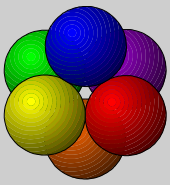


TESSERACT
Management Systems

GUIDELINES

Problem Solving
Using the 'PROBLEM' Model

Prepared by:

Mike Clargo

1 INTRODUCTION

Welcome to P.R.O.B.L.E.M. PROBLEM is a formal problem solving process which has been designed out of many years of experience in helping teams and companies tackle operational and management issues.

This guide is intended to give you a basic overview of the PROBLEM methodology sufficient to allow you to apply it to a particular situation. Essentially the guide consists of three main sections:

- An overview of problem solving and the decisions you will need to make before you use this methodology.
- An explanation of the seven steps in the PROBLEM methodology and what is required in each.
- Guidance on how the quality of each step should be reviewed, prior to moving on to the next step.

Its structure is as indicated below:

1 INTRODUCTION 2

2 OVERVIEW 3
2.1 Individual or Team 3
2.2 Problem Solving vs Continuous Improvement 4
2.3 Problem Solving Methodology 5

3 THE P.R.O.B.L.E.M. MODEL 7
3.1 Profile 7
3.2 Root Causes 8
3.3 Options 9
3.4 Balance 11
3.5 Launch 12
3.6 Evaluate 13
3.7 Maintain 14

4 TEAM REVIEW 16
4.1 Reviewing the work done 16
4.2 Reviewing the Teamwork 16
4.3 Reviewing the Deliverables 18
4.4 Clarifying the Team Roles 18
4.5 The Checksheets 19

Throughout the guide, there are a number of exercise boxes, which encourage the reader to take an active part in thinking through how the material might apply to his/her specific situation. These exercises are quite short, and are best undertaken individually as the reader progresses through the sections. However, we also recommend that people working through the guide meet together in small groups to discuss their answers to the exercises. This will significantly increase the learning and understanding that is available.

Mike Clargo
Tesseract Management Systems

2 OVERVIEW

We all spend most of our lives solving problems of one sort or another, be it a large or a small one, on our own or in a group - workgroup or family group. Whatever the problem or situation the basic process is still the same - we make a decision based, to a greater or lesser extent, on facts available to us at the time in an attempt to remove the problem altogether - to achieve a permanent fix.

Part of the problem with solving problems is that we either don't always have the facts we really need, or we don't bother to go and find them. In these cases the end result will inevitably be a less than perfect solution. How often have you heard it said (or even said yourself!) "I've seen this before, I know the answer to this one!" If the purpose of solving a problem is to permanently prevent it recurring, then, by definition, this statement can't be right!

Of course, not all situations appear as 'problems'. The model can be applied to any improvement you want to make, or a change of any sort, to a process or existing way of doing something, to improve the output - it's all down to the mind-set! For example:

- developing, administering and monitoring a new training programme,
- introducing a product specification change,
- continuous improvement of a process or part of a process.

The starting point may be different, but the overall approach and thinking is the same.

The step by step procedure which follows is designed to make sure you get the best possible chance of achieving a permanent fix to any problem faced. It is equally applicable whether you are solving a problem alone or in a group situation. It is equally applicable whether the problem is small or large. It is all a matter of degree of application.

In some cases it will be possible to very quickly go through some of the steps. In some cases the output from some of the steps will be obvious. In a lot of cases not all the tools and techniques will be relevant. What is important, however, is that the overall process is always followed; quickly or slowly, mentally or physically, whatever the situation demands, but always being sure you have an answer to the 'output' of each step in the process - no matter how blurred the division between each step becomes. The use of the acronym 'PROBLEM' is intended to help with individual ad-hoc situations, while for larger team based problems there are more sophisticated checklists available.

2.1 Individual or Team

There are, undoubtedly, times when a problem is best solved by an individual. If only the individual is affected, either by the problem or the solution, or commitment from others is not required, then there is little point in setting up a team to deal with a problem. If, however, more than one person **is** affected by the problem and commitment from others **is** required to implement the solution or if there is likely to be more than one 'right' answer, then a team is likely to be better than an individual.

> ***"Revolutions need directions and exemplary leadership, but not heroes. Heroes subvert the fact that change comes about by lots of people taking action"***
>
> Bill Harris, American Radical 1976

Individuals can use the tools and techniques that follow, but their effectiveness is much greater when adopted by a team. Knowing when to use a team approach and when to restrict the process to an individual is quite important. There are many examples of teams put together to solve a problem which should have

Exercise 1: When to use teamwork

Which of the following tasks lend themselves to being addressed by a team, and which to being addressed by an individual?

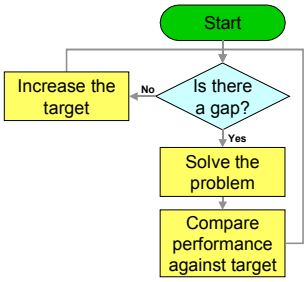
	Team	Individual	Either/Both
Developing a new way of working	☐	☐	☐
Calculating the cost of overtime	☐	☐	☐
Resolving a customer complaint	☐	☐	☐
Improving department performance	☐	☐	☐
Implementing a policy change	☐	☐	☐
Reviewing an individuals work	☐	☐	☐

been dealt with by one person, resulting in frustration and lack of motivation in the team and this is counter-productive.

However, a word of warning. The creativity and power of a team can only be fully realised when the individual members understand group dynamics and how to work together **as** a team.

2.2 Problem Solving vs Continuous Improvement

The basis of this problem solving process is a one-off application, to implement a permanent fix for a particular situation. Something has happened which is undesirable and steps need to be taken to ensure that it doesn't happen again, so the process is followed. End of story - and end of team, if it has been a team situation.



"Some men see things as they are and say why? I dream things that never were and say 'Why not?'"

Robert F Kennedy, American Politician

"All progress is based upon a universal innate desire on the part of every organism to live beyond its income."

Samuel Butler, English Novelist

The process of Continuous Improvement requires a slightly different mind set. In this case, you will not necessarily start out with a problem to solve; rather there is a process delivering an output that conforms to preset specifications.

Continuous Improvement is essentially a strategy of setting appropriate performance targets to drive ongoing refinement and development of the process through successive Problem Solving activity.

Problem Solving is the engine of Continuous Improvement. Continuous Improvement, done properly, will ensure a continuous supply of problems (where current performance falls short of the target) to harness the analytical and creative steps of Problem Solving.

