.

RP: One of your goals is to further double the number of employees – are you on track?

JO: That’s my ambition. That growth comes from new product development. We are diversifying ourselves to enter new markets. Ours is quite limited. We are starting to get into more commercial/fleet vehicles, which is a side of the business we are expecting to see grow a lot. We have already spoken with current distributors and researching new customers.

We always look for a niche, for a market that is not being served well or characterised by low quality products or customer service. I am very confident that we are going to grow and achieve these goals, provided that we remain efficient and keep the prices low. In the future we are going to be applying lean in design. That’s where the growth is.

Results

- Cut physical production/assembly time (value added) on the drawer system line down from over 11 hours on average to 6.5 hours (40%)
- Reduced production/assembly time on roof racks from 4.5 hours to 2.5 hours (55%)
- Cut product lead time in the factory on drawer systems from an average of 4.5 days to 1.2 days (73%)
- Cut floor space required for drawer system production by 30%
- Increasing overall output by over 40% while reducing all overtime and production staff numbers by 15%
Michigan-based Zingerman’s Mail Order packs and ships gift baskets of gourmet foods all over the United States. As a very seasonal business, ZMO experiences extremely high variability in demand. Tom Root, Managing Partner, tells Roberto Priolo of how standard work helps this small organisation respond to big challenges.

Roberto Priolo: What were the factors that convinced ZMO to go down the lean route?

Tom Root: There were three contributing factors. First of all, we were growing 25-30% year on year, which had caused us to move four times in eight years. Because we were batch building gift boxes, we would spend the night shift making the assortments, storing them and picking them during the day to ship. We were running out of space to build and store the kits before they got picked the next day. We literally had boxes stacked everywhere, including above the bathrooms.

Secondly, Zingerman’s Mail Order had been an open book finance company for a couple of years already. Our financial statements are available for any employee to look at. But we go a step forward, and make employees responsible for the content. We take key operational and financial metrics and we assign ownership to those key lines. It can be anyone in the organisation: just because it says revenue, it doesn’t mean it will...
be a number owned by an accountant. We might assign a revenue number to somebody who is a front line employee. Being open book put us already over the bump, and led us to the understanding of one of lean’s key concepts: that there is intelligence in the workforce. The front line had shown they were able to understand financial metrics – why could they not be owners of the processes as well?

The final reason for adopting lean was, well, chance. Back then one of our managing partners was taking an MBA and read The Toyota Way. He suggested I read the book as well. I thought what it said was natural for us. I often say lean is half philosophy, half mechanics: while most organisations struggle with the philosophical implications, I figured we had that side covered. I thought that all we had to do was applying the tools – it was an oversimplification, of course.

RP: How did you get started?

TR: We contacted Professor Jeffrey Liker at the University of Michigan and asked him if he had anyone interested in us as a project. He had a student who was working on his dissertation on lean implementation in variable demand businesses. We were perfect for that. He studied whether lean can be adapted to a system with extreme variability.

He came in and ended up spending three years with us, revamping our production line and taking a lot of metrics along the way. We were a chapter in his dissertation.

RP: How has lean helped you?

TR: It would be easier to say how lean has not helped us, as the methodology is everything in terms of how we do things now.

The first project we took on was making the kits just in time. We set up a marketplace and routes to replenish it. We picked the kit items, sent them down the line and then we had a work cell that did the assembly just in time.

That immediately showed us we didn’t need a lot of space to build and store the kits, which immediately took off the pressure of space constraint. However, lean has to be consumed all or nothing: after those first steps, the next bottleneck showed up and we tried to address it, then the next one, then the next one, and so on. It has been 10 years of addressing the next problem.

Zingerman’s Mail Order at a glance

- One of the Zingerman’s family of businesses
- Makes gift baskets filled with traditional food and produce imported from all over the world
- Ships baskets all over America
- Staff: around 45, which balloons to 450 during the holidays
- On a lean journey for 10 years
- Strong focus on standard work, the only way to onboard seasonal workers quickly enough
- A mixed use of kanban and an IT system ensures optimal leveling of orders

Figure 1: During the Christmas holidays, the number of employees at ZMO grows tenfold

"Lean gave us an absolutely obsessive focus on standard work: it is the only way for us to onboard 450 people, get them trained up enough that they are effective while they are working with us"
Specifically, how did lean impact on your ability to respond to the demand variability you experience every year around Christmas, when the number of employees grows tenfold?

Fifty per cent of the business happens in December at ZMO. We have about 45 to 50 employees who work with us year-round, but during the holidays the number goes to 450.

Lean gave us an absolutely obsessive focus on standard work: it is the only way for us to onboard 450 people, get them trained up enough that they are effective while they are working with us.

My challenge back in the day was getting someone off the street and making them 80% effective in 30 minutes or less. The way we did it was through a careful division of labour and through a strong focus on defining the standard work.

Because part of my background is in IT, I came to Zingerman’s as chief information officer. We decided to build our own order management system. We brought its development in house, which allowed us to control how it behaved but also to integrate it with the production floor.

At that time we used to print all the work orders for the day out in one batch and we would bring a big pile of paper out to the floor. Then we went to printing them just in time – that’s how we established takt for the line. We used to pre-print labels for everything, and we changed that into printing those just in time as well.

We had the advantage of building and maintaining our own software. But you have to be able to build the system manually before you make a software out of it.

Do you think lean and IT tend to work better together when the software is developed in house?

Yes, but unfortunately that is not an option for many companies, particularly companies our size. We are a $11 million business. We happen to have a staff of developers because we realised this would be core to our success. Had we not had someone like me in house, who had an understanding of IT and software, we wouldn’t have gone down that route.

Can you give us another example of how lean has helped you?

Trying to get as many things close to when they are needed as possible has been great for us. We might have 200 of those assemblies as active products at any given time – they all have names and descriptions.

We used to have 200 pre-printed labels on rolls and there was a station that did nothing but picking the label for the kit we were making. It’s all the classic problems with inventory: the moment we wanted to change the product on the line, production told us, “We have 2,000 of those labels – are you really going to change them now? Can’t we use them for a while?”

When we moved to printing each label where it got assembled, many issues (for example picking the wrong label) went away. The driving force was putting a computer at the kitting station to print the label.

Then we found a ton of other things to do with the computer – for example, the worker can scan a barcode on the work order and on screen we display the illustrations on how to assemble that kit. This comes back to the idea of developing someone in 30 minutes or less: I cannot rely on them memorising the assembly recipes for 150-200 kits.

How do you schedule what you produce and when?

Takt is our “magic number”. We have a box count for the day and a set of standard takts that imply staffing. If we are going to do, say, 500 boxes today that means we are going to run on a 24-second takt; that means I need this many people here, and this many there, etc. That used to come from institutional knowledge – you would have had to work here for years to know how many people you need. Takt allows us to calculate this pretty accurately.

We also make some products that need to be handled in some way before they are shipped. Take bread, for example: it comes from the bake house unpackaged. You need to put the loaf in a bag, put a label on the bag to identify what product is in it before it is shipped. Takt allows us to do “time slices”: the bread bagging area starts one hour ahead of the line and produces in its first hour what the line will consume in its first hour.
We also have the ability to switch into a mode where we are using the order management system while responding to kanbans, a hybrid scenario: the kanban comes back asking for more products; we present the kanban to the order management system, which knows how much of that specific product we need on the day and prints out the appropriate number of labels. If the kanban calls for 10 loaves but I only need two, I get two labels. If it says 10 loaves but I need 100 more loaves it gives me ten. If the system says we don’t need any, the kanban is filed until the next cycle.

RP: What about leveling production?

TR: It’s the first thing we do, starting at the beginning of the process – picking items. Items are stored in racks near the line, which are assigned to different pick zones. Our IT system will level orders across the pick zones to make sure that each picker picks a similar amount of orders. By using this model we ensure on-time delivery from our warehouse to our customers.

We decided to build our own order management system. We brought its development in house, which allowed us to control how it behaved but also to integrate it with the production floor.

