Asma

DMAIC:



A methodology for Lean Six Sigma business transformation

Effective business transformation can really benefit from traditional Lean Six Sigma (LSS) but in many enterprises, it is perceived as applying overly rigorous and time consuming methodologies, employing advanced statistical techniques – which very few people use today. This is intimidating for many, especially in the service sector where the delivery of services bears little resemblance to improvement logged in manufacturing operations and on the factory floor. In some cases, understanding that change is both a political and a behaviourial process will give more leverage than focusing entirely on advanced statistical techniques and applications.

In today's marketplace, the focus on change has to move away from the traditional curriculum of Lean Six Sigma (LSS), and towards the application of the behaviourial sciences. Research in the behaviourial component of what makes organisations function effectively will take you further towards your change management goals than the application of any statistical technique.

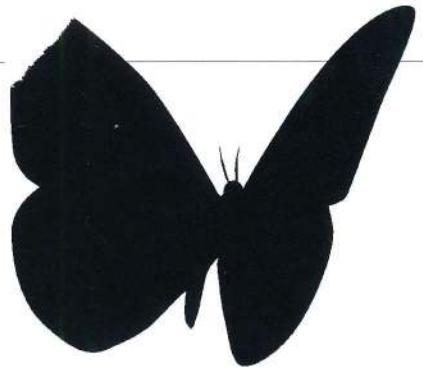
The time may be ripe to review the basic approach and DMAIC as the key structure for bringing about change. DMAIC focuses on the five core stages of using LSSOD and suggests a systematic and sequential approach to problem definition and solution. DMAIC is a solid foundation for problem and conflict resolution, is based on the OD approach to action research and follows the rigour of the scientific method or enquiry. We will explore each of the stages and upgrade our understanding of these based on the latest approach to LSSOD.

DMAIC comprises five key stages. 'D' refers to DEFINE, defining the core issues and winning the support of the organisation to drive for improvement. 'M' is for MEASURE where we assess current performance of an operation and use it as baseline assessment of progress when implementing solutions. 'A' stands for ANALYSIS where we use an evidence based rationale to identify the initial 'root cause' of the problems that spread and have such a negative impact on corporate performance. Analysis gives us ideas where 'I' for IMPROVEMENT and implementation of the needed changes is driven and 'C' refers to CONTROL where we set measures in place, ensure that systems are tracked and performance is measured and maintained within acceptable quality standards.

DMAIC is a very powerful process but the old approach relied on 'left brain' statistical thinking and methods for analysing problems – neglecting the more 'right brain' intuitive solutions. Maybe the more traditional methods were suited to manufacturing and operations management, but, although still appropriate for the service and public sector, they are favoured less well than the more 'up beat' and attractive applications of organisation development.



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We also find that the service and public sector are equally in tune with DMADV as a problem solving approach simply because it focuses on the development of new services and products and the 'DV' element of the DMADV equation concentrates on 'D' for Design and 'V' for Verifying that the design ideas are working and resolving the identified potential problems. We have known organisations using DMADV for developing new innovative services in recruitment, learning and development, procurement strategies, blended learning solutions, new product development in (POS) point of sale finance and developing IT platforms for a variety of technological solutions.

Moving through the DMAIC sequence of activities, you will find that by 'front loading' efforts into the earlier stages of the DMAIC process, there is less dependency on detail and rigour in the final stages of the sequence. Basically, we are investing in prevention and learning from the Deming Cycle which is also widely used as a Lean problem solving technology focused on the four stages of Plan, Do, Check and Action.

By defining and planning with precision, we can circumvent problem resolution at later stages. We will run through the key issues in DEFINE before moving on. Note as you read through this section how the 'political and influential' role of the project team is vital in influencing those on the senior management team.

