



Welcome

By Mark Rewhorn

Hello and welcome to our October (interim) newsletter.

Whilst we hadn't planned to create a newsletter for October, we have had various calls for assistance in the use of some tools. So, in the spirit of our organisation we have created a few guides, which are printed here.

If these tool guides are the type of thing you'd like to see more of, please drop us a comment on our chat forums.

<http://s1.zetaboards.com/BusinessImprovement/index/>

Hey, if you even want to write up the use of your favourite tool for a future newsletter, why not let us know?

Six-sigma isn't all about tools; there are many other aspects to it. We feel it is important to remember that the tools are there to be your slave, not the other way round.

So, please take our offering, see if it helps you.

Very best wishes,

Mark

Contents for this issue

By the European Business Improvement Team

- Brainstorming
- Cause and Effect Diagram
- Decision Matrix
- Rasci Model

All follow a common format:-

- Purpose of the tool
- Description of the tool
- How to use the tool
- When to use the tool
- Tips for the use of the tool
- Pitfalls to be aware of
- Some real world examples of the tool in use

Brainstorming

Purpose of the tool The purpose of brainstorming is to generate a large amount of ideas in a short time. It is important to note, that we are looking for quantity, rather than quality. The premise is that if we obtain sufficient quantity of ideas, there will be one or more useable ones amongst them.

Description of the tool Brainstorming is a powerful semi structured technique of utilising the team's collective brain power to deliver ideas. Most usually a brainstorm is carried out in teams, where team members have the opportunity to "spark" off each other's ideas. Brainstorming stimulates creativity. The golden rule is that no discussion about any ideas takes place until the session is over.

How to use the tool Firstly select the team and a neutral facilitator to run the session. The team should be made up of interested parties to the topic under investigation, and someone who knows nothing about it. Total team members should not rise above 10, as after this the brainstorm becomes difficult to manage properly.

Select somewhere quiet and "neutral" for the session. You'll need flip charts and pens, or post-it notes and a wall to stick them on to record the ideas.

Agree the objective of the brainstorm and write it up where all can see. There are now 3 possible scenarios that can be used.

- 1) The **freewheeling** technique, where everybody shouts out their ideas and someone writes them down. The pros for this idea are that it's fast and furious, people spark off each other, it's fun. The cons are that very often it can be dominated by one person; the shyers amongst us won't offer any ideas. The writer may not be able to keep up.
- 2) The **round robin** technique. Here everyone is asked in turn to present a suggestion. The pros of this method are that everyone gets a turn. The cons are the lack of spontaneity, and people can feel pressured to come up with ideas.
- 3) The **silent** routine. Everyone writes their ideas on post-it notes and puts them on the wall. The pros of this method are that everyone gets the same opportunity, people feel less pressure. The cons are that spontaneity has gone.

Allow the brainstorm to run for about 15 minutes, or a little shorter if people are running out of ideas. Take a break now. After the break, the facilitator leads a review of the ideas, clarifying just what each one means. Ideas can now be grouped (this becomes an affinity diagram) or the best idea generated selected. Often this is done by simply voting on each idea. Sometimes, a local "expert" may be needed to assess the applicability or feasibility of ideas.

When to use the tool The tool can be used whenever fresh ideas are needed. These ideas might simply be of the "what could have gone wrong?" type, to the more creative, "we have a problem, and how can we get round it with our current constraints?"

In six sigma this tool would typically be used in the following phases:-

Define

Improve

Tips for the use of the tool

- Ensure a clear and unambiguous definition of the topic to be brainstormed. The clearer the better.
 - Make it visible to all participants.
- Keep the group focussed on the definition, don't allow drifting onto other topics.
- Encourage participation, make it fun.
- Check that all ideas are recorded.
- Avoid using phrases like "We have always done it this way", "It will never work", "We have tried that before", "Great idea, but not for us".
- Don't be afraid to combine ideas. Often two weak ideas combined become very powerful.

Pitfalls to be wary of

- Letting the boss get involved. – His ideas will always win.
- Groups that are too large. Split large groups into smaller ones, and then compare ideas.
- Using "experts" only. Use those that have limited knowledge if you want true creativity. They aren't bound by "knowledge".

Example of the tool in use

Why won't my car start?		
Brainstorm session	Understanding	Vote (0, 1, 3, 5 or 9)
No petrol	Filled up yesterday, fuel gauge shows content	3
Blocked fuel line		9
Leaking fuel tank	Nothing visible, fuel gauge shows content	3
Wrong fuel		5
Flat Battery	Engine turns over	3
Lights left on	Could only cause a flat battery	0
Wrong key	Fits the ignition and door	0
Lost key	Present	0
Wrong car	Key fits, same reg' number	0
Don't know how to start it	Have done for last 5 years	0
Immobiliser activated		3
No sparks		3
No engine	Checked, it's still there	0
Seized engine	Sounds as if it turns over	1
Starter broken	Appears to turn the engine	1
Starter seized	Appears to turn the engine	1
Engine damp	Not been any rain for a week, no puddles/streams nearby	0

Most likely result, the car was filled up yesterday, with the wrong fuel, which has caused a blockage in the fuel line. – Expensive repair!

