BSM

MANAGEMENT BRIEFING

TOP LABS GET LEAN

GIVE YOUR LAB THE EDGE

BSM has developed Lean methodologies and solutions specific to the Lab environment which substantially improve measurable performance and/or reduce lead-times & costs.

Lean in the Laboratory

Laboratories are not the same as manufacturing environments. While most of the key principles of traditional Lean still apply, there are many unique challenges involved in effectively implementing them in laboratories.

Most analytical and microbiological laboratories have relatively low volumes but a high degree of variability and complexity. Many standard lean tools are not a good fit, however Lean can and should be applied to labs. A generic approach will not work but careful adaptation of the techniques based on a thorough understanding of Lab operations will deliver significant benefits in terms of cost or speed or both.

BSM has developed methodologies and solutions specific to the Lab environment which minimise non-value add activity and maximise throughput and/or velocity.

Applying Lean in the Lab

Lean in the Lab should not just be about applying techniques or developing people skills it should be primarily focused on improving measurable performance. Of course people will learn valuable new skills but firmly in the context of improving KPI's or reducing costs.

*Key principles that always apply**

- Specify Value
- Identify the Value Stream
- Make Value Flow & Create Pull
- Level the Load & the Mix (Heijunka)
- Eliminate Waste
- Manage Performance

Improving measurable performance, reducing lead-times and costs

Although the basic concepts and techniques of lean are simple, adapting them to the lab situation and integrating them into a defined process that uses resources well (and is simple to manage) is quite a challenge.

If a Lean project is to be successful and delivered within a reasonable time frame, it is necessary to resource it properly. This should include significant senior management support and/or the use of external consultants with a relevant track record and excellent project management skills.

Obviously this costs money and a clear ROI (Return on Investment) and measurable project objectives should be established prior to embarking on a full project.

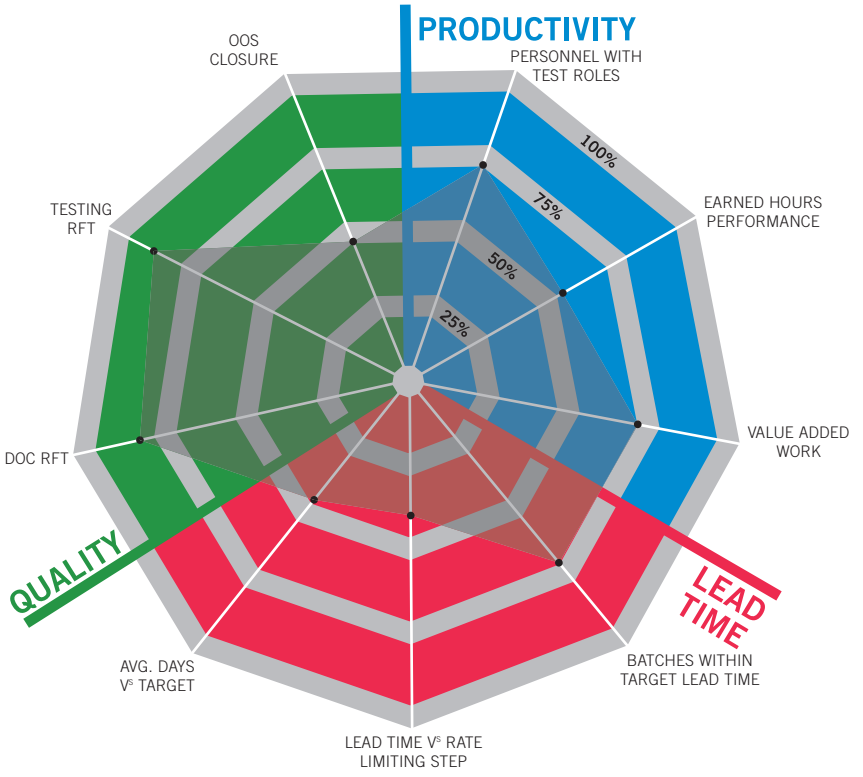
A company would generally have no problem investing in a new piece of equipment that could substantially improve measurable performance and/or reduce lead-times and costs. Investing in a project to achieve the same result via a Lean Lab implementation should not be any different.

Getting Started

Before embarking on a Lean Lab project, you should carry out a structured appraisal of the 'as is' situation.

- **Assess** current processes and measurable performance.
- **Identify** and size opportunities for improvement via the application of lean techniques.
- **Decide** *'go'* or *'no go'* based on the potential ROI of an implementation project.

Figure 1: ***One of the Typical Outputs of an Assessment***



What we often find in Labs*

- Lack of Focus
- Long and variable lead times
- Ineffective *'Fast Track'* systems
- High levels of WIP
- Volatile incoming workload
- High analyst turnover

* FURTHER DETAILS OVERLEAF

Assessment

What we often find in Labs

Lack of Focus

Analysts and Microbiologists are typically only focused on test accuracy and individual test run efficiency.

Very often, personnel are dedicated to specific tests and there is little or no control of the progress of individual samples through a sometimes highly variable test routing (dependant on product type and/or intended market).