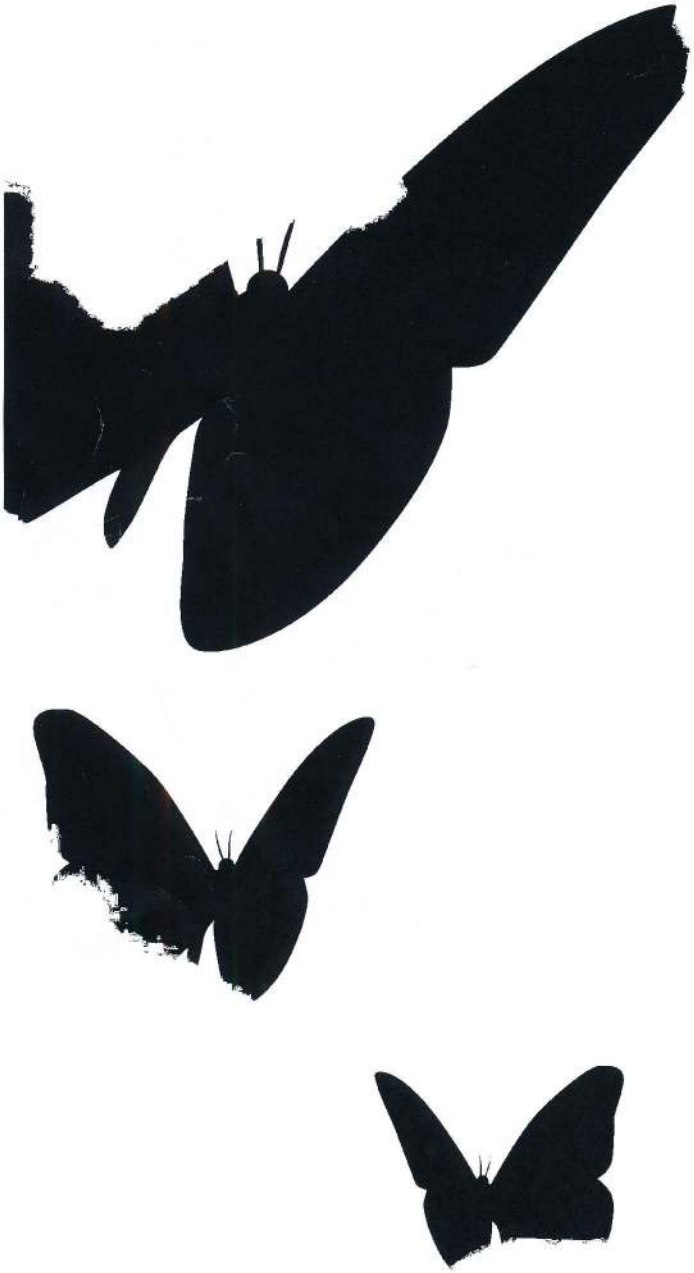
A key driver in the DEFINE stage is to define the very nature of the project we wish to pursue. Part of that definition requires us to explore from the source where the problem evolved. In many cases, we find that feedback from the end user, the consumer of the product or service, is instrumental in propelling action. The concerned citizen who is unhappy with the service received at his local healthcare centre, the recipient of social care, educational provision of central or local government services could well be the cause behind the investigation. Likewise, the customer or the client of a service provider or the customer of a fast food outlet could be the 'tipping point' that causes the organisation to adopt a self critical review of their service.

However, those in the organisation are often pretty sharp at picking up non conforming processes before the consumer has had time to sample the service, which is a powerful 'wake up' call to take action. The organisation may also have had the benefit of a member of staff who

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has championed the need to change, and this can be the key driver of the project.

However an organisation is structured, there will be an executive team who agrees how to distribute resources to resolve business problems. LSSOD requires teams to work on the preparation of projects that will be worthy of investment from that top team. The project team will have to develop an influential 'business case' outlining the nature of the problem, the implications for the business or organisation, as well as a full and detailed financial analysis of the problem outlining the immediate the costs of failure, the costs associated with not fixing the problem, the benefits that will accrue by fixing the problem, and any temporary fixes that can be put in place.

Team Charters articulate the 'problem statement' and the problem definition that the group are trying to resolve. It really needs to adhere to the simple model or SMART acronym of being Specific, Measurable, Achievable, Relevant and Time bound.

Presenting to the top or executive team is critical in taking the LSSOD initiative seriously. Project teams can make very little or limited progress without the 'sign-off' of the top team members and this is the reason why many quality or Lean Six Sigma projects fail. When we add Organisation Development (OD) to the process we find that the top team takes a new degree of seriousness to any quality or process problems and gives their support to the project.

