MindManager®

Authored by:

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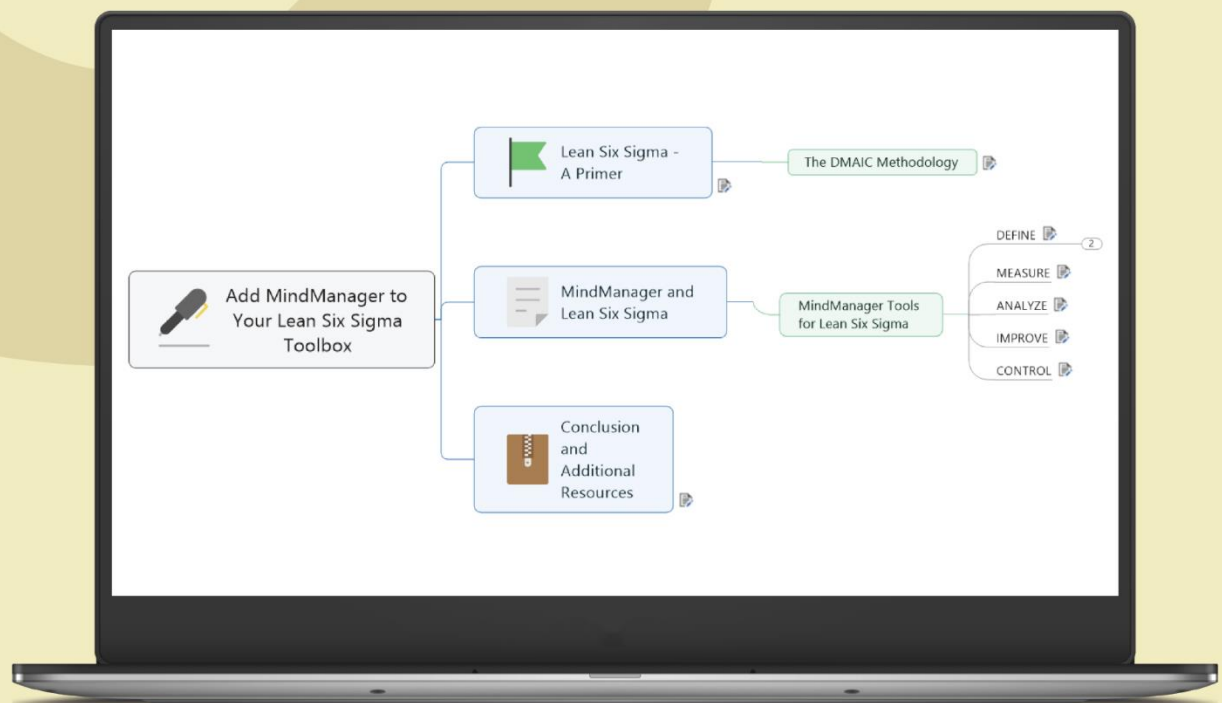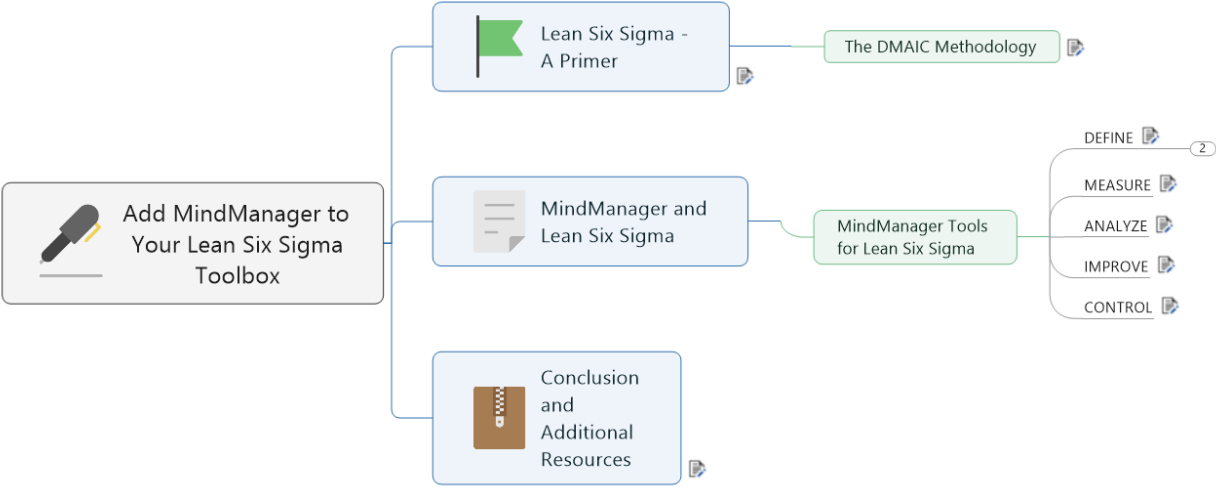
Add MindManager to
Your Lean Six Sigma Toolbox

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1 Lean Six Sigma - A Primer

Lean Six Sigma is a quality management methodology and a customer-focused change strategy to improve performance. You can also look at it as a collection of tools, or rather a toolbox, for fixing processes.

Any toolbox is only as useful as the tools it contains. Before we get into the tools themselves and how MindManager is a welcome addition, let's review some of the key components of Lean Six Sigma.

Lean Six Sigma, as the name implies, is a combination of Lean Manufacturing and Six Sigma methodologies. Lean has a long history dating back to the Middle Ages, long before the Industrial Revolution when the Venetians developed techniques for mass-producing warships in the Arsenal of Venice. But it was Henry Ford who is credited with the modern concept of Lean since he integrated an entire production process into what we know as the assembly line. Lean can be summarized as the means by which we eliminate waste in processes, specify and make value flow in the customer's eyes, and pursue perfection through continuous improvement.
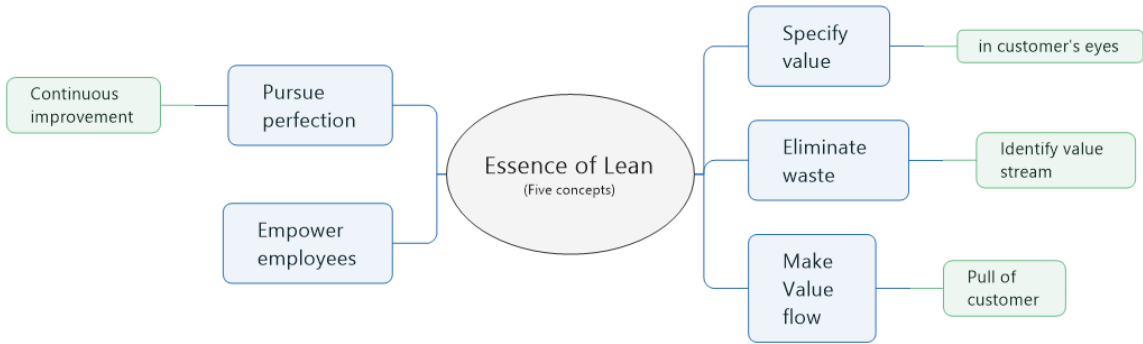
Six Sigma traces its origins to quality management fundamentals developed in the 1980s by Motorola, and later by General Electric in the early 1990s. It has a similar definition to Lean, in that it is focuses on improving the performance of processes to satisfy customers and enhance bottom-line results, but it takes a more statistical approach in doing so. The Six Sigma name is derived from the Greek letter sigma σ, and refers to the population standard deviation, which is a measure of the variation in the data set collected about a process. A Six Sigma process is one in which the 'mean' or process average is six standard deviations away from the nearest specification limit. Another way of explaining a Six Sigma process in terms of capability is in the number of defects per opportunity. A Six Sigma process is one that produces a 99.99966% yield and thus has only 3.4 defects per million opportunities.
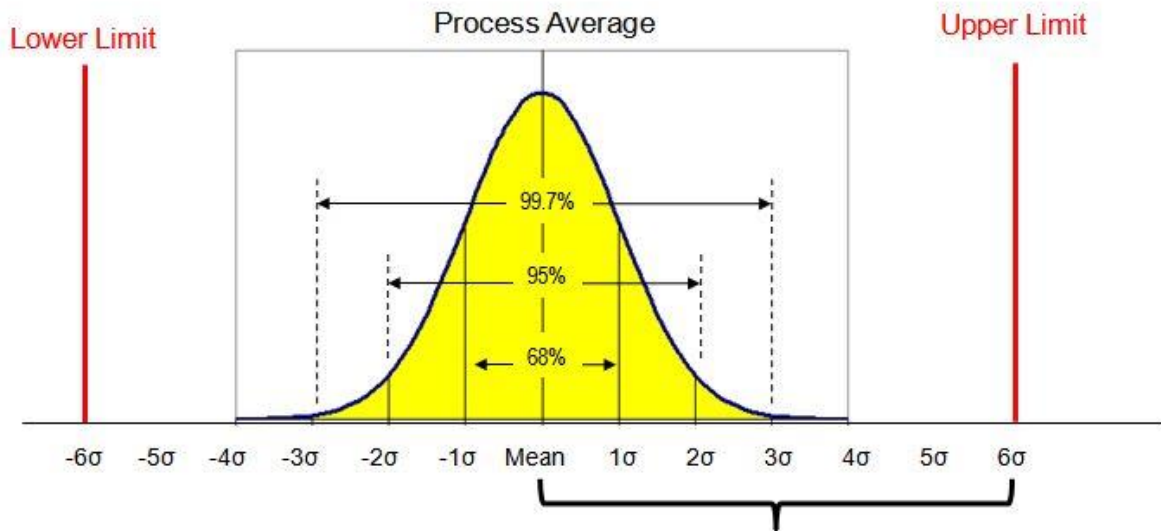
Together, Lean and Six Sigma, hereinafter referred to as Lean Six Sigma, offers a set of tools that can be used in any environment, whether it be manufacturing, e-commerce, healthcare, financial services, law offices, retail, education, or your unique organization to decrease costs, increase revenue, and ultimately improve overall performance.