Figure 3: Zingerman’s Mail Order uses a kanban system that is integrated with an IT infrastructure developed in house

RP: Is it difficult to apply lean in a small company?

TR: I would argue that our size was actually an asset. I didn’t have to get buy-in from a lot of people. That’s not to say we didn’t have our struggles in terms of adoption, but it was relatively straightforward for us to implement a lot of this because the group of people we needed to engage was small.

If you take the approach that lean is about buying software or hiring consultants, however, being small is a liability. But that’s not what lean is.

On the other side, Zingerman’s Mail Order is one of seven businesses. It was fairly easy to apply lean at ZMO, but the others are not practicing. And it’s not like we haven’t spent the last 10 years talking about how great lean is! I teach classes, we do lean simulations using Lego bricks, but it hasn’t caught on elsewhere. ZMO has also generated the largest revenue within the business for the past six years.

I would say that people like the problems they know, as they are less scary. In the classes I teach the first thing I tell people is that, if they to apply lean, they need to be okay with change at a personal level or it won’t work.

Recently, a consultant has started to advise us on our environmental performance (which is very important to Zingerman’s as a whole). He pointed out that it would be an advantage to be able to produce a value stream map of the entire organisation. I am working on it now and I think it could represent the first step towards the adoption of lean outside of Zingerman’s Mail Order as well, even though the interest didn’t come from the desire to improve production but to become more environmentally friendly.

RP: How do you keep your relationship with suppliers working?

TR: That’s where being a small business becomes a liability with lean: we don’t have any leverage with our vendors.
The way we maintain the relationship is very much in person, through a lot of contact. We try to build relationship with vendors, and that includes bringing guests over on tours of their operations around the world. We can control things once they arrive on our dock, but it’s still up to us to figure out how to coordinate the rest.

**RP:** How has the small size of Zingerman’s Mail Order supported the development of a culture of continuous improvement?

**TR:** As an organisation, even before we learned about lean, we knew about the importance of creating a culture. That knowledge was used to adopt the open finance book approach, for instance.

With lean it was about using the tools we had to create a new culture, but it’s very difficult. Even in a company our size, with 30-40 people, there a lot of individuals who do not approach their lives from a CI standpoint. Building the argument that there is a difference between knowledge work and labour is not totally straightforward, and it takes time.

**RP:** What makes ZMO’s lean journey unique?

**TR:** The high variability we face; our corporate culture, which provides for the democratisation of the running of the business; and our proximity to the University of Michigan. I have students all the time visiting us. This creates a different environment, one that encourages learning in a number of ways.

Zingerman’s is big on learning, but also on teaching. There is an expectation that every employee will find something they can teach. This is a huge component of self-development here.

There is no aspect of the business that one can’t become an expert in. You take classes on olive oil, finance, governance... and then become a teacher.

**RP:** I assume this contributes to the creation of a multi-skilled workforce as well.

**TR:** Absolutely. Cross-training at Mail Order is a necessity. One of our ways to deal with variability, for example, is “Help your neighbour”. We have a signal that highlights when a cell is behind, and the cell upstream or downstream will send people there for a cycle to support. Training people in a number of different operations and making them as knowledgeable as possible is essential to how we manage variability.
**Interview**

**InteRVIeW**

**Tony Wallis** is Director of Toyota Material Handling in the United Kingdom. In this interview, he touches on some of the key ideas behind the company’s success.

**Roberto Priolo**: The Toyota Way is still the number one model for companies who are interested in implementing lean. How do you think the perception of the company has changed over the years?

**Tony Wallis**: Despite a number of challenges in recent years, where the DNA of the organisation has been tested following the exposure to one of the world’s most devastating natural disasters, the perception of the brand has actually improved thanks to the organisation’s ability to adapt and to its can-do attitude. The core values of the business, underpinned by continuous improvement, continue to fortify the brand as a world leader in manufacturing, as strong as ever in the public arena.

**RP**: Some argue that the problems the company experienced after the tsunami and then the recall crisis raised questions over Toyota’s understanding of its supply chain and attention to quality. The company’s reaction has, however, showed once again how unique its focus on customers is. What lessons has Toyota learned from that experience?

**TW**: At Toyota we have five values that drive the way we operate. When any part of our business is tested or challenged we embrace our values and go to the source to understand how to solve the issue. We learn from success and the challenges we face. Experience tells us that anything we do today will never be good enough for tomorrow. We have learned in recent events that the DNA of our business is at its strongest when we are faced with the unknown.

**RP**: In a lean implementation, tools can only go so far. It’s the culture that needs to change in an organisation that wants to improve. How does Toyota provide for the creation of a culture of continuous improvement? Would you agree with the idea that it does it by continuously developing its people?

**TW**: TPS (the Toyota Production System) drives every area of our business, but I would say it also stands for a “Thinking People System”. I think this reflects our culture very well. By providing an environment where people can think, are challenged and can eventually take control of their development, Toyota makes continuous improvement its way of life rather than training programmes.

**RP**: Do cross-functional and cross-departmental collaboration and communication flow help with the creation of a different culture?

**TW**: Without a doubt, divisional silos reduce business efficiency. Creating cross-functional collaboration is critical to the success of Toyota.
We want to hear from you!

As the Lean Management Journal progresses on its own continuous improvement journey, we understand how important it is for us to listen to the voice of our readers.

So we have set up our own **suggestions box** and would like you to tell us what topics we should cover in the journal and at our events in the next few months. **What are the questions you want answered? What are the issues you are facing that you would like to read about?** We believe in pull and will always welcome your suggestions and feedback. We will try our best to address every request by providing helpful, thought-provoking case studies, interviews and features.

Don’t forget that our Letters and comment section is open to anybody in the lean community who wants to share an opinion or an experience with their peers.

Your feedback is important to us as we strive to improve our publication, services, and overall reader experience.

If you have any suggestions for topics you would like the LMJ to feature in the coming months, please send an email to the editor, Roberto Priolo, who can be reached at r.priolo@sayonemedia.com or +44 (0)20 7401 6033.
Case Study

Out of many, one

Halil Akgül, Core Competencies Coordinator at Coşkunöz Group of Companies, discusses the implementation of lean across a number of different business platforms.

Case Study

Coskunöz Holding is a privately held industrial group with 60 years of history. The group consists of 11 companies active in different business sectors, a research centre and a training centre managed by the Coşkunöz Education Foundation. The main focus area of the business is automotive parts and components for OEMs.

Our customers always want more for less. They expect better quality and service, in the face of more risk and complexity. However, they have less money, resource and time than before. In short, they want to work with highly competitive companies. The only way to satisfy them is to work with and implement lean principles at every level of the organisation.

In the past, Coşkunöz Holding companies tried several ways to be more productive; however, KPIs like OEE, internal scraps, delivery performance and work accidents only brought limited results.

How Our Lean Journey Began

At the beginning, we were merely using the tools, but essentially all we did was scraping the surface. We gained a few results quickly, but they could not be sustained. In 2005, management decided to implement the Lean Production System at Coşkunöz Metal Form, the leading company of the group, using the Toyota Production System as a reference and with the consulting services of the Lean Institute Turkey supporting us.

One year later management decided to deploy the Lean Production and Management System in all the companies of the group. The Group Lean Policy was developed targeting operational excellence.
THE COŞKUNÖZ LEAN POLICY

- Respect for the people is our top priority. This value covers all our staff, customers, suppliers and, more in general, the entire society. We must make every effort to establish mutual trust and understanding among our stakeholders;

- Our founder’s motto “When I do something I should do it in the best possible way” is our guiding principle. We shall put our best effort on every activity and improve our processes constantly;

- We must develop our employees’ ability to work in teams, enhance their individual performance and share improvement opportunities to develop multi-talented and multi-skilled people;

- The management has a long-term vision to realise our dreams with courage and creativity, deploying the necessary strategies and targets at all levels of the organisation;

- All our employees develop the habit of going to the gemba to be able to make informed decisions at all times, to reach goals quickly.

Lean principles and the results they can bring are difficult to sustain for everybody. Even Toyota has to work hard to spread and to maintain the Toyota Way outside of Japan.