Exercise 2: Continuous Improvement

How do you see Continuous Improvement as differing from Problem Solving?

Why do we want to generate "a continuous supply of problems"?

2.3 Problem Solving Methodology

Exercise 3: Past Experience

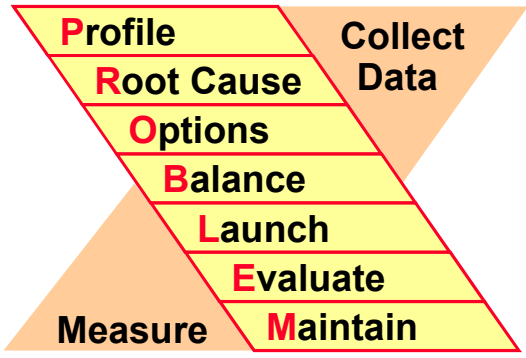
Review your personal experience of what you have observed of Problem Solving and Change. What sorts of things do you think have gone wrong (or less than well) in the way things were done?

In our experience, Problem Solving often falls considerably short of its true potential to deliver lasting benefits to the business. In the box on the left we ask you to think through what your experience of Problem Solving is, either as a practitioner, or as a recipient, or as an innocent bystander.

If your company is fairly typical in its approach to problem solving we suspect you can develop quite a long list. Over time we have observed many problem solving activities, and in general they have fallen down on their potential for one of the following reasons:

- Different departments saw the problem differently
- People leap to solutions rather than identify the real issue - symptoms instead of root cause
- Solutions are adopted before their implications are fully considered
- Once the 'fire' has stopped blazing people think that the problem is solved
- The solution implementation isn't properly managed
- Nobody notices that the solution isn't actually working properly
- When the focus shifts elsewhere, things drift back to how they were

It would be interesting to compare this with your list and see how many of the issues you have identified fit into the above seven categories.



These issues arise because, left to their own devices, people often don't take the trouble to fully think through the implications of their ideas and conclusions.

The P.R.O.B.L.E.M. methodology is intended to create an environment which works to drive and support people in undertaking that thinking, and thereby prevent these issues from happening.

The key steps in the 'PROBLEM' methodology are listed below, and are outlined in more detail in the subsequent sections.

PROFILE: What exactly is the problem? This is the stage where a full definition of the problem is established

ROOT CAUSES: What could all the possible causes of this problem be? Using data to help establish the probable cause(s)

OPTIONS: What solutions could be adopted to remove the root causes?

BALANCE: Of all the options, which appears to be the best, and which is going to be implemented? And what are our options for implementing an effective solution?

LAUNCH: Having chosen a solution and the means to implement it, how do we manage and support the implementation activity to its successful conclusion?

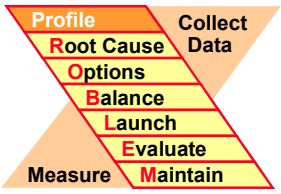
EVALUATE: With the solution in place, what measures need to be taken to make sure the problem has been solved?

MAINTAIN: How can a 'permanent fix' be established?

3 THE P.R.O.B.L.E.M. MODEL

This section has been written to provide clear guidance on a systematic approach to solving problems. The approach we are advocating is the 'PROBLEM' model, where 'PROBLEM' is an acronym for the various stages of a systematic problem solving process.

3.1 Profile



The first step of the 'problem' methodology is undoubtedly the most important. At first glance it seems trivial, and yet not spending enough time to consider this step properly is probably the major cause of inefficiency and failure in problem solving and improvement projects.

> ***"If you accept your limitations you go beyond them"***
>
> Brendan Francis, Writer
>
> ***"It isn't that they can't see the solution, it is that they can't see the problem"***
>
> GK Chesterton, Writer

Most problems start off as 'boil the ocean' type statements, which don't help when trying to solve them. Without adequate definition, too many problem solving attempts fail - simply because no-one is quite sure what it is they are trying to achieve!

Reducing the problem down to a clear and focussed statement of what is to be achieved, and gaining full agreement on that is a very time consuming process, often taking a number of weeks. But it is not as time consuming as living with the consequences of not having done it properly.

Exercise 4: Problem Definition (A)

Develop a single sentence to define accurately and specifically the current problem concerning Northern Ireland as you see it?

And by the definition, literally as it is written above, what specifically would be delivered if the problem was to be solved as stated?

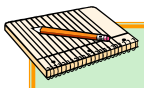
The exercise box on the left is intended for you to try out a problem definition for yourself. It is aimed at a big issue, but there again most problem solving activities tend to start out that way.

Have a go at writing your definition before you move on to the next paragraph

How did you fare? Writing Problem Definitions is far from easy, but some examples of what people have written in the past include:

- Protestants and Catholics don't get along in Northern Ireland
- Northern Ireland should be given back to Eire
- The people of Northern Ireland are being killed and terrorised
- The British Government is too lenient to the IRA
- There are too many arms in Northern Ireland

You can see however that reversing each of these statements provides a different end result, but not necessarily a real solution to the problem.



Exercise 5: Problem Definition (B)

For the problem definition you wrote down in part A, to what extent would the following conditions be met by it?

	Y	N	?
The problem is clearly and unambiguously defined	☐	☐	☐
Those who need to contribute to the solution will agree it	☐	☐	☐
The statement will be interpreted in the same way by all	☐	☐	☐
Success in solving it can be judged objectively	☐	☐	☐

Can you see ways in which your statement may be improved?

Clearly PROFILING the problem in a way that

- is explicit and free of ambiguity
- does not assume a solution
- can be accepted by all parties involved

is at the heart of effective problem solving, and is very much underrated, underestimated and underplayed. We believe that fully one third of the time you plan to spend on solving your problems can be usefully in vested in the Profile step.

Objective

To arrive at a clear definition of a workable and owned problem, which everyone involved understands and is based on hard facts rather than assumptions and opinions

Output

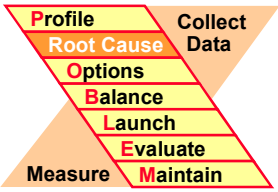
A statement of the situation as it is now and of the situation as it will be when the problem has been resolved. A clearly identified problem owner and some quantification of the impact of resolving the problem

Process

In order to get the most comprehensive profile of the problem, there are a number of specific steps to follow.

