2021

MODULE 3

PROGRAMMING & SITE OPERATIONS

PROBLEM SOLVING

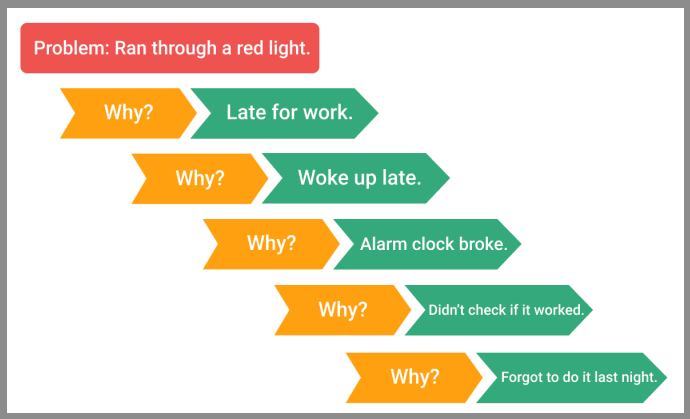
CALA CONSTRUCTION
ACADEMY OF EXCELLENCE

keystone

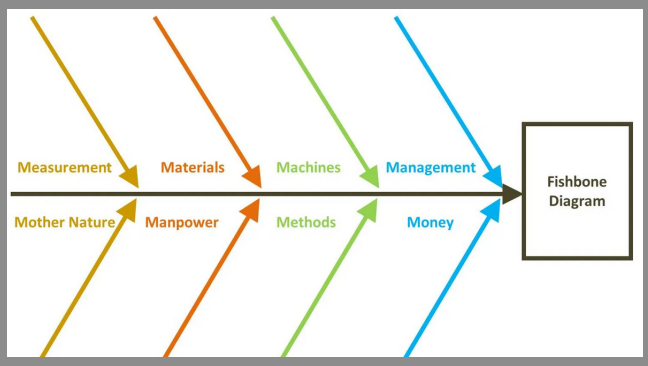
DEVIATION PROBLEMS

A deviation problem occurs when something is not performing as expected. There has been some deviation in performance, and we need to know the cause to resolve it. This can relate to the performance of a thing—like a machine—or a system or person. An example of a deviation problem is when a piece of equipment overheats tripping an automatic shutdown. The problem is contained but must be resolved before normal operation can begin again. Some popular methods and tools used to handle deviations include (these are clickable links):

The Five 'Whys'