Coşkunöz started the process by training people in the new (and lean) way of thinking and behaving. The establishment of a lean office at each company and the training of the team leaders were the starting points. Change is impossible without effective leaders at the top, middle and bottom of the organisation.

The Coşkunöz Education Foundation launched the Lean Leader Certification Program to train white and blue-collar team leaders and leaders from our suppliers. The programme consists of six modules, each module lasting six days. The company visits, simulations, workshops and some individual development programmes are organised between modules.

Each participant has to complete two projects, to be then presented in an A3 format. Our chief trainer, Mr Yönel, is a sensei with 10 years’ experience at Toyota. We also encourage all our managers to share their experience in the course of the programme.

As core competencies coordinator, my function is to promote and maintain the Coşkunöz Lean Production and Management System in all group companies. We named the initiative Lean Production System at the beginning because we wanted to keep Toyota and its TPS as a model.

Even six years in, however, Toyota is still our number one model, with our True North goals being: respect for people; improving quality; shortening lead times and cycle times; reducing cost in a systematic and continuous way as our group companies develop their own lean production and management systems unique to their processes and customer mix.

"Each year, continuous improvement forces us to bring lean to a higher level. In a learning organisation, people’s abilities continuously move ahead, leading to sustained improvements in the operations department."

Figure 2: A session of the Lean Certification Program
SUCCESSFUL LEAN

In our experience, the principles that form the basis for the success of a lean implementation are the following:

- The group leaders and team leaders drive most improvements at the operations level. A leader must take an active role in achieving the desired performance in safety, quality, productivity and cost. The selection and accurate training of the leaders is very important as they play a crucial role in the implementation of a lean culture, in the interpretation of job responsibilities and in communicating company objectives to the team members;

- The full participation of top management to the Monthly Company Cockpit and Kaizen Meetings is an indicator of the interest our leadership shows. The participation of managers in shop floor presentations greatly improves the level of motivation of the employees, as well;

- Lean assessments reveal a current picture of the company and guide management to the next steps in the implementation of the lean culture. Improving the assessment results is a performance indicator of the general manager. The best applications must be benchmarked and deployed horizontally in the group;

- Number of suggestions put into action per person and the percentage of people who join the kaizen teams are also key indicators, showing the spreading of a lean culture. You know you are on the right track if you are over 10 applied suggestions per person per year and over 80% of your employees performed at least one kaizen event in their work area. This kind of performance can only be achieved with great team leaders;

- Focusing on a defined product group will allow standardisation of the processes and will eliminate the complexity in the plant. After a value stream mapping exercise and the systematic and continuous elimination of waste, the value added portion of the process will increase. Only the necessary and justified investments will be done. As a result, competitiveness, customer satisfaction and profitability of the company will increase;

- Visual management is an ideal tool to share information with all members of the organisation. Top management and lean offices make sure that information is up-to-date and actionable. Cleanliness, order and real-time information on the factory display board positively influence the working behaviour and the morale of the operators;

- In most cases, layout changes are necessary for improved flow of the material and a better working environment. Allow your employees to make the change, don’t be afraid to try new things and make mistakes on the way. They are actually great lessons that you can use to improve and to avoid mistakes in similar circumstances. The only way to get better results is through trials, tests and learning by doing. When you go one step further, new opportunities will appear that nobody thought of before.

Each year, continuous improvement forces us to bring lean to a higher level. In a learning organisation, people’s abilities continuously move ahead, leading to sustained improvements in the operations department. According to lean assessment results, doing the right things right and continuously is more important than doing everything at once but not as well.

Lean is a long-term learning journey; it requires patience and discipline. We at Çoşkunöz are pleased to share the lessons learned in this journey with the global lean community, as we believe in power of learning from others.
Investing in “bricks and mortar” to get on the first rung of the property ladder was always a mantra for parents of young adults.

Today, there are many more complexities that make owning your first house extremely difficult. Even though current house prices are depressed in comparative terms, the multipliers that are applied for the purpose of a mortgage loan by lenders vastly exceed the average annual income. Add to this the fear of employer insolvency/redundancy and there can be little wonder that people are looking at alternative forms of “owning” or renting the home they live in.

The problems do not just affect those starting out either. Those individuals near retirement also have their problems. Endowments are falling short of paying off mortgages and intermediate care for citizens is becoming increasingly expensive. It comes as no surprise, then, that the world of social housing and mega-landlords represents a fantastic sector to study. It is a melting pot of innovation, creativity, experimentation, and change.

Council houses were once the answer to the problem of affordable rental housing but the majority of these were sold to private individuals during the Thatcher era. Demand for affordable housing did not go away and Social Housing Associations (SHA) have emerged to fill this void in the housing market holding vast estates of thousands of houses and other accommodation units (these include living space above shops, communal facilities with many individual tenants in their own internal
accommodation, protected housing for citizens who suffer from medical conditions and other types of housing).

For the customer of the housing association - the tenant - the processes that surround them are also personal and trigger significant emotional distress when things go wrong. In that sense, the social housing sector has many similarities with healthcare provision (complexity, process waste and personalisation of service).

Recent government reforms and regulations have combined with the high importance that most housing associations place on corporate social responsibility to add volume to the “voice of the customer” and greater tenant involvement in corporate decision-making. Tenants now populate the board of directors and surveys provide increased transparency/scrutiny of performance between SHAs.

The sector is proactive to these changes – it is vibrant and has a fascinating diversity of improvement methodologies. Indeed, where manufacturers had often forgotten the voice of the customer (the first lean principle) preferring instead to map processes, everything for SHAs begins and ends with the tenant.

This article presents an overview of the changes in the sector and proposes there is much to learn from the lean/six sigma. The most progressive are now adopting a form of productive maintenance for properties.

Of the few vital processes, the voiding handover process and the maintenance of the tenant property represent the most significant volumes of work and expenditure. The voiding process is a classic case in hand - the tenant declares an interest to leave the property and terminate the legal contract with the association. Typically there is an excess of demand over supply so another team has to find a suitable new family for the property. Delays in handover cost significant loss of earnings as each day a property stands idle it is not earning an income. Learning and experimenting with these has resulted in solutions that resemble the quick changeover methods associated with the manufacturing sector and Formula 1 pit stops: the new tenant being brought into the process before the existing tenant leaves, all materials to upgrade the property being made ready and the idle time reduced to a fraction of its pre-improved state. In five of our case studies we found the improvement to be an average of a 73% reduction in time to handover the property and with additional scope for improvement beyond this.

**THE PRIMARY PROCESSES OF SOCIAL HOUSING ASSOCIATIONS:**

- The acquisition process of a building or street to join the housing portfolio of the housing association;
- The recruitment of the first tenant;
- The “voiding” of one tenancy agreement (as an individual or family leaves the agreement and house) so that another tenant may move in;
- On-going planned maintenance and refurbishment of major “systems” within each property (such as the large-scale replacement of windows, kitchens, bathrooms, etc);
- Regulatory servicing to comply with British laws concerning the rights of tenants and the obligation of landlords;
- Reactive repairs to the building following a catastrophe;
- The process of evicting tenants who breech their responsibilities to their social housing association landlord and legal agreement (such as breeches to the care of the property or anti-social behaviour);
- The disposal and sale of the property.

Major improvements have been made in focusing on value and re-designing the flow of work through each process for tenants. Experimentation and the learning process of following robust A3 planning documents that are derived from reliable process maps have eliminated waste, reduced errors, speeded up tasks and reduced the “failure demand” where tenants would repeatedly call the tenant service centres to progress their issues.

**TYPICAL IMPROVEMENT METHODOLOGIES:**

- Understand the voice of the tenant - enlist tenant support for process improvement;
- Map process (often swim lane mapping) and understand demand (including failure demand);
- Develop A3 or project improvement documentations for project and learning management;
- Enact improvements;
- Reflect;
- Build new projects into a future sequencing of change initiatives using policy deployment.
Improved “voiding” assists cash flow – better maintenance, however, helps keep rents low and this is a major source of value for tenants. The improvement of maintenance systems is one of the lessons that many manufacturers did not truly understand on their improvement journeys so reduced buffer stocks without effective planned maintenance exposed the manufacturer/customer to disruption. Houses are complex assets and for a tenant catastrophic failure through unplanned “run to fail” (RTF) maintenance is costly and traumatic.