- The first step is to identify the detail of the problem area. What process and groups of people are involved; what is the current output of the process and what should it be and who is going to own both the problem and its solution.
- Secondly, it is important to understand exactly what is happening at present. This means flowcharting **what actually happens**, rather than the ideal.
- Thirdly, it is important to establish - at the outset - what measures are going to be taken to verify whether or not any improvement has been made and where in the process these measures are to be taken.
- The final element of the Profile of the problem is to attempt to quantify the benefit of its resolution. This is a definite help when it comes to justifying the need for resource.

3.2 Root Causes



"The question is one of fighting the causes and not just being satisfied with getting rid of the effects"

Ernesto 'Che' Guevara, Bolivian Radical 1953

"Philosophers are adults who persist in asking childish questions"

Sir Isaiah Berlin, British Philosopher

Tackling a problem without addressing the root cause is somewhat akin to jamming both nostrils with tissue paper and claiming to have cured your cold. That might seem a silly thing to do but in a work situation, where the 'nose' might be in one department and the 'mouth' in a totally different one, it happens all too frequently. Departments often find it more expedient to move the problem out of their area than to attempt the major organisational task of resolving it altogether. In fairness this is often because of the pressure of work and other problems, and because some other department probably 'dumped' it on them to begin with.

The resulting confusion and compensating strategies often means that there is no single simple root cause to the problems you tackle. Problems have been allowed to build over time, and the contingencies put in place have caused further problems to overlay and compound the difficulties. This is very likely to be the case in any business which has been operating for some time without regularly using a disciplined process for identifying and resolving root causes. And it is for this reason that this step is so important.

Exercise 6: Quality of Root Cause

Below are listed two statements of the root cause to a production problem in a biscuit making plant:

A) 37% of waste is generated by inaccurate placing on the belt

B) People are not properly trained to undertake their tasks

Which do you see as the better Root Cause statement? A?☐ B?☐

Why? ----------

Objective

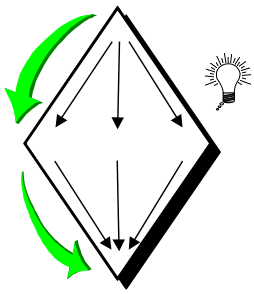
To establish the most probable root cause of the whole problem, as opposed to identifying and dealing with symptoms

Output

A cause, or group of causes, which can be shown by data to be the most likely real cause of the problem

Process

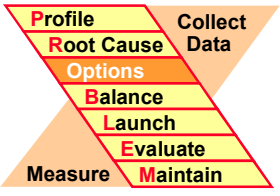
There are two main steps to this element of the Model.



- Firstly, as wide a range of potential root causes as possible needs to be developed, using a variety of 'opening up' techniques.
- Secondly, these potential causes need to be analysed and verified with data to establish the most probable cause or causes

If too many probable causes are identified, it could be that the Profile (ie the definition) of the problem is still too broad and that you are attempting to address a number of problems in one go. In this case, more rigorous profiling would be needed to break the problem down into more manageable parts.

3.3 Options



Innovation is the lifeblood of progress. Our futures will be largely dependent on the creative ideas and solutions that are being developed around us. If we grasp these ideas we can make our processes more effective and efficient. If we fail to grasp the ideas then gradually we will be put out of business by those who do. If we develop and grasp the ideas early then it will give us the competitive edge over our competitors.

"The human mind is like an umbrella - it functions best when open"

Walter Gropius, German Architect

"The 'silly' question is often the first intimation of some totally new development"

Alfred North Whitehead, British Philosopher

Innovations can be ideas of our own devising or they can be new solutions already tested and proven by others.

But how do these ideas enter our workplace? If we depend purely on the design department, or on external consultancies, then innovation is often limited only to major change projects. And yet it is often ongoing innovation in the routine processes that can make so much difference to a company's success.

If we leap at the most obvious solution to the root cause we have identified then we forgo the opportunity to consider new ideas or the best-practice solutions that might already be in use elsewhere.

Exercise 7: Brainstorming Ideas

On a separate sheet of paper, spend the next five minutes brainstorming possible solutions to the problem of road congestion.

Review your list of ideas using the following questions:

	Y	N	?
■ Do you have a long list of ideas (more than ten)?	☐	☐	☐
■ Do you have a number of silly or bizarre ideas?	☐	☐	☐
■ Have your ideas covered many different aspects?	☐	☐	☐

The answer to each of the above should be 'yes'.
How could you improve your brainstorming approach further?

Alternatively, we could take this opportunity of impending change to spend a short amount of time in searching our creative minds for new possibilities, in challenging ourselves with the achievements of others, and in selecting the best solution to our situation. This is what is expected in the 'Options' step.

Objective

To identify a range of possible solutions which would eliminate the chosen root cause or causes, and which reflect an understanding of best practice.

Output

A list of possible solutions to the problem.

Process

As with the first stage of identifying the possible root causes, this is a step of 'opening up' the thinking process.

Be as creative and innovative as possible at this stage; this is no time to simply introduce variations on the old 'tried and tested' solutions - although these will still need to be considered.

Exercise 8: Learning from others

In seeking to identify new ideas or solutions to improve your work, how often has your group done any of the following?

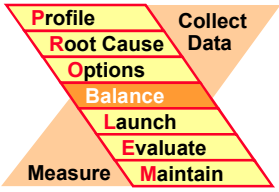
	Often	Rarely	Never
■ Shared ideas in the group on ways to improve	☐	☐	☐
■ Visited other companies to learn new techniques	☐	☐	☐
■ Attended conferences & shared the outputs	☐	☐	☐
■ Undertaken a literature survey & discussed it	☐	☐	☐
■ Invited speakers in from similar operations	☐	☐	☐
■ Had new starters present their ideas & history	☐	☐	☐

There are a number of possibilities to ensure that the most appropriate solution is found. These include brainstorming sessions, the use of creative design tools, undertaking a literature survey on the subject, visiting companies with similar processes and seeing what they do, canvassing the opinions of others etc.

The creativity need not be confined to the ultimate solution either. There should be scope for considering options as to how the solution will be implemented, or whether there needs to be a long-term 'ideal' solution in conjunction with a short-term 'fix'.

This is also an excellent time to build the ownership for the ultimate solution with those who will have to work with it. By involving those who work in the process during this step you will do much to ensure the acceptance of what eventually evolves.

3.4 Balance



Having identified the range of possible options, these now have to be evaluated, and those selected need to be pulled into a balanced solution. By 'balanced' we mean that, in pulling together a solution package, benefits need to be balanced against cost, opportunities need to be balanced against risks, long-term effects need to be balanced against short-term ones etc.

