Company Overview | DPS ATG | dpsgroupglobal.com

DPS Group is a global engineering, consulting, and project management company serving high-tech industries around the world. DPS delivers services for clients across the complete engineering and construction value chain, including feasibility studies, concepts, consulting, architecture, engineering, procurement, construction management, commissioning, qualification and validation, as well as contingent staffing solutions. DPS applies its extensive process engineering expertise built over 45 years, as well as significant Lean construction experience to assist clients in high-end process sectors such as pharmaceuticals, biotech, and semiconductors to deliver manufacturing facilities speedily, safely, and cost-effectively. What sets the firm apart are the partnerships it builds with clients through a fundamental understanding of their businesses and its own agility, flexibility, original thinking, and high-calibre people. DPS has grown substantially in recent years and now employs more than 1,850 people in 14 offices and on client sites in Ireland, UK, Netherlands, Belgium, Sweden, Switzerland, Israel, Singapore, Saudi Arabia, and the United States.

Author

William Schofield

Overview & Background to the Lean Initiative

This case study demonstrates the application of the DMAIC (Define, Measure, Analyse, Improve, Control) methodology of problem solving to develop a global innovation roadmap for the DPS Advanced Technology Group (ATG). The DMAIC method for process improvement offers a structure for improvement initiatives that encourages both control and exploration in improvement endeavours, plus the active investigation encourages teams to be adaptable regarding diverse viewpoints.

Lean Initiative Undertaken – Lean Thinking, Tools, Techniques

The following is a summary of the five phases of the DMAIC methodology applied on this Lean project.

Define Phase

The define phase of the DMAIC approach utilised the following instruments: project selection, strategic planning, process mapping, and project management. Customer feedback on DPS performance was high regarding execution tactics. However, customers highlighted a desire to see a better strategic approach from DPS in generating and implementing strategic improvements. Acting on this voice of the customer feedback, we launched a multidisciplinary team to deliver the customer requirement for DPS to have a more effective process improvement strategy.

Measure Phase

The measuring stage of the DMAIC approach involved the use of data sampling and gap analysis. A large amount of project improvement ideas were documented across multiple DPS ATG international locations.

However, there was no central repository of improvement ideas and there was no mechanism for ideas to be shared between international sites. A multidisciplinary team was established with team members from each international DPS ATG site. Improvement ideas were collected from each site and added to a central shared repository.

To measure the effectiveness of each improvement idea, they were each scored on a scale of 1 to 5 for impact (I) based on money, time saved, and ease of implementation (E). The product of impact and ease of implementation produced a priority number (PN):

Priority Number (PN) = Impact (I) x Ease of Implementation (E)

In this measuring stage of the project, data was gathered on the improvement ideas' merits and gaps by applying the priority numbering system based on each idea's impact and ease of implementation. The dataset was then plotted for Impact versus Ease of Implementation to aid understanding of the collected data (Figure 1).

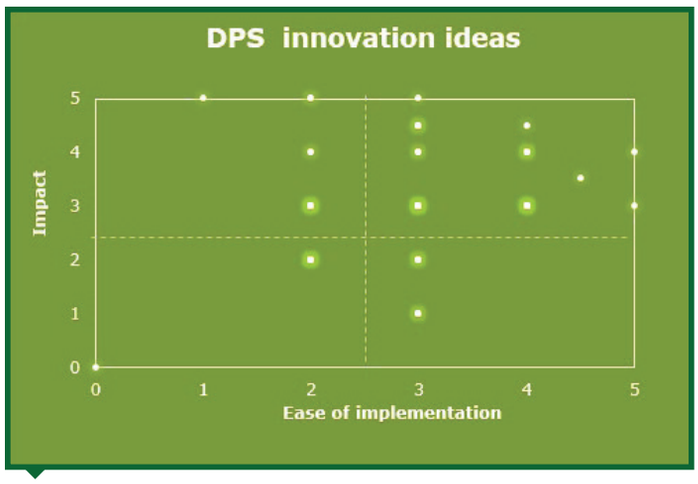

Figure 1.
Idea Priority Number

Analyse Phase

In the analyse phase of the DMAIC process, graphical improvement tools are frequently utilised. The gathered improvement ideas were classified into categorical data based on which quadrant of the Impact versus Ease of implementation graph they fell. Categorical variables represent types of data which may be divided into groups.