**Typical Repairs:**
- Door security and window fit/alignment;
- Blocked sanitation pipe work and toilets;
- Guttering, roof tiles and wind damage;
- Condensation issues;
- Leaking radiator valves;
- Bathroom leaks.

Aging properties, the requirement for a very wide skill base, material variety and long supply chains make managing the reactive repair process difficult and, when a total cost of ownership approach is used, reactive costs can amount to over £400/property, with a high percentage of that cost being avoidable. Even simple problems that are missed can end up costing many thousands of pounds to repair, due to both the length of time to respond/restore and the number of visits needed to solve the problem.

**Repair Process Failure Demand**

When systems are poorly designed it is typical to find:
- Tenant Service Centres facing calls chasing the same issue by the same tenant;
- Call centre teams must relay information to repair teams;
- Repair teams will visit the property only to find no one there to let them in. They will return later and fail again;
- Visits to assess properties need materials, which must be ordered and then collected and additional skills may be needed to complete the job. A house can be visited on average four times before work can be completed.

The classic RTF is that of the shower tray that leaks. The leak continues to deposit water into the floorboards and runs along until it penetrates the ceiling if the floor below. The room below is typically the kitchen (the bathroom and kitchen share water pipes) and the ceiling starts to absorb water. Staining appears and inevitably the ceiling sags as the weight of the water is absorbed. After a number of days there is a noticeable smell and the stain has grown in size, the ceiling sags further until it eventually collapses and sends the ceiling onto the kitchen floor.

The initial cost to repair is fractional - to renew the shower tray seal - but the eventual damage is measured in thousands of pounds as crafts persons and plasterers, materials and job cards have to be issued and work conducted. The cost to the tenant is also huge: no showers and an inoperable kitchen. No wonder delays in the repair process generate failure demand for SHAs.

**New Models of Maintenance**

- One-stops and vans - the reallocation of stocks in vans and multi-skilling of trades people to respond quickly to minor repairs;
- Cyclical post code maintenance - using the logistical performance of suppliers to deliver goods to a street so that all minor repairs can be undertaken on a regular basis. The temporary street depot serves as a hub for the local area. The system is operated every number of weeks to “close” minor repairs. This system supports the annual check approach;
- The standardisation of houses including the use of “flat pack” social housing for the quick building of homes for new tenants that meet new environmental standards;
- The annual check - the servicing of gas equipment requires a regulatory annual check and this opportunity to access the house allows the gas check to be conducted whilst a full house audit is undertaken for a condition appraisal. The home owner is then presented with a report similar to an annual car service and this is matched with any planned maintenance when large systems will be replaced;
- New training programmes for tenant-maintainers and rewards for up-keeping properties through the conduct of simple cleaning and inspection activities conducted on a regular basis and submitted on-line.
Reactive maintenance budgets run into millions of pounds and add significant problems to managing the estates. Planned maintenance does exist and this concerns larger systems within a house (such as doors, windows, roofs, kitchens and bathroom) and these have fixed replacements cycles (say every 3, 5 or 10 years). But reactive maintenance remains – buildings deteriorate and unfortunately tenants can be the cause! Learning in the sector has been rapid, however, and lean initiatives have identified many models of maintenance that are moving from reactive to a new level of predictive control. Early indications show around a 25% saving per house and half the visits are needed to respond to a reactive repair request.

WHAT CAN WE LEARN FROM SOCIAL HOUSING?

The penalties of getting maintenance processes wrong for tenants is huge - especially for “the vulnerable” or families with children. What many lean practitioners have forgotten is an operating system without maintenance can often become anorexic, lacking robust control and the resilience needed to bounce back from a catastrophe. Toyota understood this lesson decades ago, when Denso and Aisin (key suppliers) created a study group of suppliers to promote maintenance capabilities to make the just-in-time system work effectively and efficiently.

These studies did not lead to blind emulation by all suppliers but to experimentation, and each business answered one critical question: what problem are we trying to solve? For social housing associations, the question is how to achieve the lowest lifecycle costs of owning a home whilst delivering the highest service to the tenant. The questions, debates and new models emerging from this sector are really pushing the boundaries of lean thinking while at the same time returning to lean basics such as the definition of value. No dominant model for operating an SHA exists yet, and this means new solutions are emerging.

But further still, with predictions that we will now live beyond our 100th birthday, the social housing sector faces some fascinating challenges and will evolve again. As UK levels of dementia, arthritis and obesity rise, the house of today is not suitable for the tenant of tomorrow. The next generation of tenants will find mobility difficult and immobility a hazard to health. The solutions will be fascinating to see how bricks and mortar are replaced with a whole-life approach to housing solutions and probably the first real example and learning model of “lean consumption”.

This article draws from research with a number of SHAs and was initially supported by the EPSRC with the aim of transferring knowledge from one sector to another. The author would like to thank the EPSRC for their kind and generous support to Cardiff Metropolitan University.
On singling out followers

Joseph Paris, Founder of the Operational Excellence Society, reflects on Willi Schneider’s article, published in the latest issue of LMJ, and expresses his view on followership.

In the May issue of Lean Management Journal, there appears a very well-done article by Willi Schneider entitled “Singling out followers” which goes on at length about the importance of having followers as much as leaders in an organisation.

Whilst Willi does a great job discussing the importance, characteristics, and roles of followers in an organisation, he does not delve into how followers are built. So please indulge me in my effort to supplement.

In my experience, the key elements to building good followers are communication, respect, and trust.

Communication: The first most important factor to consider in building good followers is to define a proper strategy – one that is clear and concise such that everyone can understand where the organisation is headed and the role they are expected to play.

I am not referring to the platitudes and politi-speak that one might find in a mission statement. Such garbled communication is mostly of value to the marketing department and analysts and the meaning does not translate well to the rank-and-file of the organisation.

I am referring to the type of communication that is direct and to-the-point, one through which, regardless of what role a person plays in an organisation, they understand completely where their leaders intend to lead them. As Albert Einstein famously said, “If you can’t explain it simply, you don’t understand it well enough.”

Respect: The second most important factor in building good followers is for those in leadership roles to demonstrate respect to those they intend to lead, and thereby having the opportunity to earn the respect of those who will follow their leadership.

This is the essence of the “servant leader”; one who believes in a cause greater than themselves – one who “takes all the hits” and concedes the glory of achievement to those he leads.

A follower needs to know they are more than just a number, or staffing, “bodies”. In this age of Wall Street and Human Resources, companies do themselves a great disservice when they refer to their people as “headcount”, not to mention its either increasing or decreasing. When someone leadership expects to have as a follower realises they are just a statistic, all aspirations of a leader building a follower are lost.

Baltasar Gracian is reported to have said, “Respect yourself if you would have others respect you.” To respect an employee and to build a follower, a leader must: lead from the front and not issue edicts from behind a desk, be empathetic to the personal and
professional needs of those they intend to lead, build within the employee a “pride in ownership” such that the follower is vested.

Trust: And this third most important factor in building good followers is to build trust. Some might argue that it is the first most important, and perhaps it is. But trust cannot exist without communication and respect coming first - and both communication and respect can exist without trust - therefore, I believe its rightful place is third.

Trust is in large part based on a confidence one has in someone or something which has been previously tested. Sometimes, the trust is earned based upon prior experience, and sometimes it is thrust upon by circumstance and having the need to trust. As Ernest Hemingway once said, “The best way to find out if you can trust somebody is to trust them.”

A follower is always naturally suspicious of a leader because - let’s face it - there is a long history of followers being lied to, taken advantage of, or generally mistreated by their leaders. Therefore, a leader should not expect “instant acceptance” and followership when they are first placed in a position of leadership.

To build trust in a follower (and aside from effective communication and demonstration of respect as noted above), a leader must be consistent and fair. Followers need to know that their leaders will be dependable and steady in the manner in which they demonstrate their leadership skills – and the followers need to know that the leader will treat them fairly and with neither favoritism nor neglect with respect to one another.