> ***"Circumstances? I make circumstances!"***
>
> Napoleon Bonaparte, Emperor of France
>
> ***"Is it progress if a cannibal uses a fork?"***
>
> Stanislaw J. Lec, Polish Poet

Essentially the final solution you decide on is likely to be a compromise between trade-offs. But it is important that those trade-offs and their implications are fully considered. That is the purpose of this step in the process.

Objective

To develop a comprehensive, efficient and detailed solution to the problem being addressed.

Output

A complete solution, possibly with an associated short-term fix, and with the associated implementation plans.

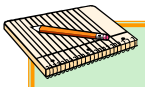
Process

This element is more akin to the second part of the 'Root Cause' stage, one of 'closing down' on a particular choice from a range of options.

As with identifying the most probable root cause, this is a process of gathering and using data to weigh up which solution to implement. It entails using a variety of tools to help understand what the effects might be of adopting a particular course of action.

Typically the effects that would be considered in selecting the preferred solution would include elements of:

- ease of implementation
- payback
- timescale
- resource implications
- severity of the required changes
- impact on other initiatives that might be affected, etc.



Exercise 9: Building a solution package

Which of the following situations may benefit from a short term fix (STF), and/or a Pilot of the solution?

	Pilot	STF
■ Injuries occurring from poorly maintained machine guards	☐	☐
■ Implementing flexi-time in the department	☐	☐
■ Introduction of a new machine	☐	☐
■ Valuable and experienced people leaving the company	☐	☐

From your answers can you derive any general principles as to when an STF or a Pilot might be desirable?

Where the selected solution may take some time to produce and implement there is likely to be a need to identify some short-term measures to alleviate the problem in the meantime. These short-term solutions can probably be selected from the thinking to date in the same way as the long-term measures.

Having identified the solution, the means of its implementation needs to be agreed. This should be pulled into a complete forward plan with appropriate milestones to enable its effective management. Successful implementation will depend on accurate planning. This will need to include providing for *all* the resources likely to be required when the 'new' way of working is in place. In pulling together the plan you should consider:

- any training that might be required for the operators
- any communication to ensure people know what is happenning and why
- any pilot programmes to test and further develop the solutions
- any changes to operating procedures or manuals that may be required
- any items that need to be purchased or ordered etc.

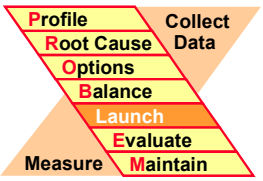
Options within the implementation can be evaluated in the same way as the solutions themselves. In addition it is useful to undertake some form of risk assessment to ensure that the plan has suitable contingencies built in.

A flowchart of the 'new' process, complete with procedures, measures and standards will be required - not only for people to learn and follow, but also to help identify training needs.

Decide first of all whether or not the solution is to be fully implemented immediately, or if a pilot implementation would be more appropriate. In either case a full project plan will need to be drawn up, complete with identified ownership and full resourcing.

If a pilot approach has been chosen, make sure that this is clear to all concerned and that provision has been made to move from the pilot to full implementation should it be successful.

3.5 Launch



No matter how well the team thinks through the implementation plan, there will inevitably be problems that arise in practice that they failed to foresee. These are unlikely however to present an insurmountable problem providing they are identified and addressed early.

"Anyone who proposes to do good must not expect people to roll stones out of his way, but must accept his lot calmly if they even roll a few more upon it"

Albert Schweitzer, German Missionary

"It does not matter how small you are if you have faith and a plan of action"

Fidel Castro, Cuban Leader

During the 'Launch' step, the team needs to maintain a watchful eye on progress against their original plan. Any deviations to the plan need to be considered from three perspectives:

- Can the deviation be corrected?
- Does the deviation have any knock-on effects on other parts of the plan?
- Does the deviation imply further similar problems in the future?

The team need to not only address the deviations as they become aware of them, but also to use them as new data to help them in predicting and preventing future problems in the plan.

Objective

To ensure that the implementation of the chosen solution is adequately resourced, and runs to plan.

Output

The solution implemented with minimum disruption.

Process

Having defined exactly how the solution is to be implemented, and gained people's ownership for that, during the preceding step, the plan now needs to be launched and managed.

Much of what needs to be done should be clearly defined on the implementation plan, including any preparation and purchasing activity.

The team needs to ensure that this is the case and that every activity on the plan has a clearly defined owner who is clear on what is to be delivered. They need to meet with each owner and clarify the work that is to be done, the date it is to be done by, and how progress or issues needs to be reported back to the team.

Exercise 10: Managing Change

How does your department fare on the following aspects of Change Management:

	Yes	No
■ Using a clearly defined and updated milestone plan?	☐	☐
■ Ensuring people really believe in the need for change?	☐	☐
■ The Boss is clearly keen for the 'Change' to happen?	☐	☐
■ People are trained to get full benefit from the change?	☐	☐
■ Progress is reviewed regularly, and issues addressed?	☐	☐
■ People are rewarded for supporting the 'Change'?	☐	☐

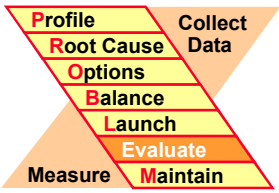
They then need to plot progress against the activities and milestones to track that the implementation is progressing to plan.

They also need to analyse any deviations to the plan and put in place measures to ensure that the deviation is corrected and future problems are prevented.

Where the plan includes for a pilot, they also need to assess the effectiveness of the pilot solution and modify the solution and implementation plan based on any learning that is available.

Finally they need to check the quality of the solution at each of the planned milestones, including the final milestone.

3.6 Evaluate



Change is clearly with us to stay. Most businesses will have had a number of new initiatives thrust upon them over recent years. Many are content that they are fully in place and working perfectly, but few seem to know for certain.

"An error is simply a failure to adjust immediately from a preconception to an actuality"

John Cage, American Musician

"The ability to learn faster than your competitors may be the only sustainable competitive advantage."

Arie P. de Geus, Head of Planning at Shell

When you look down at the detail of a reasonably sized business it is fairly common to see the remnants of numerous previous initiatives embedded in the way that people work. More often than not, however, the adoption and retention of those initiatives has been variable. Over time people have taken-on what they feel comfortable with and let slip those aspects that they don't. Normally this is for good reasons, often it is because initial difficulties and problems with the solution were not fully addressed.

But the problem for many companies is that they don't know that this is the case – if they did they would probably do something more about it – but for them the project ended at the same point the implementation plan came to its conclusion.