1.1 The DMAIC Methodology

Companies can employ different Lean Six Sigma strategies to reduce variation and waste in their organization, three of which are known as DMAIC, DMADV, and DSFF. This whitepaper focuses on DMAIC, which stands for Define, Measure, Analyze, Improve, and Control.

Although DMAIC was not part of the original development of Lean Six Sigma, it rapidly became a core component and has helped many organizations achieve long-lasting results. Each of the five steps in the DMAIC approach has a distinct purpose and set of tools to help **D**efine the problem, **M**easure how bad it is, **A**nalyze the root causes and options for solving the issue at hand, **I**mproving the process, and, finally, putting a **C**ontrol plan in place to ensure the process remains stable.

Let's explore just some of the ways MindManager can help you plan and execute a successful Lean Six Sigma project!

2 MindManager Tools for Lean Six Sigma
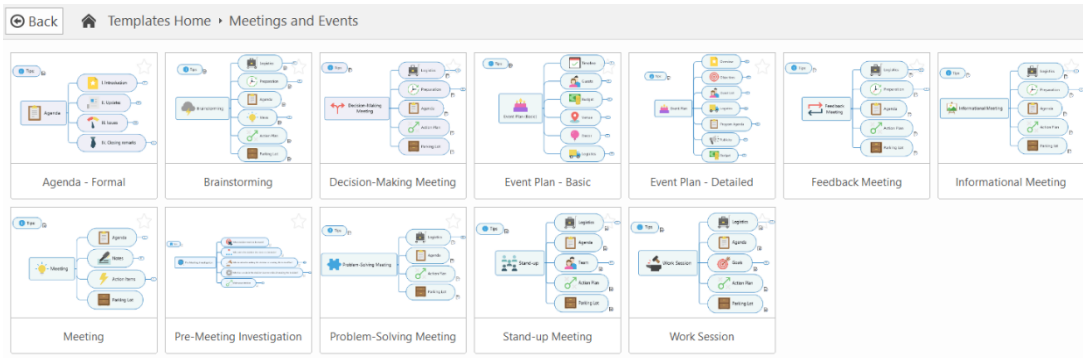## 2.1 DEFINE

In the Define step, we agree on the nature of the problem, who the customers and stakeholders are, both internal and external, and their requirements. During this stage, we also develop the project plan with attainable and realistic milestones, and then create a high-level process map. Tools used in this phase include Affinity Diagrams, Failure Modes and Effects Analysis (Risk Analysis), and Value Steam Mapping. MindManager has several built-in templates that can be used to help with the Define stage. One of the first activities is identifying the stakeholders, characterizing them, and then conducting stakeholder analysis. First, we need to understand the relationship between the various players (the suppliers and customers) and the process steps. This involves a SIPOC analysis - SIPOC stands for Suppliers, Inputs, Process steps, Outputs, and Customers. The following SIPOC tool was created in MindManager:
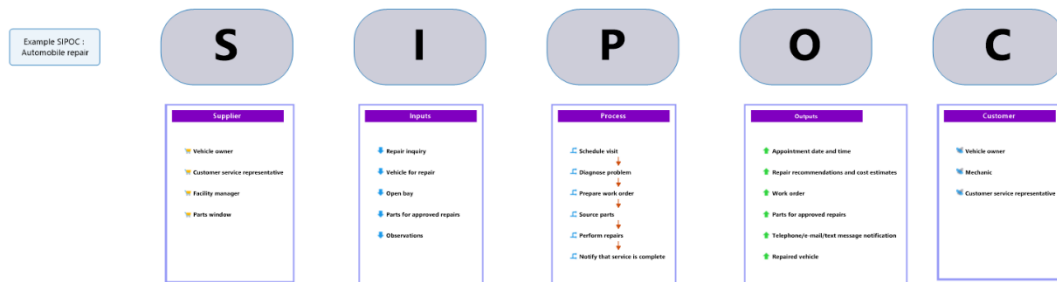
Once the stakeholders are identified, we can analyze them using a map part in MindManager specifically designed for this purpose:
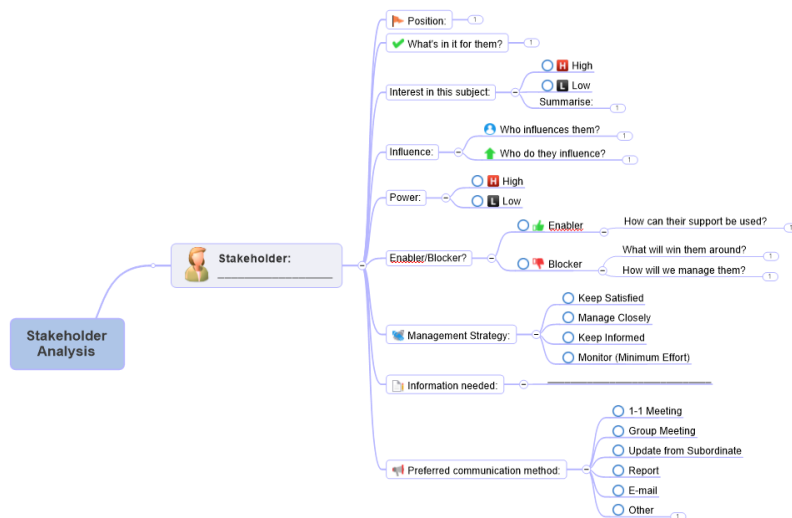

Then we need to kick off the project and begin understanding the nature of the problem. Pick an appropriate template from the Meetings and Events menu to create a meeting agenda, plan a meeting and conduct a brainstorming session:

Agenda - Formal | Brainstorming | Decision-Making Meeting | Event Plan - Basic | Event Plan - Detailed | Feedback Meeting | Informational Meeting

Meeting | Pre-Meeting Investigation | Problem-Solving Meeting | Stand-up Meeting | Work Session

Plan it like any project!