Another necessity for building trust is supporting the followers in what is required of them for their present responsibilities as well as supporting their career growth. For instance, how often have we heard (or have even been told) that; “You have to do 10% better next year, but there is no budget to help you.” Being “Yo-Yo” (You’re On Your Own) is now way to build followers. Every strategy needs a plan, and every plan needs logistics before one can think of execution. Logistics are the support.

And trust is a two-way street – always respect the chain-of-command. It does not serve anyone when a follower skips over their leader’s head without first going to the leader - nor does it serve anyone when the leader throws a follower “under the bus” when things go bad.

Although trust is difficult to earn, and so requires considerable time, it is very easy to lose. It can happen in a flash. To build a follower, you must be consistent and steady, balance the expectations with the support offered, spread the glory and take the hits, and most important, never lie – even when the truth is difficult to accept.

Of course there are a plethora of other requirements to build good followers (and good leaders), but the three listed above are the most critical in my opinion – and I would argue that most of the others likely fall under one or more of the above.

In the end, a leader is not a leader by rank, or heritage, or title, or fortune. A leader is a leader because people are willing to follow. In Leadership Secrets of the Rogue Warrior, Richard Marchinko states: “If a leader looks behind him and sees nobody following, he is no longer a leader – he is just another [hapless man] out for a walk”.

The second most important factor in building good followers is for those in leadership roles to demonstrate respect to those they intend to lead, and thereby having the opportunity to earn the respect of those who will follow their leadership
On lean in law firms

Mark Greenhouse of Levantar shares his thoughts on the application of lean in the legal sector, highlighting the challenges law firms meet, and the opportunities.

Back in 2009, we at Levantar would visit networking events and hear about Tesco Law, the then impending change to legal firms that would allow external investment.

The legal profession seemed to think that retailers like Tesco were their major threat and that they would take legal services and “pile ‘em high and sell ‘em cheap”. We lean practitioners, however, knew that high volume, low cost wasn’t the only strategy employed by retailers. Continuous improvement had played a major part.

Publicly available research within the legal sector in 2010 revealed that customers had problems with service:

- 30% of the deliveries are late or took longer than expected;
- 25% are surprised (negatively) by the costs;
- 28% suffer mistakes;
- 27% weren’t informed of progress.

A quarter to a third of customers suffered a level of service we wouldn’t have found acceptable elsewhere. Some experienced a combination of the above issues.

These were the views of inexperienced people, people who didn’t transact regularly within the industry. What happened when they researched those who purchased services regularly?

More than 60% of general (in-house) counsel claimed costs were too high, 60% claimed that the suppliers failed to look for ways to reduce costs, and 99.5% wanted responsiveness from suppliers.

This seemed to be a sector that could learn a lot from lean.

Fast forward four years and the threats to the legal sector have multiplied:

- house purchases, which collapsed in 2008, have yet to recover;
- the Jackson Reforms, designed to speed up litigation and limit the revenues that can be generated, are being implemented;
- in-house legal teams are asking for improvements to supply;
- the lack of transaction activity in the economy is a real issue for many in the legal sector; fewer companies or assets being bought or sold means less work to go around.

Is lean applicable to the legal sector, then?

In the May edition of Lean Management Journal, there are two firms that have found lean thinking to be a suitable change methodology. There are also in-house examples out there, from BT and Maersk, to name but two.
Both Seyfarth Shaw and Higgs & Sons are at different points in their lean journeys, though there appears to be an underlying message there. Lean management in law firms is often about:

- the softer elements of lean; it isn’t just about the technical improvement tools;
- control is important, as people will revert back to their prior methods.

Taking the “process improvement” element of lean first, here is an insight from the managing partner of one firm I have worked with: “Yes, we have processes. It’s just that everyone has their own version.”

This is a frequent occurring in law firms. People carry out the same service but do so in different ways: this can be the case when lawyers are located on the same bank of desks, in the same office, across different offices or in different cities.

This happens even when firms have invested in workflow processing technologies, case management and document management systems. Taking this as a clue, I realised that change management is not seen right through to completion and sustained.

Previous process improvements that we’ve seen can be thought of as changing the tools for recording the progress of legal work without changing the content or method.

Staff often retains the ability to craft new documents for every case or to use its own precedents without any requirement to submit them for checking or to ensure consistency across the business.

As more and more law firms look to mergers and acquisitions as a way to overcome the current challenges, even more opportunities arise for the work to be carried out under the same brand but in different ways. The customer is sold one service but could receive any of its several “versions”.

Resource balancing is a real challenge for many law firms. Reward systems often operate on rewards for the individual who brings in the work. As the work progresses the same individual is responsible for the delivery, meaning there often is little incentive to get others with similar skills and experiences involved.

The impact of this is an imbalance in workloads. You can find legal staff working long hours, even weekends, while their colleagues in the same firm, with the same skills experiences but lighter workloads, have no incentive to help out. Is this in the best interest of the client, the firm or the individual?

A heavy caseload will also prevent a successful lawyer from sharing learning or insights. There’s not enough time.

This lack of balancing may be responsible for a culture where senior qualified legal staff retains work that can be completed by others, both internal and external to the firm, people who may not be legally qualified but nonetheless can help in increasing throughput.

With regards to respect for people, we shouldn’t forget that legal firms often follow a strict hierarchy, which makes it difficult for people to come forward with ideas for improvements in the first instance. It is also rare to find firms that have tried improvement programmes. It can be common to find many staff with no knowledge of the current levels of work in their department, the targets, and the KPIs.

The lean practitioner is often the first person to bring KPIs to the table for all to see, the first to ask staff for their input as to how the work should be completed.

Patience is key here and a practitioner should look for those who want to share their ideas and input but are restrained by their place in the hierarchy.

What have we learnt, so far?

1) Lean is applicable to legal firms and departments where there is an interest, which is more important than turnover, number of employees, services offered etc. There is no part of the sector that is more interested in this than another;

2) The desire for lean has to come from senior partners, as most staff members are focused on their own performance, rather than that of the business;

3) The desire to find out more is driven by different factors for different legal services providers; for some timeliness is an issue, for others cost of services or the amount of WIP (work in progress) are.

4) As lean practitioners, we have to be collectively on our guard against tool-based implementations. It’s all too common to come across people claiming that lean is just a branch of project management, a set of tools that can be applied with no focus on culture;

5) As with any new sector, language is key. Talk about wasted efforts in terms of manufacturing waste and people will switch off. Waste may be familiar, the specific examples may not be;

6) Legal departments and law firms have seen lean in action within their clients’ operations, so they know it works. They are beginning to learn about the examples in their own sector.
Our company is our people

Sandra Cadjenovic looks back at the last 18 months of lean implementation at SCGM, pointing out the main different between the old ways and the new approach to running the business.

Back in 2004, I founded SCGM together with my partner. We invested a little amount of money, rented a small home office in a residential building where we spent a lot of time working, sharing ideas and day-dreaming about the future of our small enterprise.

In front of us, we had two computers and a vision - to grow into a regional leader in plastic processing. Too ambitious a plan at the time, but one we strongly believed in.

The first big international customer came along soon after. Realising we had to give our best to keep them (and keep them happy), we hired local companies to do tool production and injection molding for us. We had been following the project, simultaneously looking for new customers.
With that initial project, the first huge one for us, issues came - the companies we hired for the job failed at respecting their deadlines and at producing high quality products as required. That’s how we lost our customer.

We were lucky enough to find another client. It was our second chance, and this time we knew we had to take the reins: we started manufacturing ourselves, as we could not afford to make mistakes.

The following year, we moved to a 1,000-square-metre production facility, hired 15 people and bought four machines. Everything got organised in three main sections - tool shop, injection molding department and assembly shop.

Jobs were coming in one after the other and the number of people and machines increased accordingly. In 2008, we found ourselves in a space twice as big as previous one, with several new machines and many more people. Obligations and workload were piling up. We were growing, but uncontrollably and in an unsystematic way.