The 'Evaluate' step is intended to prevent the loss of the solutions effectiveness due to such problems as unresolved issues and variable application.

The 'Evaluate' step is also the point at which the team reconsiders its effectiveness, and clarifies the learning that is available to it in improving their own performance, (both collectively and individually) and the performance of future problem solving teams.

Exercise 11: Measuring Impact

Identify the 3 most recent changes in your area & list them below:

1: ---------- | ---------- | ----------

2: ---------- | ---------- | ----------

3: ---------- | ---------- | ----------

For each of these can you determine, in quantitative terms, the performance or financial benefit that they achieved?

And can you say accurately how their performance in delivery improved/declined in the 6 months after implementation?

Objective

To establish whether or not the chosen solution has eliminated the root cause of the problem and the desired situation has been reached.

To review an improve the teams performance in solving problems.

Output

Data against specific measures to identify any change of process output and to identify whether or not performance is as specified at the 'Profile' stage.

Learning points for the team, individuals and the problems solving process itself.

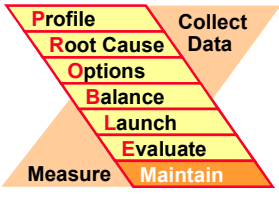
Process

In the 'Profile' stage a number a measures were identified by which you would know whether you had made any improvement. These can now be fitted into a planned schedule of regular measurement and supplemented with additional measures identified by flowcharting the 'new' process. The tools for presentation and display of data used earlier can now be used again to continue to get a clear picture of what is going on.

The problem solving team should also hold a review meeting to look back at the steps they have worked through. They should review their outputs and the relevant step Checklists, and summarise for each the aspects of their work that went well, and the aspects that require improvement. Where appropriate they should make recommendations to amend the process, update the checklists, or further develop the guidance material (this document) to improve their work and the work of other teams in the future.

If the team has been in operation for some time (longer than 3 months) they might also consider providing feedback to each other, either through a formal feedback form, or through a 'fishbowling' type exercise.

3.7 Maintain



Old habits die hard. It is very easy for people to drift back to the old ways of doing things. Once a new system has been put in place it is very important that everything is done to prevent people drifting back to the old ways. Rather we need to focus their attention on further developing the new ways.

"The art of progress is to preserve order amid change and to preserve change amid order"

Alfred North Whitehead, British Philosopher

"To improve is to change; to be perfect is to change often."

Winston Churchill, English Prime Minister

Objective

To ensure that the implemented solution becomes the new way of working and that the problem, as defined, remains permanently fixed

Output

A new set of standard operating procedures and, where relevant, a training and/or communication plan to ensure that everyone concerned knows how to adopt the new way of working

Process

When you have established that the chosen solution has, in fact, resolved the problem, you need to make sure that this becomes the new norm. This will mean re-writing any existing procedures and re-establishing a new set of standards and guidelines. Almost certainly this will mean training and education for all those involved in the change.

Forms of measurement should also be re-established to ensure the performance of the solution is monitored. All monitoring information should be collected and used by the process operators to allow them to react and continuously improve the performance of the process. Further to this, targets should be set for the improvement of the performance of the solution. A nominal 5 or 10% will ensure the focus is on making full opportunity to improve the new process rather than drifting back to the old one.

Exercise 12: Keeping it going

List below, all the mechanisms that determine, control, support and influence how things are done in your area?

How do these get reviewed when a new change is introduced?

The 'Storyboard' should be used to communicate as widely as possible the changes made and the benefits achieved. Other areas of the business with potentially similar issues should be concentrated on.

Team (or individual) recognition should be an integral part of this communication exercise.

4 TEAM REVIEW

The checksheets are a key discipline for any problem solving activity that takes more than a week, or involves a number of people in the team.

The purpose of the checksheets is to provide a formal review point at the critical points in the problem solving process. It provides the means for:

- The team leader to review with the team and the facilitator the decisions they have made during the previous step, and the teams confidence in the outcomes.
- The facilitator to review with the team and the team leader the quality of the teamwork and process, and to agree any changes for the next step.
- The problem owner to ensure that he/she is confident in the conclusions from that step, and that they move the problem forward.

4.1 Reviewing the work done

The main part of the checksheet lists a number of questions for the team to reflect upon in their review of the step. For each of these the team can discuss and agree the relevance of the question to their situation, and whether or not they have done what was necessary. Where the team feels that they have fallen short on a piece of work they may choose to delay moving onto the next step until the work is completed. In any event, work on a subsequent step should not begin until the checklist for the current step has been signed off.

The team is also able to tick off the formal tools used in the step in the bottom right hand corner. This will aid any collation of the teams work into a document for case study or review.

4.2 Reviewing the Teamwork

The section in the middle at the bottom, Step Review, provides an opportunity for the team to review how well they have worked together in undertaking the step. The section is identical on each of the checklists, and by agreement with the facilitator the team may decide to undertake the review only every other step or after steps 3 and 7, depending on the length of the project.

The facilitator should lead the discussion on this section, and ensure that the team resolves to continue those things they are doing well, and to put things in place to address any areas of weakness. Areas of previous weakness should always be reviewed after the subsequent step.

Exercise 13: Reviewing teamwork

Using the table from section 4.2, and thinking back to your most recent involvement in a team, how did they fare on the following:

	0	1	2	3
Understanding/involving the customer?	☐	☐	☐	☐
Clarity of what we were doing and how?	☐	☐	☐	☐
Teamwork and mutual support?	☐	☐	☐	☐
Disciplined use of process and tools?	☐	☐	☐	☐
Seeking real data, facts & information?	☐	☐	☐	☐
Reviewing and improving our approach?	☐	☐	☐	☐

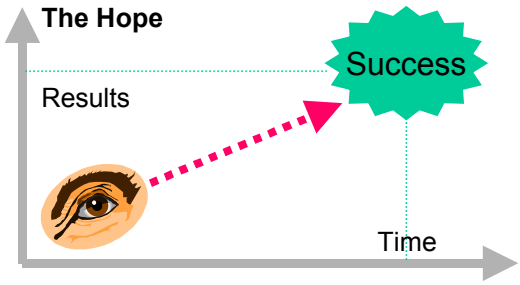
The scale for Step Review is shown below:

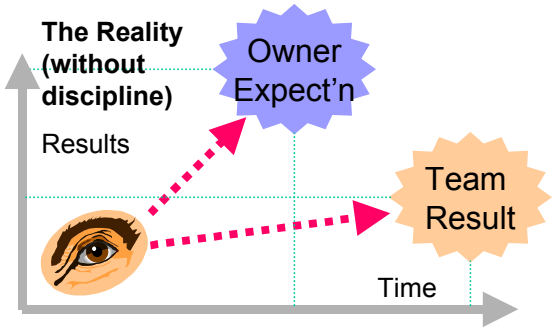
Review Point	Level 0	Level 1	Level 2	Level 3
Understanding/ involving the customer	Little reference was made to the customer of the process of his/her situation	Main conclusions and decisions were considered against their implications on the customer	The implications of decisions were checked with the customer in person wherever possible	The team built a close relationship and excellent understanding of the customer
Clarity of what we were doing and how	Meetings were often confused or started with unclear objectives and agenda	The overall goal of the team was clear but some confusion occurred around the details	Team objectives and process were clear and agreed at every point of the process.	The team was unanimous and enthusiastic on what was to be done and how.
Teamwork and mutual support	Conflict arose often and was not fully resolved. Members were unsupportive and withdrawn.	Conflict did occur but the team endeavoured to explore & resolve it constructively	Team members were good at supporting and involving the whole team.	The team had an energy of its own, which ensured mutual support and commitment.
Disciplined use of process and tools	The team did not use tools and techniques to reach their conclusions	Some tools and techniques were used, but often in an undisciplined manner.	Tools and techniques were used to reach the major decisions.	The team made full and objective use of the proposed tools/techniques to reach conclusions
Seeking real data, facts & information	Little was done to check conclusions with facts and data gathered from the process.	Key pieces of data were checked but the focus was largely on what is easily available	Current data and information was gathered directly from the process & from other sources	The team made full use of all available data sources incl. literature survey and benchmarking
Reviewing and improving our approach	No attempt has been made to review and improve our approach.	Some learning points have been considered and applied, but largely ad-hoc.	Team periodically reviews its performance and makes changes to its approach	Team regularly learns from its performance & how it has changed its approach

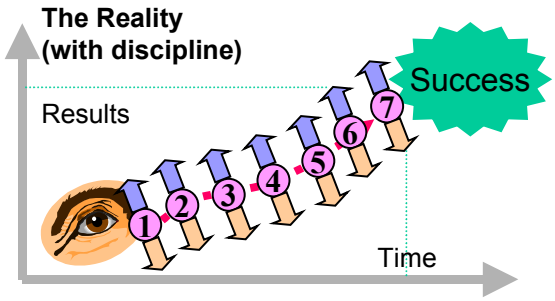
4.3 Reviewing the Deliverables

> ***"In the real world you both win when you play the same game"***
>
> Pete Shelley, British Rock Musician

Everybody involved in improvement projects believes that within a reasonably short period of time the project should have achieved real benefits for the organisation. The problem often arises however where there is a difference between management's (the problem owner's) view of the impact and timescale, and the team's view. This inevitably results in disappointment, wasted effort and missed opportunities.







The problem solving discipline addresses this issue by providing a regular basis (at the end of each step) for the problem owner and the team leader / team to communicate their experiences and share their ideas at each of the critical stages of the project's development. For this to work effectively their roles and responsibilities must be understood.

The problem owner should listen to and reflect on the summary of the step. Where he or she is concerned about the quality of the conclusions, then he/she should explore these in more detail. It is very important that the problem owner retains an open mind however, and where he/she is confident that an objective process has been followed, he/she should be confident in the conclusions and support them fully.

It is important to point out that if the problem owner challenges, they should only challenge activities in that one step. They should have taken full responsibility for the quality of previous steps at the review points for those.

Above all the problem owner should be enthusiastic and supportive of the team and their efforts.

4.4 Clarifying the Team Roles

There are four main roles in improvement teams. These are:

- The Problem Owner - somebody in a senior position who needs the problem solved, and who has executive influence over the area that is likely to be affected by the solution
- The Team Leader - who has taken responsibility for ensuring the problem is solved, and who is charged with managing and developing a team to design and implement the solution

- Team members - who represent a cross section of the necessary understanding and skills needed to solve the problem
- A Facilitator - who is responsible for ensuring the team follows the process, and for providing whatever guidance and support is required to help them to do this

The table below outlines the main responsibilities for each of these roles.

In setting up a team it is important that each person is clear on their role, and understands fully their responsibilities.

PROBLEM OWNER *"The Team's Customer"*	**TEAM LEADER**	**TEAM MEMBER**	**FACILITATOR** *"The Team's Guide"*
To be able to describe the problem clearly and unambiguously To agree the problem with the team leader To remain engaged and involved with the team to the extent that there are "no surprises either way" To enable the team by ensuring that: • resources are available to the team as necessary • issues of conflict can be resolved quickly To validate the process and the outcomes at each step To accept the final solution and support and champion its implementation	To stay close to the customer To ensure that the project team own the project objectives To motivate the team toward the objectives and to maintain their ownership by striving for consensus on key decisions To keep the team to the ('PROBLEM') processes To ensure that team members execute their roles To measure the team's performance To maintain momentum To be aware of the resource / team member difficulties as they arise and ensure they are resolved To develop team members To work toward encompassing the role of the facilitator within his own role	To share the objectives of the team over and above parochial / departmental objectives To be enthusiastic toward team tasks and activities To openly voice ideas and concerns within the team To support the team and its decisions outside the team To question the process constructively and, on agreement, conform to it To proactively use the project as an opportunity to practice and develop systematic mgt. skills To measure own performance and seek to improve it To support team colleagues in actively developing their performances and skills	To be the guardian of the 'PROBLEM' process & systematic principles and to maintain process emphasis To provide teaching / training on 'PROBLEM' or other aspects of systematic mgt. as required To develop the process skills of the team leader and the team and to provide feedback and coaching, both individually and as a group To ensure that the steering team and facilitator group are aware of issues / problems: • in the fit of the project with the overall programme • in the application of the process To develop the company's approach to projects through ensuring learning is shared

The roles described are relevant to companies in their early years of improvement projects, and will evolve with time. Longer-term responsibilities (e.g. career development) are not covered here.

4.5 The Checksheets

The checksheets for each step of the process can be found on the following pages.