A high level process map lacks detail but focuses on the core areas where there is an 80/20 chance of problems residing. Presenting this high level plan is central to winning capital and people time. The high level map may also explore potential solutions before investigation, data that reflects the presenting problem, milestones, and potential measures to assess progress.

In the DEFINE stage, the project team also need to outline how they are going to use their resources to best effect, the likely ROI, goal statements, scoping out key activities for project team members, the support they will need from project sponsors and core stakeholders in the project.

This is where there is an overlap with the 'M' stage in DMAIC. There are no 'black and white' areas, only grey areas between each of the DMAIC stages. What is hinted at in DEFINE can become much more tangible when we start moving into MEASURE.

Here we also see how the project team will demonstrate the results of research undertaken and the approach they intend to pursue. They will probably have developed a CTQ, (Critical to Quality), review of those issues which are central and vital to the quality of the service or product in very precise terms. Also CTC is (Critical to the Customer) or consumer experience. This means the team will have had some communication with the client, or at least collected data that will enable them to assess how well the CTQ

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fits with service delivery and CTC customer needs. CTQ enables the management team to understand what it is that they have to improve in the customer or end user's eyes, and why the customer believes it to be important. CTP (Critical to the Process) arises later.

At this stage, the metrics and statistics may start entering into the process. The project team will have explored process mapping and identified and applied FMEA (Failure Mode Effect Analysis) exploring those areas where failure is, has, or is about to arise. They may also have undertaken some analysis with 'Risk' and developed a RPN or risk priority number which is a combination of RPN = severity (10) x possibility of occurrence (10) x detection (10) and can range from zero up to 1000. At this stage, this analysis is vital in highlighting the commitment and the action which is necessary to fix the problem once and for all.

Here we have to take a baseline measure of how well we are dealing with the issue. One of the biggest errors that people make in LSS is failing to take measurements when things are going wrong. It is of little value to state that things are better at the end of the process without identifying specific issues and criteria for improvement at the start.

Even with problems where there are undocumented processes, we should make every effort to define some criteria, outline the conditions, the level of performance (however poor), missed stages in processes, errors in transference and translation of information, and failure to relay decisions, etc.

Although verifiable data may not be available at the start of the project, it is expected that the project team develop a data collection plan and present it to their senior management group or team. The data collection plan should cover what data the group are interested in collecting, the methods of data collection, the tools for analysis and the presentation of that data visually or otherwise, the source of the data, and the contribution of others in the data collection phase. This should all be related to the establishment of goals and must ensure data consistency and integrity.

In a less tangible, non manufacturing environment, it may be valuable to collect qualitative as well as quantitative data. Traditional LSS training focuses on the collection and analysis of quantitative data solely, with a relative absence or acknowledgement of the value of qualitative data gathered via 1:1 structured interviews, participant observation, focus groups, attitude surveys and the use of tools such as the repertory grid and a myriad of creative data collection techniques.

When using DMAIC we should be using all the tools we have at our disposal. Pictures and graphs are often worth a 1000 words. At this stage we should be capturing our data collection graphically using a variety of tools including histograms, run charts, box plot and Pareto.

Once we have identified performance objectives and measures, we can start moving away from our internal analysis and benchmarking ourselves against others as well as best



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"There is increasing evidence that creating time for teams to reflect on how they work together can help raise standards."

in class. Working with a bank, our consultancy partnered with the post office on a key benchmarking activity. Initially, people in the bank questioned why we would pair a bank with a postal service, suggesting there was no synergy or understanding of the different constraints on each organisation. They soon changed their minds when we outlined that both organisations: had customers they wanted to retain; processes that supported customer service; and staff geared towards delighting their customers. We were able to 'benchmark' how they best utilised these resources in our goals of improving customer retention, improving process capability and maximising the use of human resources.

In ANALYSIS we can use a variety of tools in order to compare our performance against self and others in the same industry, or using similar processes. We can use statistical measures such as central tendency, the mean, median and mode, and measures of dispersion to analyse how activity is distributed over a range of values. We can graph and identify trends, and explore relationships between two or more variables using regression analysis and coefficient or correlation and a host of other techniques for testing for statistical significance.