I realised that in 2011, when we decided to hire a consultancy firm to help us see where we stood and give us direction. They introduced us to lean thinking. The lean tools that we started to use made us conscious of the losses we were generating; the lean philosophy convinced us of the need to change the culture of the organisation.

Time loss from management and employees proved to be one of the major challenges for us - offers took a long time to be generated, tasks took ages to be completed, with people dawdling and customers waiting in the meantime. Why? Because the decision-making process was way too long. Why? Because information was travelling a long way from the lower levels of the company to me or somebody else from top management (we were supposed to check and approve everything). Why? Because people at all levels were not given enough autonomy. Why? Because the internal structure of the business was bad.

By looking at our processes from the right perspective, we saw the following:

What we had:
- Employees with basic skills
- Individual interests
- Different goals
- “I-did-not-do-it” mentality

What we did not have:
- Common goal
- Team work
- Clearly defined responsibilities
- Multi-skilled people
- Autonomous work

To start up with our new way to do things, we had to leave behind our pride; compromise between different views and interests; align our personal objectives into one, common company goal that everybody would accept and follow so as if their own - customer satisfaction.

For the company, that goal meant a long-term business strategy. For my employees it meant the same, but the setting of the goal and the way to reach it had to be clear and highly understandable by everyone, or people would quickly become disengaged.

Once the company-wide goal was established, we gathered group leaders to create The SCGM Way Master Plan that we’d need to implement to reach that goal. The analysis of the current situation and a few well-defined steps helped group leaders to figure out improvement goals for their individual departments. Presented action steps for each of the pillars allowed transparency across the company, avoiding conflicts and doubling up on efforts.

Finally, it made me happy to see a true corporate atmosphere around me and to see growing team work stemming from within. In each department, more teams were arranged with one person leading them.

All of this created a perfect framework for the leaders to create a new competence matrix and assign clear responsibilities to each one of the team members, carefully estimating their potential. Daily training both at the gemba and in the office was conducted.

After strong initial resistance, eye rolling and sentences like “It is not possible” echoing throughout the plant, people grew more interested in learning by doing, changing their routines and seeing themselves solving problems that earlier they couldn’t tackle. They were happy to express their ideas and see that they matter. One could see how proud they have become to have more power in their hands to change things for the better.

For management this change meant a lot of patience and a lot of explaining to do to deal with resistance. Leadership and perseverance were tested, but leaders, too, were increasingly satisfied in seeing team members getting on board and taking an active role in changing the organisation. Bit by bit, autonomous work of shop floor operators started to become a reality.

The structure of the company went from being strictly hierarchical to one where everyone is equally responsible for their own areas; where decisions flow smoothly and information does not get lost; where offers are prepared in 50% less time than before and where the lead time is considerably lower.

I am aware that leveled management and employee empowerment are still in their infancy, but I believe in the path we have decided to take, and - more importantly - in my employees.

However, enough with my perspective of things. Here is how the people see it.
**Gilovic Sandra**  
Injection molding operator (four years with the company)

“What I have noticed in the last four years is that everything we do has increasingly become a team effort; we do things together and accomplish work more easily and faster than before. Our shop floor is cleaner and everybody has a responsibility and is very much aware of it – it used to be a women’s duty and we were overburdened all the time. Lean and 5S have helped us. We take more care of machines and our working environment now. We always try to be better for the sake of the company, which means for ourselves really. What we save we re-use to improve our workplace. Also, people and their efforts are appreciated and awarded. That makes us all more motivated.”

**Radoslav Prcic**  
Tool shop group leader (with the company since its establishment)

“If we compare the before and after, the after is way better. People in the tool shop are far more independent these days. They have been trained to know their machines and maintain them. Training is in process and workers respond well to it. Concurrently, there has been investment in tools – earlier we used to struggle with what we had (and we had little equipment to work with), while now we have everything we need.”

**Olivera Cekerevac**  
Assembly operator (in SCGM since the founding of the organisation)

“At the beginning, we did not have a systematic way to run the organisation. Over time, and especially recently, a new system has been built and now we all know our responsibilities. Quality is what we continuously focus on, as well as efficiency. The introduction of overall manpower efficiency at SCGM meant the world to me because, being one of the oldest people in assembly, I thought I was the slowest one but it turned out it is quite the opposite. I am quite happy about that.”

Nine years have passed and we are finally starting to realise our dream to build a truly successful organisation, with one huge difference. Up to 2011 we were building the company by investing in additional space and technology. We have since then begun to build a different culture, develop our people and their minds, grow team spirit and construct the right structure. The growth of the company is a natural result of that.

Visual management, 5S, surfacing problems, clear standards, clear placement and location, idea progression. All of these are core lean foundation concepts but, apart from 5S, have a common issue: where to look for good guidance? If that is the case, look no further!

Gwendolyn’s book is a real treasure trove of material on “visuality” (a new word in the lean vocabulary). Even the most experienced lean practitioner will discover numerous insights, ideas and examples and will be able to draw inspiration from *Work That Makes Sense*. Appropriately, of course, colour photographs lavishly illustrate the book.

The sub title of the book is pertinent: “operator led”. So the theme of the book is that operators generate the best visuality ideas at the gemba.

Numerous personal stories are told throughout the book. Some may find this annoying, but the stories reflect the humility of the author, reinforcing the theme that good visual management ideas can be created by anyone. The trick, of course, is to plant the seeds and to water them. Planting the seeds comes from the huge number of “wow, what a good idea!” reactions that any reader will experience. Watering the seeds is handled by a theme that runs throughout the book on the role that leadership needs to play, and suggestions that help keep momentum (the theme of leadership and visuality will be taken up by Gwendolyn at the Buckingham Lean Conference).

Sections that I particularly liked include:

- The insight that motion waste is connected with interruption, and that there is a multiplier effect as it spreads from person to person;
- The idea of the “value field”. So if people are in the wrong place they cannot add value (obvious? Maybe, but provocative);
- Placement principles, all of which are “common sense” (like no doors or drawers, put in on wheels, store things not air), but a very useful checklist nonetheless;
- “Mini systems” that are clusters of visuality where a complete workplace is re-engineered for visuality.

There are carry-overs from other books by Gwendolyn, but these are useful reminders. I have long been a fan of her “four power levels: visual indicators (like a railway crossing warning), signals (where flashing lights are added), controls (a railroad barrier), and guarantee (a bridge to separate rail and car – a fail safe). The idea is to move up the levels over time. Poka-yoke is level four and is becoming more prominent in both manufacturing and service as the predominance of mistakes is realised.

If there is some criticism of this book it is that with so many ideas, locating them for any given situation takes time. I found the index not too helpful in this regard, so a cross-referencing classification framework would be most valuable. However, the book contains a very useful Appendix where various vendors of visual products each have a page.
The NHS Blood and Transplant has to ensure a reliable supply of blood and blood products to hospitals around the United Kingdom. Joy Furnival, Head of Service Improvement, Debbie Carmouche, Head of Operational Improvement, and Vaughan Sydenham, Assistant Director of Finance, explain how lean is helping NHSBT.

HSBT is a Special Health Authority, dedicated to saving and improving lives through the range of services we provide to the NHS. Our challenge is to offer a safe and reliable supply of blood components, diagnostic services and stem cell services to hospitals in England and North Wales and tissues and solid organs to hospitals across the UK.

We also provide diagnostic and therapeutic services outside the UK. We collect donations from voluntary donors, prepare them for use, dispatch them to hospitals and match them to patients who desperately need them.

Over the last few years the blood service has focused on streamlining its processing and testing productivity. We have successfully removed excess capacity and improved efficiency and productivity delivering more than £30 million of annual savings to the NHS by reducing the price of blood to hospitals.

This included implementing lean principles across our 15 blood centres and multiple blood donation sites since 2009. In doing this the organisation wanted to engage its staff in creating a culture of continuous improvement that aligned with its mission to save and improve lives.
NHSBT has had to really understand and listen to the voice of the customer at both ends of the blood supply chain. Upstream it relies on the generosity and time that is freely given by 1.3 million volunteer donors and downstream it has to meet the needs and expectations of about 300 hospitals and 1.9 million units of blood.