CHECKLIST:	PROFILE (Step 1)	Project:	
Questions:	**Points to Consider**	**Relevant?**	**Achieved?**
What is the situation we want to improve?	Have we reviewed the following sources of information: process performance data; customer information/ feedback; cost of quality information; internal service level agreements; previous problem solving actions?	**Yes / No**	☐
How do we know if we've got a problem?	Has data been used to show the need for improvement, and has the need for improvement been defined in clear quantifiable terms?	**Yes / No**	☐
	Is there a 'customer related' reason for looking at this issue?	**Yes / No**	☐
	Have we understood the customer's requirements clearly in our own terms, and have we validated our specifications for the output against these?	**Yes / No**	☐
	Have we checked whether the measures we are using are the same as the ones the 'customer' of the process uses to know whether it is working or not?	**Yes / No**	☐
What happens at the moment?	Have we understood the current process in detail by flowcharting what *actually* happens?	**Yes / No**	☐
	Have we included *all* the inputs to the process, from whatever source?	**Yes / No**	☐
	Do we fully understand the 'who, what, where, when and how' of the process? Do we know who does each step of the process?	**Yes / No**	☐
	Have we checked the flowchart with everyone involved in the process?	**Yes / No**	☐
	Have we checked throughout the whole flowchart for any other (overt and covert) measures of its performance?	**Yes / No**	☐
How will we know if we've made any improvement?	Do we fully understand the measures that are being used to assess the process performance? (are they the best ones?)	**Yes / No**	☐
	Do we know and understand *all* the measures used, both by those doing the task and by the customer?	**Yes / No**	☐

Sign off:	**Step Review:**	Score				**Tools Used?**
	Understanding/involving the customer	0	1	2	3	☐ Flowcharting
_____ Team Leader	Clarity of what we were doing and how	0	1	2	3	☐ Interviews
	Teamwork and mutual support	0	1	2	3	☐ Questionnaires
	Disciplined use of process and tools	0	1	2	3	☐ Problem Profile Sheet
_____ Problem Owner	Seeking real data, facts & information	0	1	2	3	☐ Action planning
	Reviewing and improving our approach	0	1	2	3	☐ Cost Benefit analysis
_____ Facilitator	Date step completed	___/___/__				

CHECKLIST:	ROOT CAUSES (Step 2)	Project:	
Questions:	**Points to Consider**	**Relevant?**	**Achieved?**
What *could* the root cause(s) be?	Were the suggested formal techniques used to help encourage broader thinking?	**Yes / No**	☐
	Have we avoided being constrained by 'known' or 'ideal' solutions, and pet theories or 'soapboxing'?	**Yes / No**	☐
	Were we open minded enough in our thinking to ensure some bizarre possibilities were included in our consideration?	**Yes / No**	☐
	Have we generated a sufficiently wide a range of possible causes?	**Yes / No**	☐
Based on what we know, what is the *most probable* root cause(s)?	Did the investigation focus initially on those causes that seem to be most relevant, going through by a process of elimination?	**Yes / No**	☐
	Was the teams experience fully used in selecting the initial causes for investigation?	**Yes / No**	☐
	Was data collected and analysed in starting to close down on the most probable causes or causes?	**Yes / No**	☐
	Was the data collected analysed and displayed to show trends as well as showing absolute values?	**Yes / No**	☐
	Has further data been collected from all relevant points in the process to verify the validity of the finally selected causes?	**Yes / No**	☐
	Are we confident that we have elected to work on the root cause(s) with the greatest impact?	**Yes / No**	☐
	If we've got more than one probable root cause have we prioritised the others for further investigation?	**Yes / No**	☐

Sign off:

_____
Team Leader

_____
Problem Owner

_____
Facilitator

Step Review:	Score			
Understanding/involving the customer	0	1	2	3
Clarity of what we were doing and how	0	1	2	3
Teamwork and mutual support	0	1	2	3
Disciplined use of process and tools	0	1	2	3
Seeking real data, facts & information	0	1	2	3
Reviewing and improving our approach	0	1	2	3
Date step completed	___/___/__			

Tools Used?

- ☐ Brainstorming
- ☐ Consensus reaching
- ☐ The five 'why's'
- ☐ Fishbone diagrams
- ☐ Checksheets
- ☐ Pareto diagrams
- ☐ Graphs
- ☐ Scatter diagrams

CHECKLIST:	OPTIONS (Step 3)	Project:	
Questions:	**Points to Consider**	**Relevant?**	**Achieved?**
What are the possible solutions we could adopt?	Were the suggested formal techniques (brainstorming sessions, the use of creative design tools) used to help encourage creativity and broader thinking?	**Yes / No**	☐
	Were we open minded enough to ensure some bizarre solutions were included in our thinking?	**Yes / No**	☐
	Have we generated a sufficiently wide a range of possible solutions?	**Yes / No**	☐
	Have undertaken a literature survey of relevant management and technical periodicals on the subject?	**Yes / No**	☐
	Have we visited companies with similar processes, to see how their approach migh provide possible solutions?	**Yes / No**	☐
	Have we identified people who might have some experience on this subject and canvassed their opinions?	**Yes / No**	☐
	Have we sought to bring a creative perspective in considering options as to how the solution will be implemented?	**Yes / No**	☐
	Have we considered whether there needs to be a long-term 'ideal' solution in conjunction with a short-term 'fix'?	**Yes / No**	☐
	Have we involved in generating a list of possible solutions all those people involved in the process itself?	**Yes / No**	☐

Sign off:	**Step Review:**	Score				**Tools Used?**
_____ Team Leader	Understanding/involving the customer	0	1	2	3	☐ Brainstorming
	Clarity of what we were doing and how	0	1	2	3	☐ Lateral thinking
	Teamwork and mutual support	0	1	2	3	☐ Rich pictures
_____ Problem Owner	Disciplined use of process and tools	0	1	2	3	☐ Literature Survey
	Seeking real data, facts & information	0	1	2	3	☐ Morphological Analysis
_____ Facilitator	Reviewing and improving our approach	0	1	2	3	☐ Benchmarking
	Date step completed	___/___/__				