There are many types of Lean Six Sigma projects, and they can be used to address a variety of key performance indicators (also known as quality characteristics) that are in need of improvement.
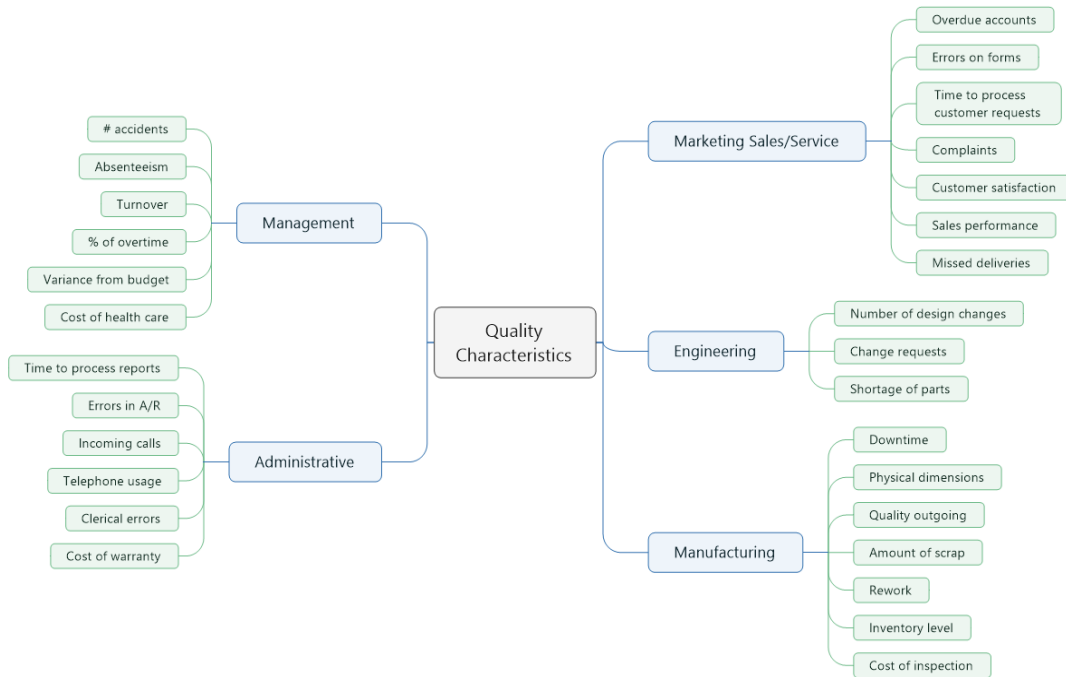
Often, organizations have so many processes that need optimization that it is necessary to prioritize the improvement projects. MindManager can help with this by creating a project prioritization map to assess the ease of implementation and the relative benefits of each project. Go to File > New, and select Strategic Planning > Matrix – Value-Effort:
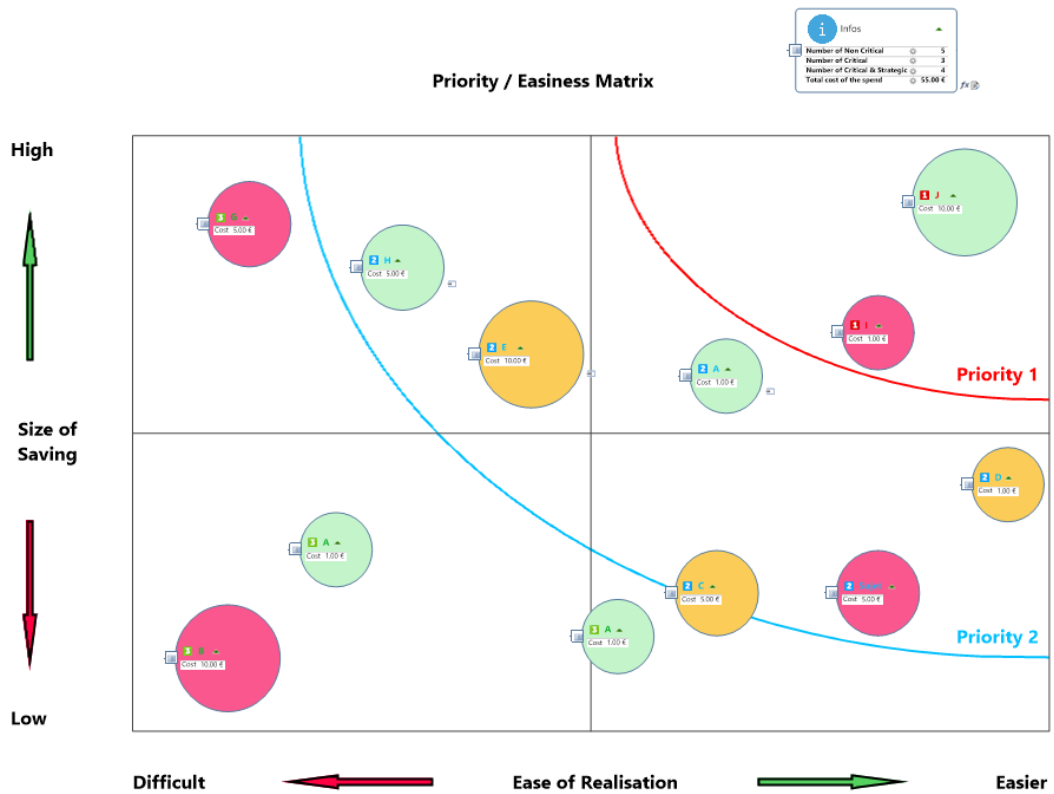
Tips:

Value / Effort Matrix

High Value

Low Effort   High Effort

Low Value
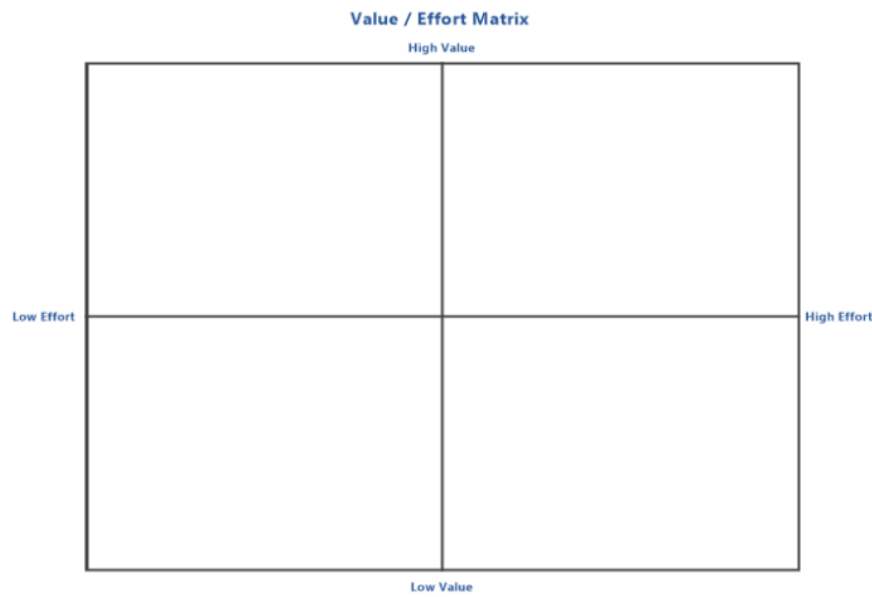
Matrix - Value-Effort

The Value-Effort Matrix template is used to guide decisions based on Value and Effort.

Create Map

A completed matrix will look like the one below:

Infos

Number of Non Critical	5
Number of Critical	3
Number of Critical & Strategic	4
Total cost of the spend	55.00 €

Priority / Easiness Matrix

High

Size of
Saving

Low

Difficult   Ease of Realisation   Easier

Once the project is selected, it needs to be planned using project management best practices, and that means creating a Work Breakdown Structure for the project. Refer to this whitepaper titled *"Project Planning with a Visual Work Breakdown Structure"* for details on how MindManager can help you create a winning WBS.