Through a programme of focused activities, such as the introduction of cellular manufacturing and visual management techniques, NHSBT has been able to achieve some truly spectacular results.

These include a significant contribution to a productivity improvement of between 70% and 90% in blood component manufacturing and testing (between 2008 and 2013), which places NHSBT well into the upper quartile of blood services across Europe.

This equates to recurring savings of about £5.7 million annually from a relatively modest OIP investment.

Work has been particularly intense at the Filton manufacturing site near Bristol, where productivity has moved from 5,200 units/WTE/year in 2007-2008, when the data was baselined, to over 10,000 units/WTE in March 2013.

Other examples of improvements include the introduction of new platelet quality processes and improvements in donor waiting times by more than 24%. The introduction of lean into the organisation via the operational improvement programme (OIP) led to NHSBT being awarded a prestigious Health Service Journal Award for Quality and Productivity last year.

In-house capability for developing productivity and quality improvements via lean has gradually been developed firstly using an external specialist consultancy and now increasingly through in house resource or in collaboration with other NHS partners.

This has led to over 800 staff now having been trained in lean principles, many of whom have taken part in rapid improvement event activity or kaizen work. Improvement objectives and aims are increasingly being built into staff objectives as well as being linked into values of caring, expert and quality across the blood supply chain.

A primary objective has always been to develop a continuous improvement culture and capability in such a way that this becomes regarded as “business as usual”.

As evidence of its growing confidence and maturity in the lean field, NHSBT has been able to successfully deploy its experience in the application of lean principles by helping to support and develop best practice in other European Blood Services who are facing similar challenges.

Improvement activity has been strongly governed with a focus on selecting the highest priority problems for the business. There has been an emphasis on strong performance management and coaching in order to expedite improvement actions when there have been problems or blockages with the activity.

Lean gains have been used not only to deliver existing activities more efficiently but also to introduce new ones with minimal cost as demonstrated by the effective implementation of a major £3 million and fairly labour intensive blood safety initiative (bacterial screening of platelets) without the requirement for any additional staff.

Here’s what Michelle Ashford, associate director of manufacturing development, who has led the lean activity from the beginning, thinks the biggest learning has been so far: “As we began to encourage our staff to examine what they do every day and think about removing waste, removing batches and really focus on value, the ideas that our teams have been able to generate have been astounding. I am so proud. And to think, too, that all these fantastic improvements help make working lives better and at the same time help us deliver better services and better value to help the front line NHS.”

NHSBT is now planning to further extend the reach of lean and its principles across the business, notably in the diagnostic and therapeutic services and organ donation and transplantation divisions.

There is a strong link with organisational workforce development programmes to further embed and reinforce the lean culture across the organisation. Senior management actively participate in lean initiatives and can often be seen participating in gemba walks and sponsoring rapid improvement events and value stream analyses.

Immediate plans include further embedding local production cells and introducing daily problem solving and visual management into all manufacturing centres. We also intend to examine the adaptation and use of single minute exchange of die (SMED) techniques within donation units, which will reduce set up and set down times, increase opportunities to donate, limit waiting times, and boost productivity.

Feedback from donors indicates that one of their biggest issues relates to waiting times, so any improvement in this area will have a positive impact on donor retention and satisfaction, both of which are critical to meeting the demand for life-saving blood products.

In conclusion, NHSBT’s lean experience has clearly proved that the methodology will be critical to the organisation’s ability to respond appropriately to the demanding environment in which it operates. Continued success will depend on being able to embed a culture of continuous improvement across all staff with visible and unambiguous support from senior management.
In 2011 the world’s best selling carmaker needed to reconfigure its global engine production to accommodate a new design, a hybrid engine for the Auris Sports Tourer. Toyota Motor Manufacturing UK’s engine plant in Deeside was asked to ramp up capacity. In addition, it won the contract to make engines for the new Corolla sedan being built in Turkey.

Director of the engine manufacturing division at Toyota Deeside, Richard Kenworthy, was given a serious test; find up to 40% more capacity with no substantial additional capital investment.

To hit 250,000 without altering its two shifts five-days-a-week system, Deeside would need to reduce engine assembly takt time from 84 seconds to 48 seconds, a whopping 43% reduction. To deliver the new volume, 100 new staff were hired from November last year.

In late 2011, Deeside appointed a dedicated team of five members who led the exercise over about 12 months. The plant has multiple lines but one assembly line. The team did a proof of concept on the engine block line over six months. The plan was to stagger ramp-up to get each line operating at 54-seconds cycle time first before shaving a further six seconds off to reach the 48-seconds Holy Grail. “We proved the concept and through 2012 we extended the methods to five other machining lines to get those beneath 48 seconds,” says Richard Kenworthy, a Toyota man for 21 years. This was extended to the full assembly line in the first quarter of 2013.

Finding 40% volume increase with no significant capex investment is a huge ask for any company, even for the proverbial godfather of lean. Will Stirling finds out how Toyota Deeside did it.
“Originally we didn’t think the requirement was needed for assembly because part of our business is shipping machined components to Brazil, therefore we’re always looking for extra capacity on casting and machine lines more than assembly,” Kenworthy adds. “But as year-end 2012 approached, we saw a big increase in demand for the hybrid across Europe, meaning we’d need to run it on the assembly line as well.”

Toyota is already famously lean, having pioneered the original lean manufacturing system – the Toyota Production System – in the 1950s, 60s and 70s. How could such a lean manufacturing process find such large cycle time reductions?

The project team made 455 separate modifications to the plant’s machines to reduce cycle time. “It’s like British Cycling,” says Kenworthy, “a cumulative aggregation of a series of small improvements. Put all together you can get several seconds per cycle time.”

Deeside collaborated with other divisions to find the specific alterations needed to realise the efficiencies. The Kentucky plant in the United States, in particular, was a close collaborator. The project team spent several days in Kentucky examining specific time-saving techniques, and a US delegation has since visited Deeside. Is such cross-pollination common within Toyota? “It’s not a well-trodden path, because each site circumstances are different, but TMC [Toyota Group] head office is very keen to benchmark for regional cooperation,” says Kenworthy.

Dwell times within the assembly processes were studied and teased apart. Robotics and automating machines were assessed and, where practicable, accelerated.

**SPECIFIC ACTIVITIES**

Tiny improvements have been made across casting, machining and assembly. On grinding crankshafts, for example. “When the grinding wheel approaches the crankshaft at high speed, it was starting to decelerate 25mm away from the shaft. We asked if it should slow down just 5mm before it starts to approach the shaft,” Kenworthy says, emphasising the devil in the detail.

Elsewhere, the transfer bar on an assembly process used to drop 150mm and go under the line’s process doors. “We put a slot in all the doors, now they drop just 15mm which means it takes less time to transfer the part.”

**ZONE EFFECT**

Deeside has done a lot work on the “zone effect”: tool change frequency and tool change time.

For example, the cycle time on one machine is 48 seconds. If the tool is changed every 1,000 operations, and it takes 10 mins (600 secs) to change that tool, the effective cycle time is 48 seconds + (600 / 1000 =) 0.6 seconds = 48.6 seconds.

**KAIZENING A KAIZEN: ELECTRICAL TESTERS**

To use an electrical tester at Deeside, hitherto a member would fit a harness, it would go onto the machine, which would connect to the pallet, test the engine, remove the tester and then the harness. Toyota’s Kentucky plant had automated this stage. There was only one different engine variant in the US, while Deeside has three.

Kentucky’s automated tester did a good job but it wasn’t 100% reliable. A cylinder was inserted into the connector but it was attached to another cylinder, and to another. “By the time this part had gone in and this part had come out, the assembly was varying hugely in space, which was causing the reliability problem,” says Kenworthy.

“Our maintenance engineers engineered their own connectors and modified the machine with more accuracy in the connections. They worked with production members to reduce the variation when fitting the injectors.”

The outcome: “Now both plants have an automated in-line tester based on an idea from the US plant which we’ve copied and improved, which the US guys have taken back. They have kaizened their own kaizen.”