Long and variable lead times

In many test laboratories, we find queues in front of each test in which individual samples wait until enough similar samples arrive to constitute an efficient test run.

This approach causes long and variable lead times and, contrary to popular belief, does not result in higher productivity.

Ineffective *'Fast Track'* systems

'Fast Track' systems are often developed in an effort to deal with urgent samples but these rarely work.

In most cases, the proportion of samples designated as priority becomes so large that *'Fast Tracking'* quickly becomes unworkable. A much better approach is to re-engineer the process to improve the velocity for every batch. **It can be done!**

High levels of WIP

Most labs we see have high levels of WIP which inevitably results in lots of (non value adding) effort being expended in controlling, tracking and prioritising samples and in planning analyst work. Companies often respond to this situation by investing in a LIMS or other costly IT system. However these systems do not in themselves improve performance.

The underlying process by which work is organised and moves through the lab must first be re-engineered based on lean principles.

Volatile incoming workload

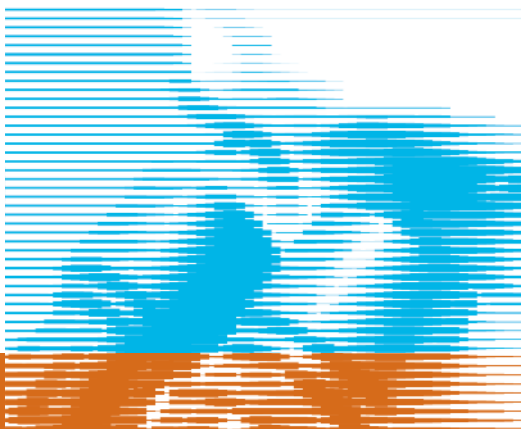
For many labs the incoming workload is inherently volatile with significant peaks and troughs. This causes low productivity (during troughs) and/or poor lead time performance (during peaks).

Very often the capacity of the lab is not well understood and there is no mechanism to level load the workload. **The surest way to fail is to put more work into the lab than it can handle!** This may seem obvious but it is remarkable how often this is exactly what happens.

High analyst turnover

The levels of analyst turnover in Irish test labs is remarkable by comparison to other Life Science departments and to other countries.

This brings a unique set of difficulties with many labs being in constant training mode. This can be made easier to manage by the *'standard work'* approach of lean which inevitably leads to more prescribed and structured processes and roles.



Implementation

Applying Lean in the Lab – key principles that always apply

Specify Value

Start by identifying, quantifying and categorising lab activity as *'value add'*, *'non value add'* (from the customers perspective) and *'incidental'*. Note: Incidental work is non value add in itself but essential to enable *'value add'* tasks to be carried out.

It is also worthwhile defining tasks as being *'time elastic'* or not. This has value later in enabling level loading. A significant focus of any Lean Lab initiative will be to eliminate or reduce the non value add activities.

Identify the Value Stream

Develop value stream maps of the overall release process. This should avoid the error of working on point solutions that only end up moving a bottleneck to another process and therefore do not deliver overall improvements. For example there is no real value in reducing analytical lab lead times below a release constraint test in the Microbiology lab. You can however use increased velocity to help *'level the load'* or to maximise individual test run efficiency.

Make Value Flow & Create Pull

Define sequences of tests and associated analyst roles that make good use of people and equipment. Once you start testing a sample, keep going and do not let samples queue between tests. This will create a reduced *'through-put'* time which can be converted into a lead-time reduction or used to allow samples to wait in an incoming queue to facilitate level loading and /or grouping for efficiency.

Interpret *'Pull'* as testing according to customer priority. If this is not inherent in the order in which samples arrive, launch samples from an incoming queue according to customer demand and thereafter process them in FIFO order with no overtaking.

Level the Load & the Mix (Heijunka)

At its simplest, levelling the load (overall workload) and the mix (the mix of sample types) is about putting the same amount of work into the lab on a daily basis. This is probably the most critical step and potentially the most beneficial for the majority of Labs.

Successfully levelling a volatile load and mix will significantly improve productivity and/or lead time. The productivity improvement can be used to provide additional capacity or converted into a cost reduction.

Level loading can be achieved using queuing time created by reducing the through-put time and via the time elastic tasks identified when *'specifying value'*.

Eliminate Waste

Develop solutions and re-engineer processes to eliminate or reduce the non value add and incidental tasks identified when *'specifying value'*. Use visual management techniques to significantly reduce work planning effort. Ban all Excel trackers!

Manage Performance

Develop a structured performance management process which includes a review of lab performance on a daily basis. This can be in the form of *'huddles'* i.e. short *'stand up'* meetings held at a team white board. The agenda should be the same every day – basically how was yesterday, what is the plan for today, what actions do we need to take.

Applying Lean in a Lab is always challenging but, if done properly, the results can be extraordinary.

BSM is a leading management and technology consulting company working in the life science sector. We assist companies to deliver significant measurable improvement across a range of manufacturing, testing and business processes.

We develop innovative and sustainable solutions via the application of best practice lean, re-engineering and change management techniques and we have an extensive track record of successful implementations.

To discuss any aspect of this briefing or your own laboratory project or plans please contact:

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