Start by opening a new map, then select Org Chart under Layout in the Design menu. Name your Lean Six Sigma project using the central topic and begin identifying the project deliverables:
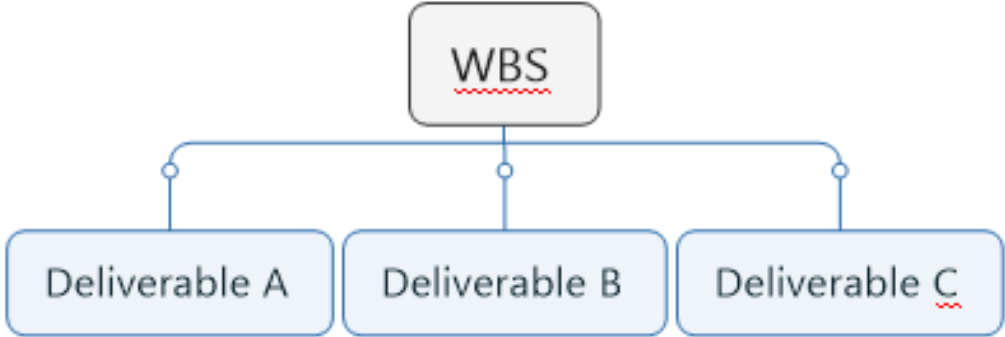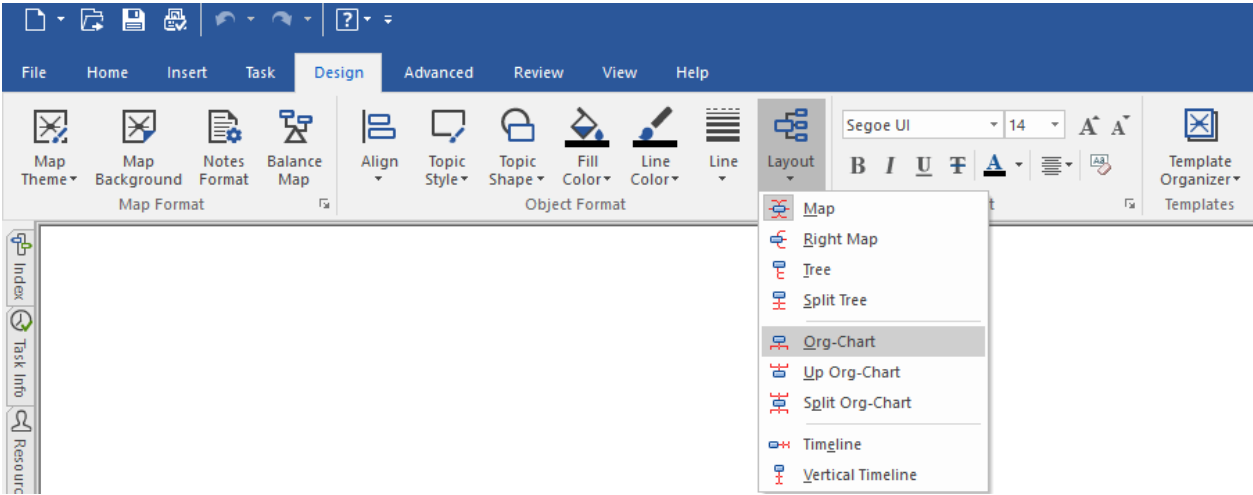

 You can very rapidly use this mind map to create the deliverables for your Lean Six Sigma project, as per the example below.
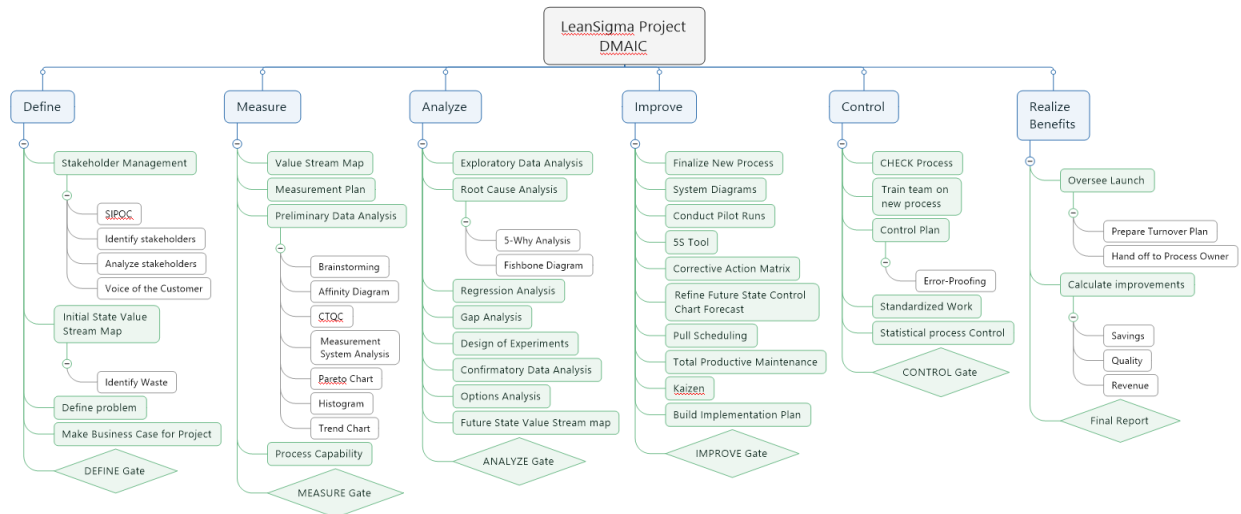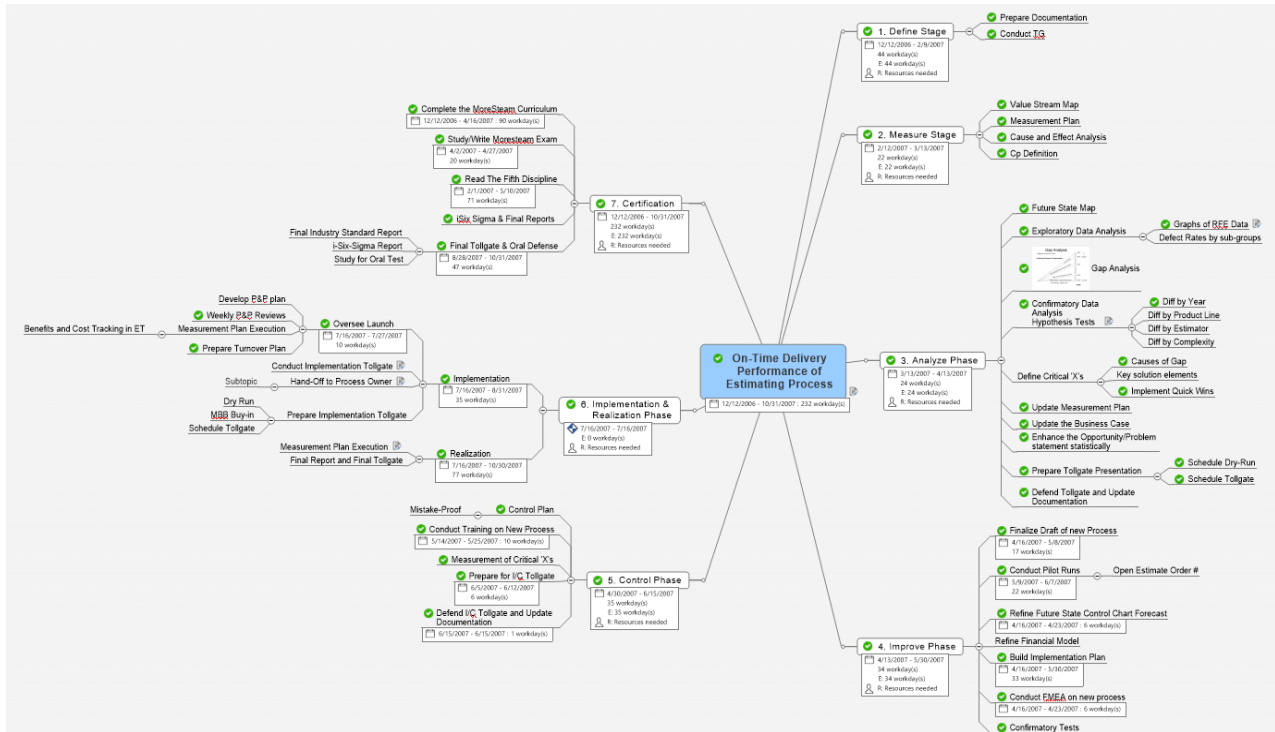
Of course, you can use whatever format you prefer to lay out your project. For instance, this radial view works just as well, so long as all the elements are included and represent the totality of the project, along with applicable task information and dates:
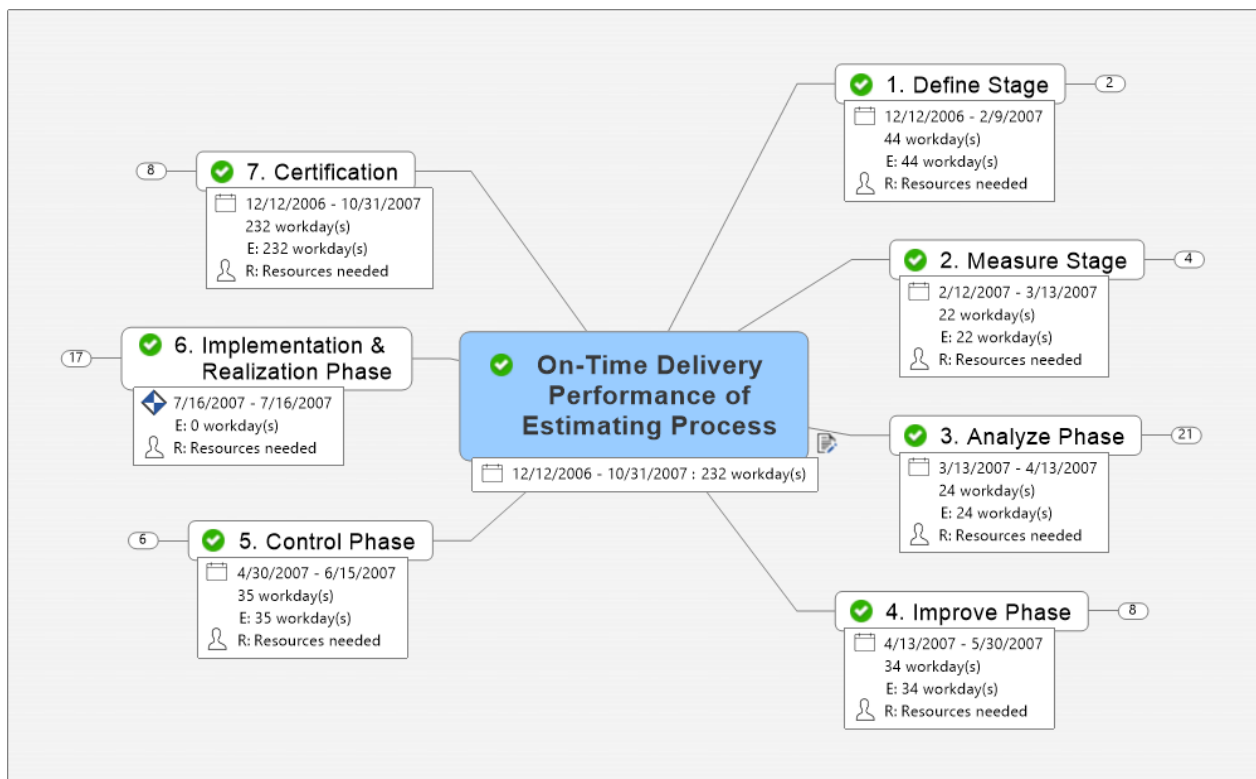
When expanded, the above WBS looks like this:

Gantt Charts

Once the WBS components have been given start and due date information and dependencies, select the Gantt chart icon at the bottom of the mind map window to view tasks on a Gantt timeline. MindManager comes with a built-in core Gantt charting capability.

It is also possible to adjust the task information directly within the Gantt chart, and to have MindManager display the Critical Path (and critical tasks) for the project. The Critical Path is defined as the longest sequence of activities in a project plan which must be completed on time for the project to achieve the due date.
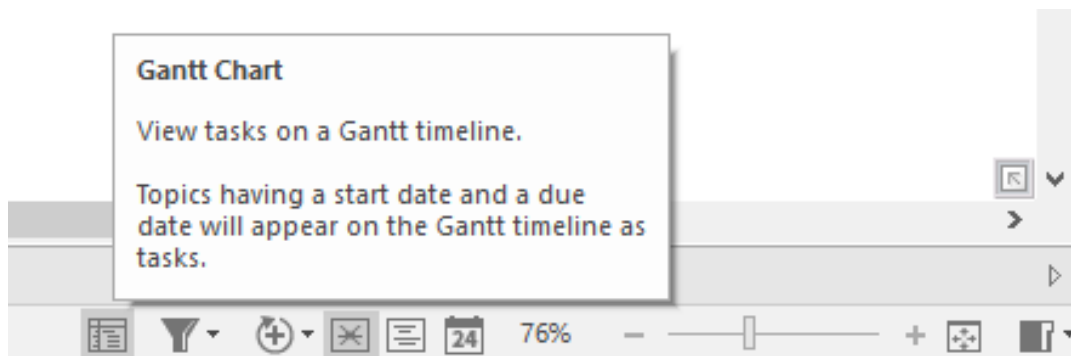
The result will be a Gantt chart that can be displayed either above, below, to the left or to the right of the WBS map. It offers more features than the core Gantt and can be opened in a new window for display on a separate monitor. In the image below, the Gantt chart for the Lean Six Sigma project was produced by Gantt Pro:

| Task	Start date	Due date	Duration	Progress
On-Time Delivery Performance of Estimating Process	12/12/2006	11/1/2007	232d	100 %
1. Define Stage	12/12/2006	2/10/2007	44d	100 %
2. Measure Stage	2/12/2007	3/14/2007	22d	100 %
3. Analyze Phase	3/13/2007	4/14/2007	24d	100 %
4. Improve Phase	4/13/2007	5/31/2007	34d	100 %
Finalize Draft of new Process	4/16/2007	5/9/2007	17d	100 %
Conduct Pilot Runs	5/9/2007	6/8/2007	22d	100 %
Refine Future State Control Chart Forecast	4/16/2007	4/24/2007	6d	100 %
Build Implementation Plan	4/16/2007	5/31/2007	33d	100 %
Conduct FMEA on new process	4/16/2007	4/24/2007	6d	100 %
5. Control Phase	4/30/2007	6/16/2007	35d	100 %
Conduct Training on New Process	5/14/2007	5/26/2007	10d	100 %
Prepare for I/C Tollgate	6/5/2007	6/13/2007	6d	100 %
Defend I/C Tollgate and Update Documentation	6/15/2007	6/16/2007	1d	100 %
6. Implementation & Realization Phase	7/16/2007			
Implementation	7/16/2007	9/1/2007	35d	100 %
Oversee Launch	7/16/2007	7/28/2007	10d	100 %
Realization	7/16/2007	10/31/2007	77d	100 %
7. Certification	12/12/2006	11/1/2007	232d	100 %
Complete the MoreSteam Curriculum	12/12/2006	4/17/2007	90d	100 %
Study/Write Moresteam Exam	4/2/2007	4/28/2007	20d	100 %
Read The Fifth Discipline	2/1/2007	5/11/2007	71d	100 %
Final Tollgate & Oral Defense	8/28/2007	11/1/2007	47d	100 %

2.2 MEASURE

During the Measure phase, we gather the necessary data to understand the performance of the process.