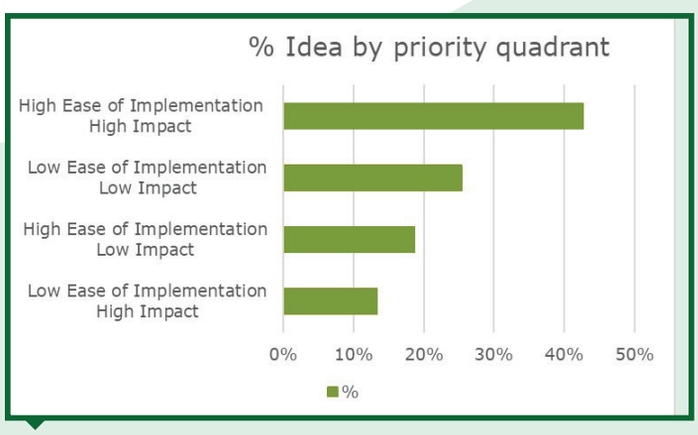

Figure 2.
Idea by Priority Quadrant

A graphical representation of the categorical data is shown as a bar graph (Figure 2), representing the percentage of improvement ideas by quadrant category.

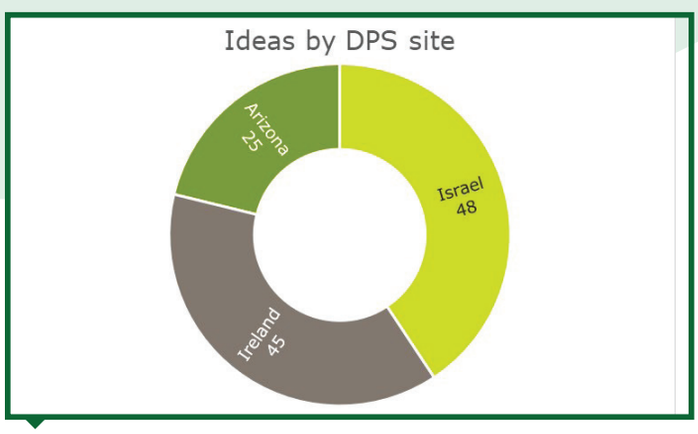

Figure 3.
Ideas by DPS Site

Improve Phase

In the improvement phase, ideas and designs were tested for their improvement impact. Appropriate remedial actions were planned after the analysis phase. A weekly idea-sharing forum was established with representatives from all international sites. An improvement roadmap was generated based on the ranked Priority Number (PN) scored for each improvement idea, owners were assigned to each improvement idea, and implementation dates by site were tracked.

Each site developed its own walk-in ideas weekly forum where staff could bring in improvement ideas to be added to the central repository, and have them assessed and ranked by priority number. The outcome was a ranked roadmap of improvement innovations for implementation at each international site. During this improvement phase of the project pilot, implementations were conducted for some of the highest-ranked projects to verify their impact. Starting in March 2020, and after implementing the above solutions, the number of improvement ideas generated each week was monitored and plotted as a run chart.

Control Phase

The final stage of the DMAIC approach involves the use of control plans and charts. During the control phase, the multidisciplinary team planned to gather and monitor the number of new ideas being generated over time. Here, a run chart was used to monitor the number of new ideas generated each week, and upper and lower process limits were calculated and added to the new ideas run chart.

This type of chart is referred to as a process behaviour chart. Process behaviour charts assist in identifying changes in process behaviour and allow them to be differentiated from natural variation in the process. Using a process behaviour chart allowed the identification of when the number of new ideas being generated was unnaturally low or high. This allowed program changes to be monitored for their impact on the number of new ideas being generated each week.

The upper and lower process behaviours limits were calculated from using the following formula:

Lower Natural Process Limit = Average -3 (Moving Range Average)/1.128

Upper Natural Process Limit = Average +3 (Moving Range Average)/1.128

The moving range is the absolute value of the difference between consecutive points on the number of ideas run chart. The average moving range represents the amount of variation in the idea generation process.

Lean Initiative Improvements & Impact

A total of 114 innovation ideas were generated, and 43% of these were assessed as having high ease of implementation and high impact. The rough order of magnitude cost-saving calculation for these projects was estimated as being between $18M and $72M, applying +/-50% accuracy limits.

This study proved to be an unusual and innovative application of the well-established DMAIC approach, and it helped identify $36M of project cost savings that had a high degree of ease of implementation.

Thanks to the multidisciplinary team conducting this project, the DMAIC approach has been demonstrated to be a highly effective strategy for the development of a global innovation roadmap. The development of a global innovation roadmap using a DMAIC approach has enabled DPS ATG to become a learning organisation. In a learning organisation, employees generate, attain, and transmit knowledge through the company, and the process of generating an innovation roadmap has created mechanisms for employees to develop, acquire, and transfer innovative knowledge throughout DPS ATG and which will enable us to add greater value for our employees, partners, and clients.

DPS Better Engineered Solutions