Cause and Effect Diagram

Aka

Fishbone Diagram

Aka

Ishikawa Diagram

Purpose of the tool The purpose of this tool is to help identify causes or solutions to a problem. The tool can be used in conjunction with brainstorming or the 5 Whys to very good effect. Fishbone diagrams are visual and easily understood, but often not used to their fullest potential.

Description of the tool The fishbone diagram will help in stopping team members jumping to conclusions as regards causes or solutions to an issue. It does this by providing a structure that assists with understanding the relationships between possible causes or solutions. It helps identify areas where data or more information is needed; it provides a pictorial representation of where the team has travelled. It also aids communication of ideas and thought processes within the team and the wider organisation.

How to use the tool This tool is best treated as a team tool. Like brainstorming, a neutral facilitator can be useful. Draw the outline up on the wall or flipchart, add the issue under investigation. Add the potential causes under each category as the group decide them. Use the 5 Whys technique to drill down into the causes.

The tool can also be used to seek solutions, once the root cause is known and understood.

When to use the tool This tool is an exceptionally versatile tool and is applicable throughout the DMAIC cycle. In **Define** it can help focus the team on the real issue, in **Measure** it can help identify where measurements are missing or more are needed, in **Analyse** it helps to drill down to root cause, in **Improve** it can be used to identify and “approve” ideas, in **Control** it can be used to ensure an adequate control plan is in place.

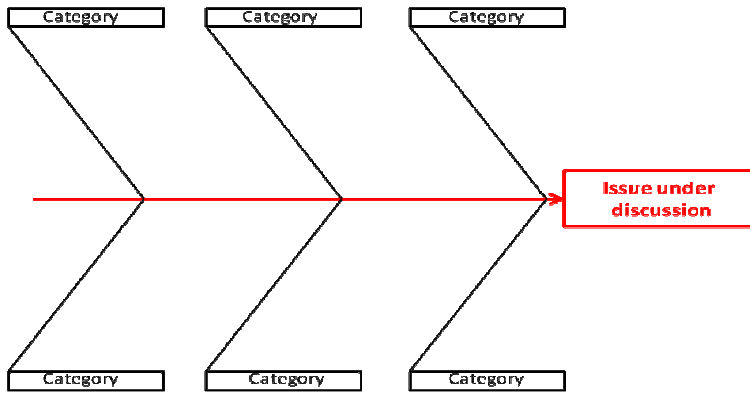
Tips for the use of the tool

- Ensure all understand the issue being discussed.
- This is not a “one size fits all” tool. Adapt it to suit the circumstances.
- Look at recording causes, not symptoms.
- Causes may fit in more than one category.
- Post-it notes are useful for re-arranging ideas.
- When finished, tape any post-it notes securely down. There is nothing worse than returning to a diagram after a couple of days and finding all the post-it notes have dropped off.

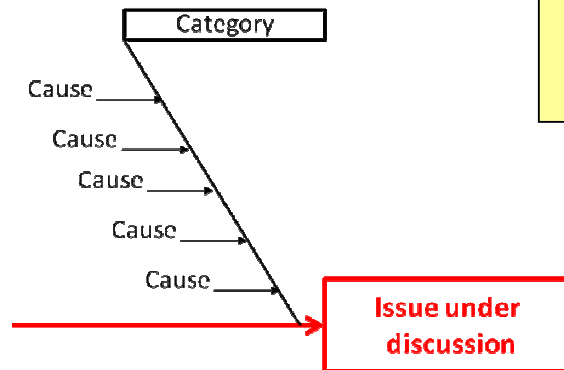
Pitfalls to be wary of

- Not having a clear and unambiguous issue statement.
- Not reviewing the diagram regularly as more information becomes available.
- Recording symptoms not causes.
- Forcing solutions rather than recording causes.
- Going “off topic”.