One of the elements of the Measure phase is a refinement of the Value Stream Analysis. MindManager has powerful features that allow you to create a Value Stream Map (VSM) and input cycle time and delay information related to the process steps in the VSM:
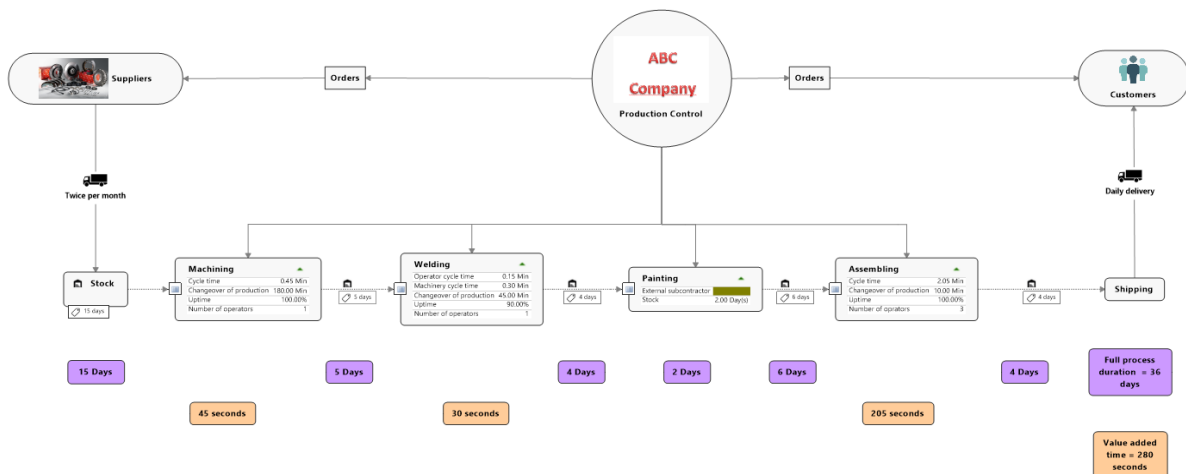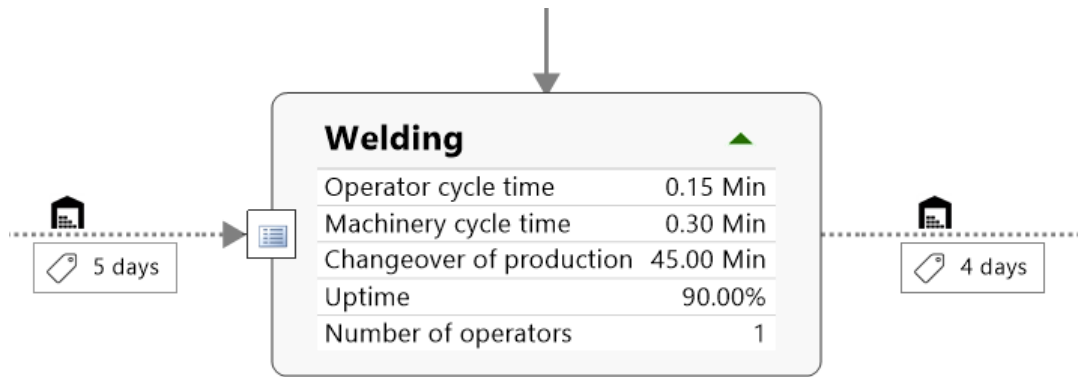
A MindManager map is also very useful as a catchall file for storing all of the project artefacts. Virtually any file format, such as an Excel spreadsheet or a Word doc, can be attached to the WBS element in MindManager, thus keeping all project files in one place.

To attach a file to any element of the mind map, select the element, right-click, and select the Attach File item from the drop-down menu, or press Crtl+Shift+H.

2.3 ANALYZE

In the Analyze phase, we seek to understand the nature and source of the problems in the process. Various tools can help us in this phase, like the 5-Whys Analysis, which we use by asking "why?" up to five times to get to the root cause of a problem. MindManager makes it easy to create tools of this nature.
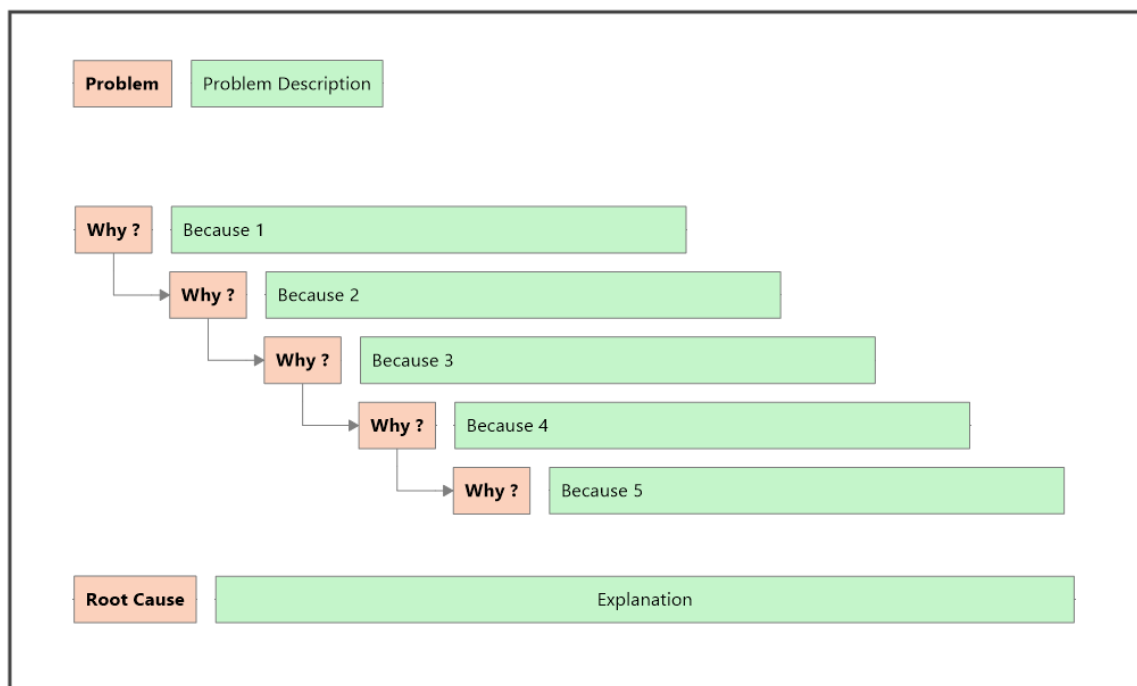
Another commonly used tool in this phase is the Ishikawa or Fishbone Diagram. These are available in several formats such Manufacturing, Market, or Services. Simply create a new mind map under File > New, and select the Problem Solving folder under Professional Templates.
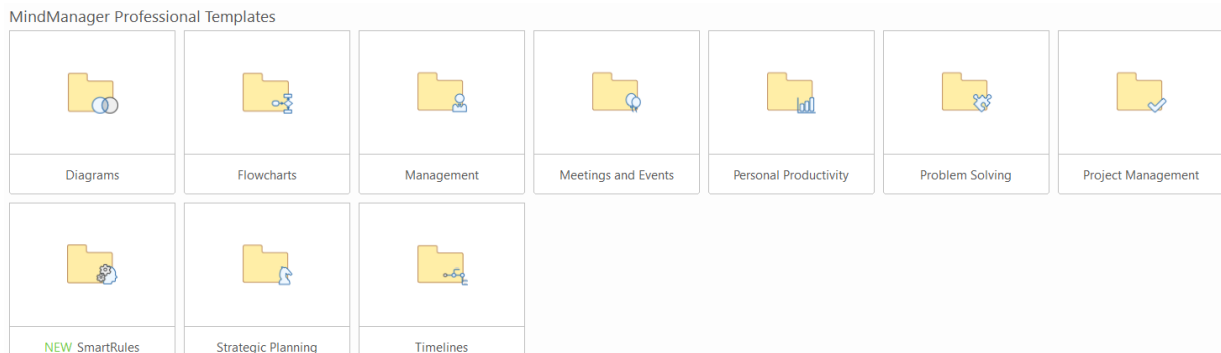
Once you have opened Problem Solving templates, select your applicable Fishbone diagram. See the Service Fishbone Analysis template below:
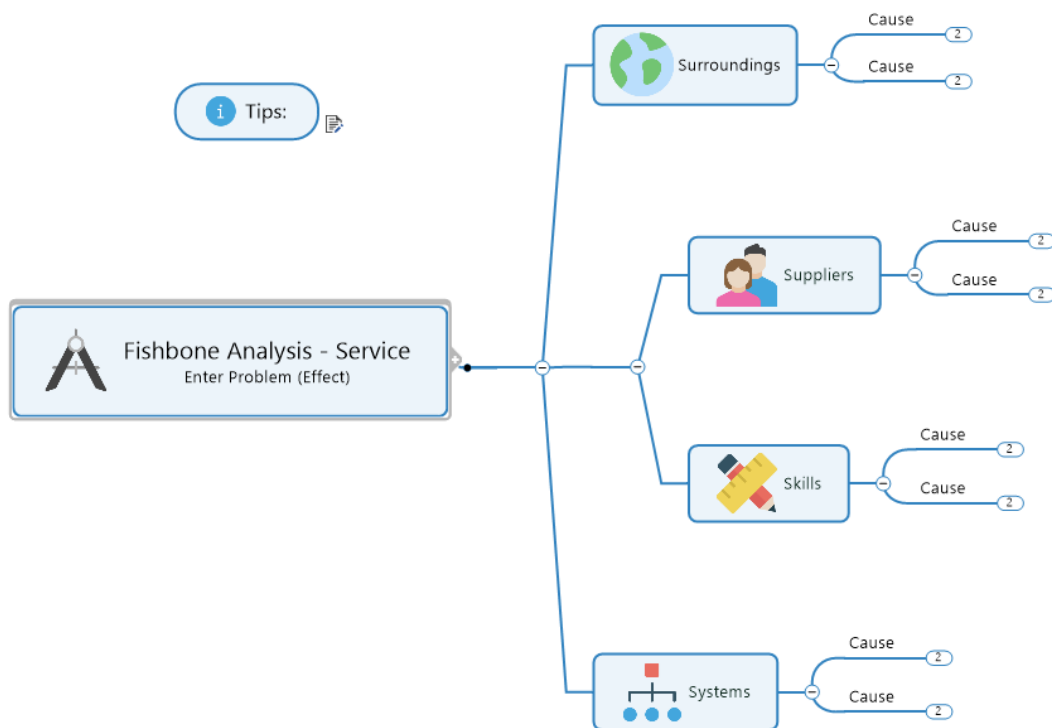
The output of a Fishbone diagram can be unwieldy, and it is often useful to group the resulting information into an Affinity diagram. MindManager can create such a diagram with ease. Go to File > New, select Matrix Diagram:

NEW Matrix Diagram

This template allows you to place floating topics into various boxes. Add rows and columns as needed.

2.4 IMPROVE

Improvements implementation is the phase where mind maps can also be of great assistance in brainstorming ideas for problem solving and ensuring the right solutions are in place to complete projects.
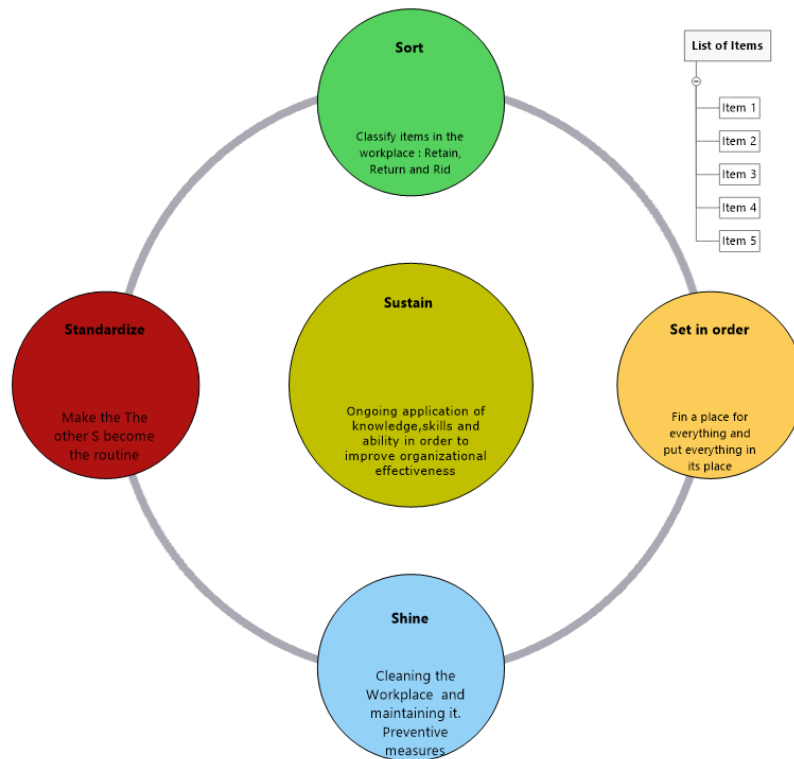
Brainstorming is a great way to engage a team in a creative way to solve a problem. It has many benefits, not the least of which is group cohesion.

MindManager has a brainstorming template under File > New > Meetings and Events:
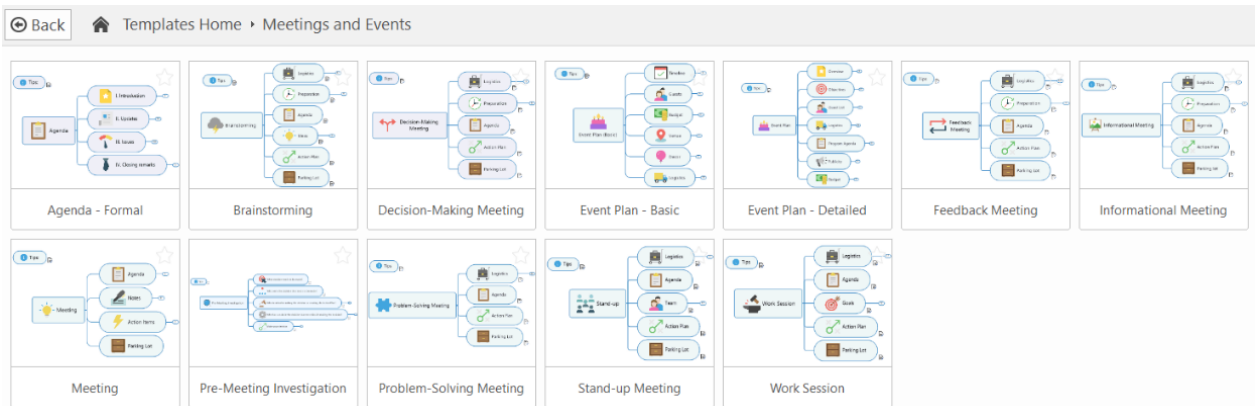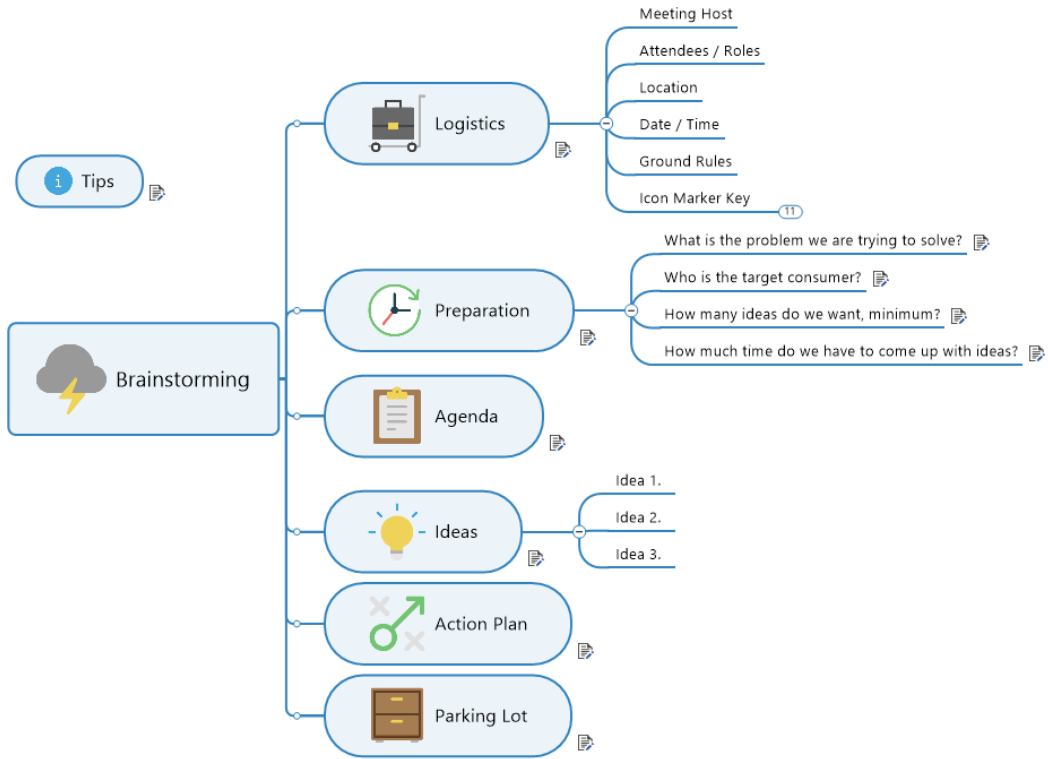
Other tools include the 5S Tool for improving visual control in the workplace.