Finally, in ANALYSIS we should be able to explore cause-effect relationships and arrive at the root cause of our problems. Here we can loop back to MEASURE and understand how we can start tracking those things which cause other factors to vary outside our defined limits. Here there is an overlap between the ANALYSE and the IMPROVE stage.

Here we identify the vital 'X' factors that when employed correctly, can have a huge impact on the whole organisation. These 'X' factors have been identified by the team or through data analysis. In ANALYSIS we will have tested some of our ideas and drawn up implementation plans to make a big difference to performance. In IMPROVE we will focus on such behaviourial tools as RACI where we concentrate on the key players in processes and identify the roles where responsibility, accountability, consultation and influence reside. Here we will also explore stakeholder analysis, technical, political and cultural analysis (TPC) to support us in building strong and robust implementation plans. In LSSOD we need to impact the cultural and behaviourial component of organisational change and here the tools of OD are especially effective.

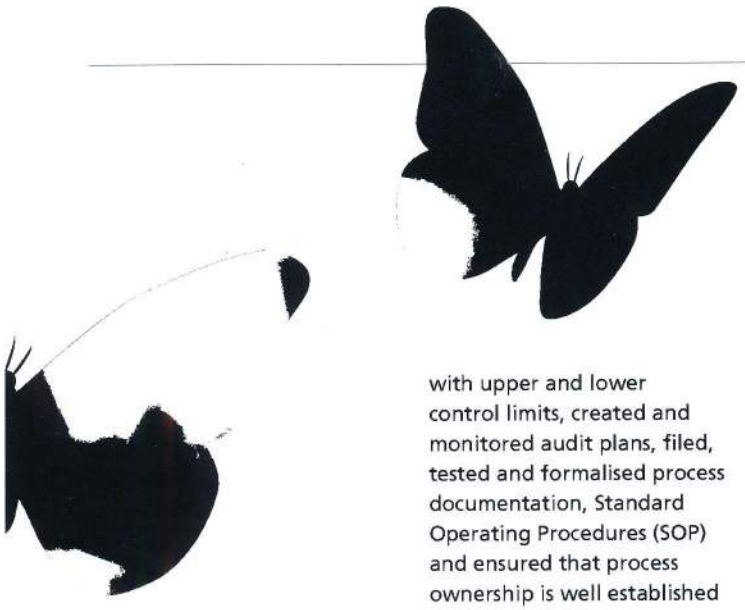
In terms of driving improvement through Rapid Improvement Events (RIE), we can utilise an implementation plan using Kaizen principles such as the 5 S's – to Sort, Simplify, Shine or Sweep, Standardise and Sustain to improve performance.

Finally, we have to ensure that we manage the key actors in the change process, to learn to develop and use sponsors and change champions, master black belts, black belts and green belts to bed down performance. This will only be achieved when we have trained sufficient people to understand their role in change. Change champions may be spread pretty thin within the average organisation. Most enterprises should be focused on training at least 1% of their staff to be skilled to black belt level and approximately 20-25% trained at green gelt level. Green belts will be able to facilitate problem solving sessions and should be equipped with training in the use of LSSOD tools within each stage of the DMAIC process. It is also a pretty good idea to have trained the majority of staff in yellow belt so they are equipped and fully understand the basic LSSOD tools and methodologies and can contribute as part of a problem solving team.

CONTROL enables us to determine process capabilities and understand when they are under pressure, before they create problems and answer the question 'Will processes stay in control?' CONTROL also tells us when we are safe to close a project, and during this phase we may want to consider have we undertaken a risk assessment, have we set up Poke-Yoke – or mistake proofing devices, developed preventative SPC (Statistical Process Control) and data collection plans for review, set up ongoing measurements



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with upper and lower control limits, created and monitored audit plans, filed, tested and formalised process documentation, Standard Operating Procedures (SOP) and ensured that process ownership is well established in every process that flows across the organisation. Should there be a quality plan to ensure that each product or service characteristic stays within conformance?