Find out more about Toyota Deeside’s engine capacity ramp up at www.themanufacturer.com

“A lot of these machines have up to six tools on them, an extra 3.6 seconds on every machine,” says Kenworthy. “If engineering can reduce that to 5,000 operations then the effect on line capacity is enormous. And it’s all free.”

Deeside’s 12-month ramp-up exercise has re-emphasised the principle that there is waste hidden in everything. “They’ve had to demonstrate that they really understand what lean means. By studying the machines and studying them again they have really understood where the cycle time comes from,” says Kenworthy.

Deeside began running the casting and machining lines at the 48-second cycle time in February and March.
THE MANUFACTURER OF THE YEAR AWARDS

Entry deadline: July 31st

This competition is specifically designed to acknowledge and celebrate the strength and diversity of UK manufacturing. The awards aim to spread best practice, inspire others and show the important role UK manufacturing plays in today’s economy.

We know success is achieved by organisations of all shapes and sizes and believe that every business should have the opportunity to be recognised and to showcase its talent.

For winners, finalists and those highly commended, the experience from judging day, the thrill of the awards ceremony, the internal and external PR opportunities and the recognition gained from existing customers and peers are all fantastic well-being factors that result from entering an awards programme.

ENTER NOW

Entry into The Manufacturer of the Year Awards is straightforward, simple and free*. Whether you have driven innovation in your company, taken on a recent sustainability project, have an inspirational leader or made significant improvements to your working practices, we want to hear from you!

ENTRY IS FREE*

Entering The Manufacturer of the Year Awards programme could be the single most cost effective method of motivating your team and recognising their achievements. With a range of categories to choose from, entering is free* and simple, and there’s no limit on the number of categories you can enter.

SHORTLISTED COMPANIES

After the first round of judging by industry experts, the top scoring companies in their category will progress to the second round of the competition. These shortlisted companies will be announced in September and invited to present to the category judging panel at a Judging Day in October.

* All categories are free to enter, EXCEPT the World Class Manufacturing category, which will involve a half day site visit for three judges who will assess the nominated plant. Companies that are shortlisted for the World Class Manufacturing category will be asked to pay a small contribution of £450 towards the judge’s time and travel expenses. This is the only category that will have a site visit and fee.

There is no cost to submit your entry for this category and only those companies who are shortlisted for the World Class Manufacturing category will be required to pay the judges fee.

LeanNHS

June 20, London, United Kingdom

LeanNHS is a free forum for NHS employees who are interested or involved in the operational improvement process within NHS. It provides them with a platform to share their work, success and challenges with peers.

LeanNHS, sponsored by Kinetic Solutions and LeanExecutives, is a quarterly event taking place in London and Birmingham, UK, alternatively.

For more information, please visit leanmidland.org.uk and leanlondon.org.uk

IN2:INTHINKING NETWORK 2013 FORUM

June 19-23, Los Angeles, California

The 12th annual forum is themed The Art of Reflection: Connect – Inspire – Act. The event was formed in 2001 by a group of students of the work of W. Edwards Deming and related theorists, including Russell Ackoff, Edward de Bono, Tom Johnson, Peter Senge, and Genichi Taguchi.

The aim of the five-day Forum is to continue to elevate the consciousness of individual and collective thinking. Join in order to learn, connect and improve how you work, learn and think together.

Registration fee: $400. More info at www.in2in.org

OPERATIONAL EXCELLENCE SOCIETY

Just over a year ago, the Operational Excellence Society only had a couple of chapters. Today, with 2,500 active members and several chapters located around the world, this not-for-profit organisation has been growing steadily.

There are active chapters in London, Dubai, Ciudad Juarez, Warsaw, Abu Dhabi, Cologne, Frankfurt, New York, Atlanta, Munich and Monterrey.

Type in the following link (http://goo.gl/jMdqB) for a full listing or contact Karolina Redzicka, Operational Excellence Society Liaison at RedzickaK@xonitek.com

UPCOMING LEAN EVENTS INCLUDE:

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June 19-23, Los Angeles, California

The 12th annual forum is themed The Art of Reflection: Connect – Inspire – Act. The event was formed in 2001 by a group of students of the work of W. Edwards Deming and related theorists, including Russell Ackoff, Edward de Bono, Tom Johnson, Peter Senge, and Genichi Taguchi.

The aim of the five-day Forum is to continue to elevate the consciousness of individual and collective thinking. Join in order to learn, connect and improve how you work, learn and think together.

Registration fee: $400. More info at www.in2in.org

OPERATIONAL EXCELLENCE SOCIETY

Just over a year ago, the Operational Excellence Society only had a couple of chapters. Today, with 2,500 active members and several chapters located around the world, this not-for-profit organisation has been growing steadily.

There are active chapters in London, Dubai, Ciudad Juarez, Warsaw, Abu Dhabi, Cologne, Frankfurt, New York, Atlanta, Munich and Monterrey.

Type in the following link (http://goo.gl/jMdqB) for a full listing or contact Karolina Redzicka, Operational Excellence Society Liaison at RedzickaK@xonitek.com

THE MANUFACTURER OF THE YEAR AWARDS

Entry deadline: July 31st

This competition is specifically designed to acknowledge and celebrate the strength and diversity of UK manufacturing. The awards aim to spread best practice, inspire others and show the important role UK manufacturing plays in today’s economy.

We know success is achieved by organisations of all shapes and sizes and believe that every business should have the opportunity to be recognised and to showcase its talent.

For winners, finalists and those highly commended, the experience from judging day, the thrill of the awards ceremony, the internal and external PR opportunities and the recognition gained from existing customers and peers are all fantastic well-being factors that result from entering an awards programme.

ENTER NOW

Entry into The Manufacturer of the Year Awards is straightforward, simple and free*. Whether you have driven innovation in your company, taken on a recent sustainability project, have an inspirational leader or made significant improvements to your working practices, we want to hear from you!

ENTRY IS FREE*

Entering The Manufacturer of the Year Awards programme could be the single most cost effective method of motivating your team and recognising their achievements. With a range of categories to choose from, entering is free* and simple, and there’s no limit on the number of categories you can enter.

SHORTLISTED COMPANIES

After the first round of judging by industry experts, the top scoring companies in their category will progress to the second round of the competition. These shortlisted companies will be announced in September and invited to present to the category judging panel at a Judging Day in October.

* All categories are free to enter, EXCEPT the World Class Manufacturing category, which will involve a half day site visit for three judges who will assess the nominated plant. Companies that are shortlisted for the World Class Manufacturing category will be asked to pay a small contribution of £450 towards the judge’s time and travel expenses. This is the only category that will have a site visit and fee.

There is no cost to submit your entry for this category and only those companies who are shortlisted for the World Class Manufacturing category will be required to pay the judges fee.
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Some of the benefits of subscribing to LMJ include:
- full access to the website leanmj.com - online back catalogue of articles from January 2012.
- 20% discount to LMJ events throughout the year, including the flagship LMJ Annual Conference

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**Company sector (Please tick ONE box)**
- Manufacturing
- Engineering
- Finance
- Construction
- Healthcare
- Local government
- Professional services
- Retail
- Military
- Other _____________
- Government

**Employees at Site (Please tick ONE box)**
- 1-50
- 251-500
- 51-100
- 501-1000
- 101-250
- 1001-5000
- 5001+  

**Employees globally (Please tick ONE box)**
- 1-50
- 251-500
- 51-100
- 501-1000
- 101-250
- 1001-5000
- 5001+  

**Turnover (Please tick ONE box)**
- Under £2m
- £50m-£99m
- £2m-£4m
- £100m-£999m
- £5m-£9m
- £500m-£999m
- £10m-£49m
- £1b+

**Among the following topics, which are of most interest to you?**
- Leadership
- Tools
- Coaching
- Employee engagement
- Visual management
- Event reviews
- Case studies
- Research
- Academic debate
- Standards
- Assessments
- Lean IT

Signature: ____________________________ Date: ____________________________

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For more information, please contact Roberto Priolo on +44 (0)207 401 6033.

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