Pull Scheduling or Just-In-Time (JIT) is another common tool used in the Improve phase of a Lean Six Sigma project. This is a system of production scheduling that pulls product through the value-stream in a continuous flow rather than pushing it through in batches. The parts on demand mechanism is referred to as a Kanban - a card that specifies the number of parts that are to be moved. MindManager has a built-in template for a Kanban. Go to File > New, and select Kanban from the list:
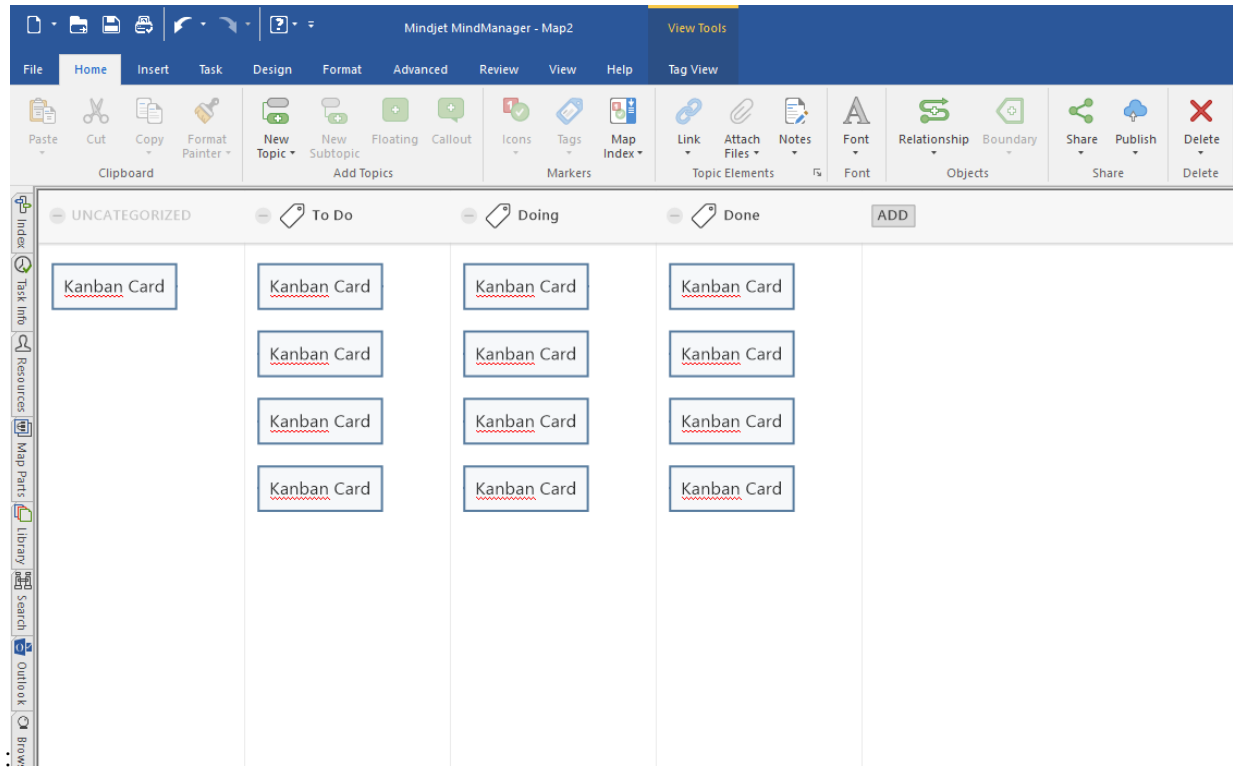
2.5 CONTROL

The Control phase of a Lean Six Sigma project is, in a sense, the beginning of the new process that has been developed and tested. This is all about maintaining the stability of the process that has been improved and involves the application of strategies for continuous improvement to ensure things do not go awry.

A solid control plan along with error-proofing and training the process owner's team are the keys to long-term sustainability of the improvements achieved in the project.

MindManager is useful in this stage as a repository all of your documents and artifacts as attachments within the mind map.

3 Conclusion and Additional Resources

Lean Six Sigma is a broad subject and there are many aspects to this methodology for process improvement. Like any field, it has acronyms and terms that are specific to the Lean Six Sigma field like Takt Time, Kaizen, Nike, JIT, TQM, etc. There are software packages and other tools that are specifically designed to provide the templates needed to conduct a DMAIC project, and these are necessary for any project that requires statistical data analysis. It is not the purpose of this paper to provide a comprehensive treatment of the subject. Instead, the goal is to present alternative tools available within MindManager that can complement and often replace other sources, some of which are listed below for reference. As mentioned earlier, one of MindManager's many powerful features includes the ability to save attachments within the elements of the mind map, thus allowing you to have a self-contained project file with all artefacts in one place. The ability to make notes within MindManager is also a powerful feature for producing reports. For instance, this whitepaper, along with all images was written entirely in MindManager, and then exported to Microsoft Word.

3.1 Resources

One of the most useful tools in any Lean Six Sigma toolset is an advanced spreadsheet program like Microsoft Excel. There are free or reasonably priced add-ons available for Excel that provide statistical packages for data preparation, conducting statistical and regression analysis, preparing control charts, and aiding with decision-making. One add-on that the author recommends is PHStat. Below is the menu that comes with this add-in:
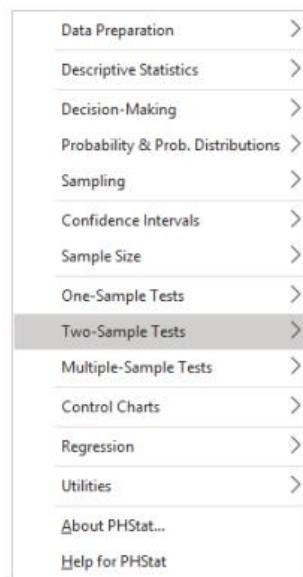
For advanced data analysis and Lean Six Sigma projects, the author recommends Minitab and Companion by Minitab, which are software tools that can be used in complement with MindManager. NOTE: Neither the author nor MindManager have any affiliation to Minitab.

Every Lean Six Sigma practitioner should have access to a good statistics manual, and there are many excellent ones to choose from, both in print and online. Even a basic statistics manual will provide all the necessary formulae and tables needed by the average user. The author has been using *Statistics Manual*, by Crow, Davis, and Maxfield for more than two decades.

An excellent online resource for statistics is the free e-Handbook of Statistical Methods.

Other recommended books include *The Fifth Discipline, the Art and Practice of the Learning Organization* and *The Fifth Discipline Fieldbook, Strategies and Tools for Building a Learning Organization*, both by Peter M. Senge.

Please note that the author used MindManager 2019 for Windows to create this whitepaper, and the included screenshots. Some features may be different or not available in the Mac editions of MindManager, or in earlier editions of the Windows version.