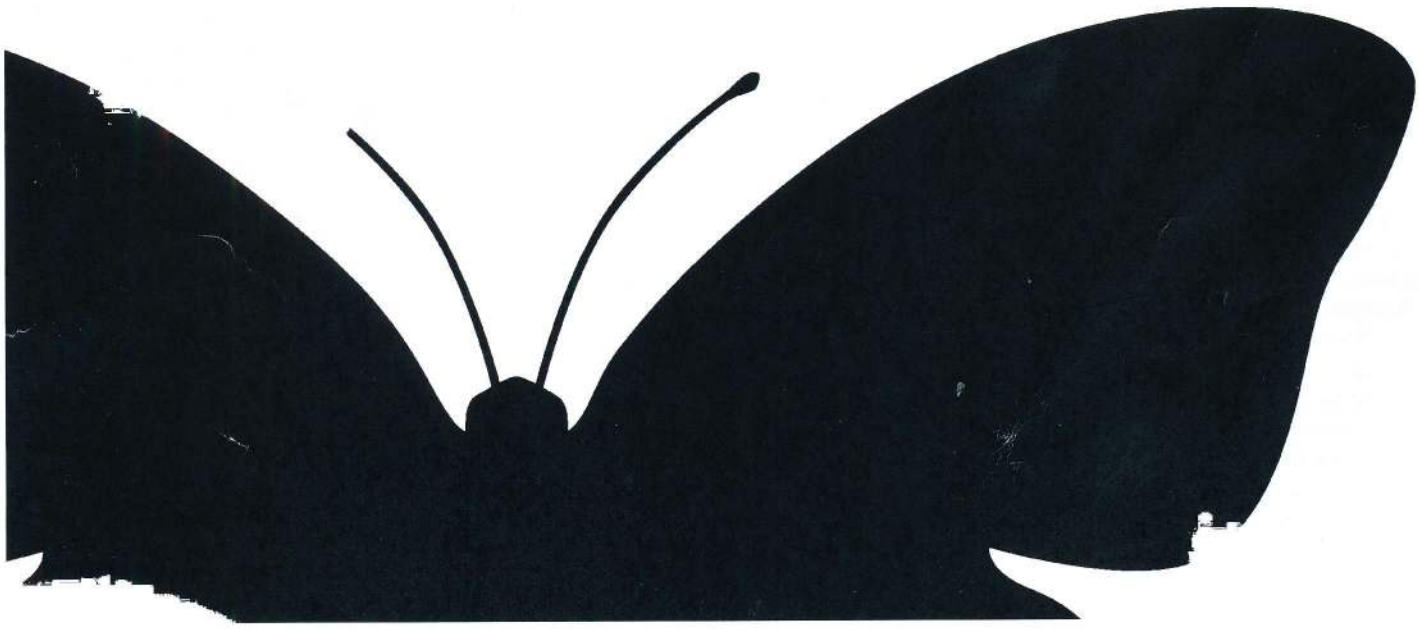
The DMAIC Process is a set of five phases within a LSSOD project used by organisations to improve upon the quality of an existing product or service. We focus our energies on looking at specific tools and the stages for the public and service sector enterprises. There are many tools and methods used within these five steps so that any LSSOD project can be a success in quality improvement and service excellence. These tools are equally useful for those who are using DMAIV for developing a new products, projects or processes.
The difference between a good LSSOD practitioner and a great practitioner is the ability to know which tool or technique can or should be used, and when to use it. This comes with training and extensive experience with LSSOD projects.

DMAIC that relies on 'left brain' statistical thinking and methods for analysing problems and neglecting the more 'right brain' intuitive solutions, is doomed to failure, compared to the more 'up beat' and innovative and attractive applications of Organisation Development (OD).

Finally, there needs to be a balance between the traditional tools of LSS and that of LSSOD. It must be remembered that change is fundamentally a cultural issue, and unless we address the core OD issues of how to create the appropriate culture and leadership style to create significant change the application of the myriad of Lean techniques and advanced statistical use will only prove partially successful in changing organisations for the future.

Philip Atkinson is a consultant, executive coach and a master black belt tutor in Lean Six Sigma specialising in strategic, behavioural and cultural change. He consults in the UK, Europe and US, has written seven business books and published over 300 articles, is a frequent conference speaker and designer of learning strategies to support personal and organisational change.

Visit philip@philipatkinson.com or www.philipatkinson.com or his new website www.lean-six-sigma-OD-training.com where his new accredited learning management systems in Lean Sigma OD are presented.



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