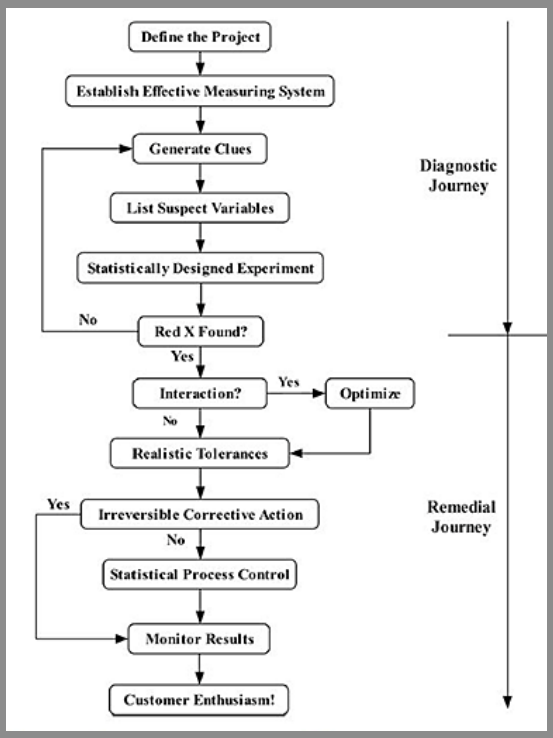


Fishbone



8D Method

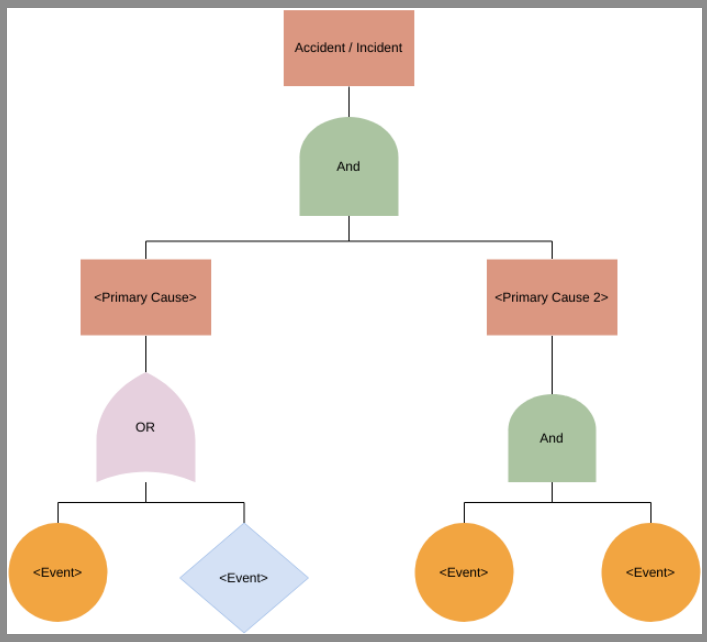
Shainin System



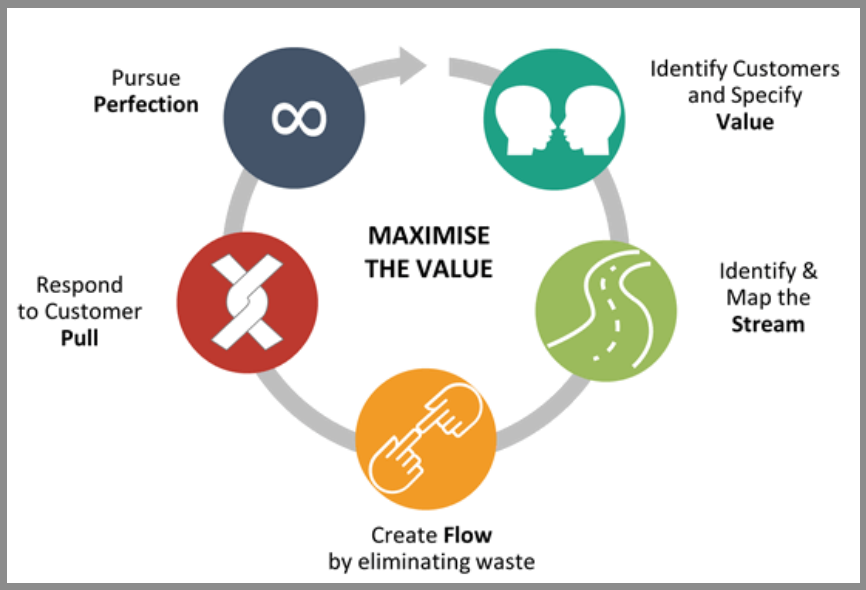
EFFICIENCY PROBLEMS

An efficiency problem is when you need to save resources, time or money by improving the efficiency of a thing, a process or person. Efficiency problems may be apparent when a system fails to run at anticipated capacity. Using the right problem-solving tools to remove bottlenecks, eliminate waste and reduce redundancy can reduce cost and improve profitability as production increases. Frequently used approaches include (these are clickable links):

Fault Tree Analysis



Lean Systems Thinking



VARIATION PROBLEMS

A variation problem occurs when the performance of a process (manufacturing, human, electronic) shifts unexpectedly outside acceptable limits. The variation occurs between prediction and reality. A frequently used approach to understand variation is (link is clickable):

Six Sigma DMAIC

Six Sigma DMAIC (Define, Measure, Analyse, Improve and Control) is particularly effective for addressing 'common cause' variations in a system. These are the usual, historical, quantifiable variations that are inherent in a system. Addressing these issues moves a process towards being defect free, or specifically where 99.9996% (Six Sigma) of the process is expected to be defect free.

Motorola Case Study

Motorola, the company that first established the Six Sigma concept, has used the approach to address business improvement. You can read more about its relationship with Six Sigma in this case study by clicking here

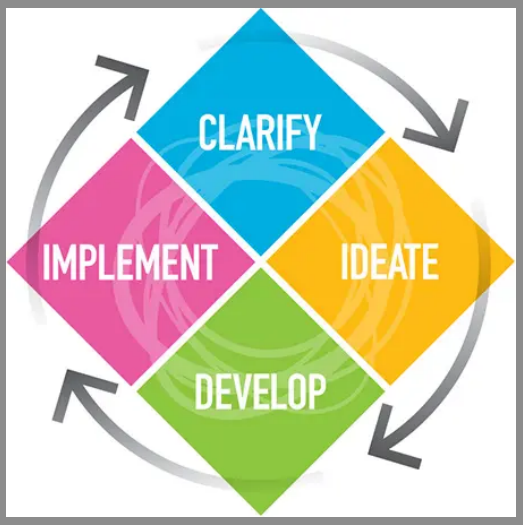
MOTOROLA

INNOVATION PROBLEMS

An innovation problem is when you need to find a solution to something that is more than just an incremental change; it is breakthrough development that meets the end users' needs and more. The resolution of such problems can result in seismic shifts in technology, performance, or the way we do things. Some of the most popular approaches are (clickable links):

- Design Thinking, by IDEO

Creative Problem Solving Theory



As the future of work changes, with automation and robotics reducing the number of low-level tasks, the need for effective problem solvers who can quickly make sense of complex problems is increasingly important. While technical skills are often industry-specific, problem-solving is considered a 'soft skill' that is valued at every level of an organisation and in all functions and industry sectors. Problem-solving and critical thinking skills are enduring skills that take on increased value as other, more technical skills become automated or replaced.