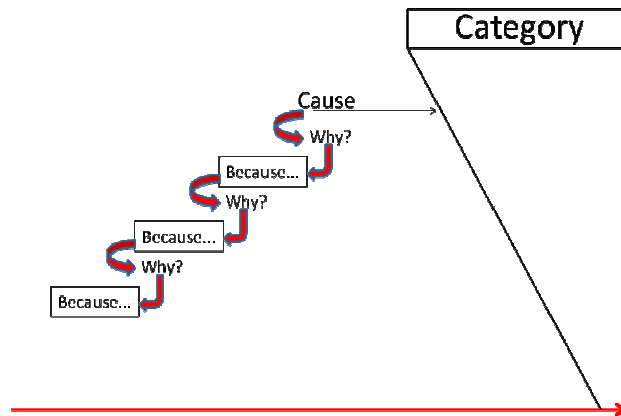
Example of the tool in use



Base outline



Adding the effects to the causes



Using "Why?" to "drill down" the causes

Tip

For transactional uses start with categories of

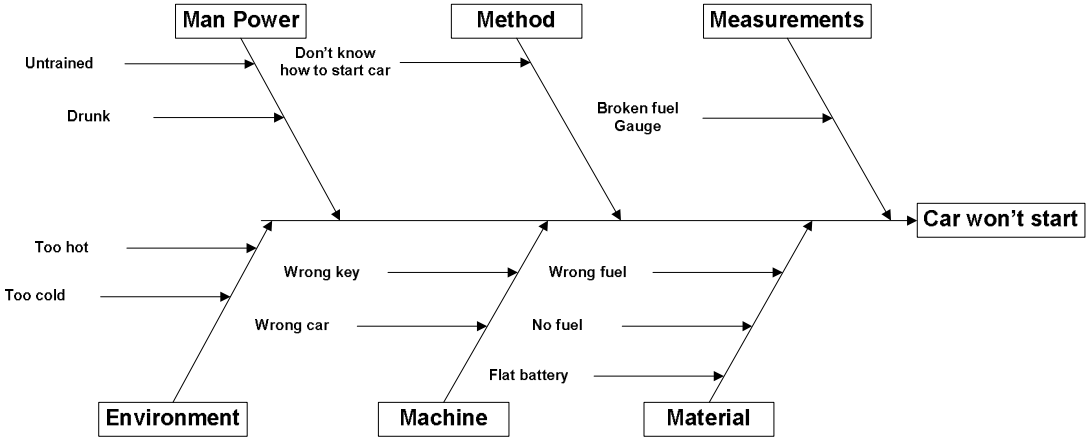
- People
- Plant
- Policies
- Procedures
- Measurement

Environment

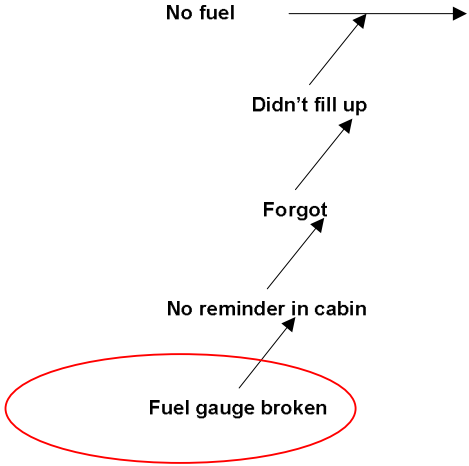
For manufacturing, start with

- Man
- Machine
- Materials
- Methods
- Measurement
- Environment

Taking a real life example...



Drill down on most relevant cause using "Why?" technique...



Root cause as to why the car won't start:- Broken fuel gauge

Solution:- Get gauge fixed at earliest opportunity

Decision Matrix

Purpose of the tool The tool is to help make rational decisions wherever there are multiple options.

Description of the tool Use of this structured tool helps to decide the most relevant answer when faced with multiple options. The tool screens out those options that fail to meet the “must” criteria, then ranks the remaining options depending on how they fit the chosen criteria of “wants”. The tool removes the “gut feel” and often illogical reasoning that goes with decision making.

How to use the tool

1. Seek out somewhere that the team can work uninterrupted for a short while.
2. Identify the team along with someone that knows little about the process under investigation.
3. Appoint an impartial facilitator.
4. Draw the grid up on a flip chart/whiteboard so all can see.
5. Identify the required outcome.
6. Identify all options that appear to fulfil this required outcome.
7. Identify the “musts” that the options must fulfil.
8. Identify the “wants” that it would be good to fulfil.
9. Weight the “wants” according to your selection criteria, or if all equal weight with a weighting of 1.
10. Evaluate each option against the “musts” criteria. Any option not meeting a “must” is removed from further evaluation.
11. Evaluate each remaining option against the “wants” criteria.

Total up the scores to see how each option meets the overall criteria. The one with the highest score meets the criteria best.

When to use the tool This tool can be used in any situation where assistance to make a rational decision is required. Typically this would be used in the improve phase of a project. However, it might also be used in say the measure phase to decide which method of gathering data is most appropriate. Like many tools, its use is only limited by your imagination.

Tips for the use of the tool

- Write on the form the reason for the decision.
- Weight the “wants” according to their importance.
- A direct comparison against the how the options meet the criteria can be carried out.
- Using only the numbers 1, 3 and 9 as how an option meets criteria can focus the group and stop a lot of wasted arguments.