CHECKLIST:	BALANCE (Step 4)	Project:	
Questions:	**Points to Consider**	**Relevant?**	**Achieved?**
Which solution are we going to implement?	Have we narrowed down and agreed on the solutions most likely to bring success, through an objective process?	**Yes / No**	☐
	Does each of the chosen solution options make sense in terms of its likelihood of success in attacking the root cause(s)?	**Yes / No**	☐
	Have we undertaken small-scale trialing or experimentation to establish the effect of the chosen solution on the problem?	**Yes / No**	☐
	Have we used the data display techniques to demonstrate the reasons for the choice?	**Yes / No**	☐
	Have we considered the implications of the chosen solution on other aspects of the business and operations?	**Yes / No**	☐
What short-term measures should we consider?	Have we considered whether any short-term measures are appropriate to alleviate the problem while the long-term solution is being implemented?	**Yes / No**	☐
How will we put the solution in place?	Do we have a flowchart of the new process? And have new draft standards and procedures been produced and communicated?	**Yes / No**	☐
	Has a clear action plan been produced, with all actions and responsibilities clearly identified?	**Yes / No**	☐
	Have all those affected by or involved with the implementation been communicated with, and have they agreed their part in the plan?	**Yes / No**	☐
	Have sufficient resources of all types been made available?	**Yes / No**	☐
	Have all training needs been identified and provided for in the plan?	**Yes / No**	☐

Sign off:	**Step Review:**	Score				**Tools Used?**
_____ Team Leader	Understanding/involving the customer	0	1	2	3	☐ Solution Effect diag's
	Clarity of what we were doing and how	0	1	2	3	☐ Hurdling
	Teamwork and mutual support	0	1	2	3	☐ Consensus reaching
	Disciplined use of process and tools	0	1	2	3	☐ Pot'l Problem Analysis
_____ Problem Owner	Seeking real data, facts & information	0	1	2	3	☐ Force field analysis
	Reviewing and improving our approach	0	1	2	3	☐ Solution select'n matrix
_____ Facilitator	Date step completed	___/___/__				☐ Cost benefit analysis
						☐ PERT/Gantt Charts

CHECKLIST:	LAUNCH (Step 5)	Project:	
Questions:	**Points to Consider**	**Relevant?**	**Achieved?**
How will we manage the implementation?	Did the project team meet regularly to monitor progress on the plan, and deal with any issues arising?	**Yes / No**	☐
	Was each activity owner given a full brief of what was required of them, and how to report their progress?	**Yes / No**	☐
	Were all deviations to plan identified as they happened?	**Yes / No**	☐
	Were deviations to plan addressed quickly and effectively to minimise any loss of quality in the solution?	**Yes / No**	☐
	Were there clearly identified instances of observed deficiencies in the plan being used to prevent future problems?	**Yes / No**	☐
How will we ensure the quality of the solution?	Has the effectiveness of the pilot solution been fully assessed?	**Yes / No**	☐
	Was the implementation plan modified based on learning gained during the pilot phase?	**Yes / No**	☐
	Was the quality of the solution checked at each of the planned milestones, including the final milestone?	**Yes / No**	☐
	Are the process team content that disruption to them and their work has been minimised?	**Yes / No**	☐
	Are the process team confident that the solution will be effective and relatively risk-free?	**Yes / No**	☐
	Are the process team fully competent to make best use of the solution?	**Yes / No**	☐
	Has the process flow diagram been updated?	**Yes / No**	☐
	Have all the relevant procedures and training plans been modified?	**Yes / No**	☐

Sign off:	**Step Review:**	Score				**Tools Used?**
	Understanding/involving the customer	0	1	2	3	☐ Gantt charts
_____ Team Leader	Clarity of what we were doing and how	0	1	2	3	☐ Pot'l Problem Analysis
	Teamwork and mutual support	0	1	2	3	
	Disciplined use of process and tools	0	1	2	3	☐ Milestone Reporting
_____ Problem Owner	Seeking real data, facts & information	0	1	2	3	
	Reviewing and improving our approach	0	1	2	3	
_____ Facilitator	Date step completed	___/___/__				

CHECKLIST:	EVALUATE (Step 6)	Project:	
Questions:	**Points to Consider**	**Relevant?**	**Achieved?**
How do we make sure we know we have improved the situation?	Has the application of the solution been audited to ensure it is functioning as intended?	**Yes / No**	☐
	Has the team measured the difference made by the solution?	**Yes / No**	☐
	Are the measures being used the same as those used to define the situation/problem?	**Yes / No**	☐
	Are the people who are involved in the process, collecting the measurement data?	**Yes / No**	☐
	Has the root cause been eliminated, based on the evidence of the measurement data?	**Yes / No**	☐
	Have results from the solution met (or exceeded) the target as defined in step 1?	**Yes / No**	☐
	Does the customer believe an improvement has been made?	**Yes / No**	☐
How do we improve our own approach in this?	**Has the team reviewed its own performance over the six steps to date?**	**Yes / No**	☐
	Has the team made recommendations to update the guidance document, checklists etc.?	**Yes / No**	☐
	Has the team incorporated any learning for itself in a way that will ensure it is used?	**Yes / No**	☐
	Has the team provided individual feedback for each of its members	**Yes / No**	☐

Sign off:

_____
Team Leader

_____
Problem Owner

_____
Facilitator

Step Review:	Score	**Tools Used?**
Understanding/involving the customer	0 1 2 3	☐ Pareto diagrams
Clarity of what we were doing and how	0 1 2 3	☐ Graphs
Teamwork and mutual support	0 1 2 3	☐ Control charts
Disciplined use of process and tools	0 1 2 3	☐ Histograms
Seeking real data, facts & information	0 1 2 3	☐ Checksheets
Reviewing and improving our approach	0 1 2 3	
Date step completed	___/___/__	

CHECKLIST:	MAINTAIN (Step 7)	Project:	
Questions:	**Points to Consider**	**Relevant?**	**Achieved?**
How do we ensure a 'permanent fix'?	Does everyone involved fully understand the new standards and procedures?	**Yes / No**	☐
	Has all the 'support' for the old process been removed?	**Yes / No**	☐
	Has a schedule of checks and audits been set up to monitor the new process?	**Yes / No**	☐
How do we make sure others know of our success?	Have the outcomes of the complete exercise and the benefits been widely communicated?	**Yes / No**	☐
	Are there similar issues elsewhere which might benefit from taking the same approach?	**Yes / No**	☐

Sign off:	**Step Review:**	Score				**Tools Used?**
_____ Team Leader	Understanding/involving the customer	0	1	2	3	☐ Standard operating procedures
	Clarity of what we were doing and how	0	1	2	3	
	Teamwork and mutual support	0	1	2	3	☐ Service Level Agreements
	Disciplined use of process and tools	0	1	2	3	
_____ Problem Owner	Seeking real data, facts & information	0	1	2	3	☐❑ Training plans
	Reviewing and improving our approach	0	1	2	3	
						☐ Briefing notes
_____ Facilitator	Date step completed	___/___/__				