Pitfalls to be wary of

- Inviting the boss along. His ideas will always be supported no matter how illogical.
- Not exploring the more “wilder” ideas properly.
- Involvement of process “experts” will often prevent the more radical ideas being explored.

Example of the tool in use

1) Firstly draw the grid.

Outcome							
				Option 1	Option 2	Option 3	
Musts Criteria							
Wants Criteria	Weight	Score	Total	Score	Total	Score	Total
			0		0		0
			0		0		0
			0		0		0
			0		0		0
			0		0		0
Grand Total				0	0	0	

2) Now add in the outcome and the "musts and Wants" criteria.

Outcome							
Replacement car							
				Option 1	Option 2	Option 3	
Musts Criteria							
Red							
Hatch back							
Less than £5000							
Wants Criteria	Weight	Score	Total	Score	Total	Score	Total
30 mpg			0		0		0
Cheap insurance			0		0		0
Spares available			0		0		0
Good image			0		0		0
Comfortable			0		0		0
Grand Total				0	0	0	

3) Identify the options and see if they meet the musts.

Outcome	Replacement car		
	Option 1 Renault 17	Option 2 Metro	Option 3 Beetle
Musts Criteria			
Red	Green	Green	Green
Hatch back	Green	Green	Red
Less than £5000	Green	Green	Green

Here we have identified 3 potential vehicles, but the Beetle fails a key requirement as it isn't a hatchback. In reality, we'd stop the analysis on this particular option here.

4) Next we need to evaluate the "wants" criteria.

Wants Criteria	Weight	Score	Total
30 mpg	5		0
Cheap insurance	4		0
Spares available	5		0
Good image	2		0
Comfortable	3		0

The weightings have been done on a scale of 1 to 5, the higher the rating the more desirable. We want an economical car, with good spares availability, but we aren't concerned too much about image.

5) Now we can do a comparative evaluation between the three options.

Wants Criteria	Weight	Score	Total	Score	Total	Score	Total
30 mpg	5	1	5	9	45	3	15
Cheap insurance	4	1	4	9	36	3	12
Spares available	5	1	5	9	45	3	15
Good image	2	9	18	1	2	3	6
Comfortable	3	9	27	3	9	1	3

By using the values of 1, 3 and 9 we simply evaluate which of the options meets the criteria the best, with 9 being best, 3 being midway and 1 being poor.

- 6) Finally we can total things all up and see the option which meets our overall requirement in the most rational manner.

Outcome				Replacement car							
				Option 1			Option 2		Option 3		
				Renault 17			Metro		Beetle		
Musts Criteria											
Red				Green			Green		Green		
Hatch back				Green			Green		Red		
Less than £5000				Green			Green		Green		
Wants Criteria											
Criteria	Weight	Score	Total	Score		Total		Score		Total	
30 mpg	5	1	5	9		45		3		15	
Cheap insurance	4	1	4	9		36		3		12	
Spares available	5	1	5	9		45		3		15	
Good image	2	9	18	1		2		3		6	
Comfortable	3	9	27	3		9		1		3	
Grand Total				59			137		51		

In the above example, the choice of car rationally most meeting the criteria laid down would be a Metro.

RACI Model

Purpose of the tool This tool is pretty straight forward and is used to indentify roles and responsibilities in several project stages and/or organisational transformation processes.

Description of the tool RACI, sometimes known as RASCI or RASIC is abbreviation for:-

R: Responsible; the owner of the project/problem.

A: Accountable; must sign of the work of R before it's effective.

S: Supportive; can provide resources or is supportive in implementation

C: Consulted; has information or capability to complete the project/step.

I: Informed; need to be notified about results, but not consulted about it.

How to use the tool

1. Indentify all processes and place them on the left of the chart
2. Indentify all Roles and place them in top of the chart
3. Complete the chart by filling in the R,A,S, C, I for each step or process in the project
4. Resolve Gaps and overlaps. Only one R should be occurring in each step or process in the chart

When to use the tool Use of this structured tool helps to people to indentify, discuss, agree and most of communicate roles and responsibilities with an organisational change and or project.

Tips for the use of the tool

- Accomplish before starting the project
- People will struggle against roles, but it's easier to overcome these struggles in the start of a project, rather the project isn't floating due to non-indentified roles

Pitfalls to be wary of

- People "switching" roles during the project
- No agreement on the role at the start of the project.

Example of the tool in use

	<i>Program manager</i>	<i>Assistant PM</i>	<i>Board of Directors</i>	<i>Manager Service</i>	<i>Customer Complaints</i>
Step-1	R	A	I	S	C
Step-2	I	A	R		C
Step-3	S	A	I	R	C
Step-4	C	A	I	I	R
Step-5	I	A	R	S	C