Solutions and Actions
(Fresher ideas and the best thing to do)

Purpose	To show the team how they can improve their ability to produce innovative and lasting solutions to problems. Also, to give the team a powerful process for selecting options, using pre-agreed selection criteria, and securing the commitment of the whole team.
Application	This **two-part** session takes the team through the techniques required to produce innovative solutions to problems or situations. It also introduces a series of filters, leading finally to a selection of the best course of action. Whilst this module can be used by itself, it follows naturally from earlier modules which took the team through the diagnostic steps of the problem solving journey, leading finally to a selection of the best course of action.
What happens?	After some introductory discussion, the session opens with the team deciding the criteria which they will eventually use to select the solution which best meets their needs. Having completed this preparatory work, the team then harnesses its collective thinking to generate a number of innovative solutions to the problem. The session closes with the team considering the positive and adverse consequences of each option, and making the final decision as to which option seems the most appropriate.
Resources	**Overall time required: 3 hours** **Part 1: 1 hours** • 10 minutes for introduction and initial briefing • 20 minutes to agree selection criteria • 30 minutes to generate possible solutions **Part 2: 2 hours** • 10 minutes for introduction and initial briefing • 50 minutes for comparing solutions with agreed selection criteria • 1 hour for Solution-Effect analysis, leading to the final decision **Materials and resources** A flipchart which you have pre-prepared, summarising the three key steps, as follows: **NOTE: THIS WILL BE USED IN PARTS 1 & 2**

Flipchart 1:
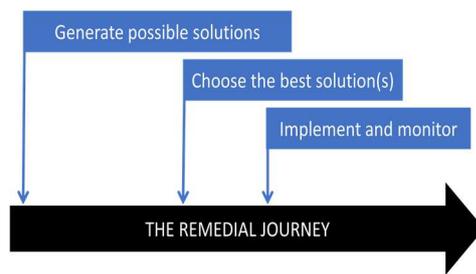
- Two flipcharts (2&3 below) which you have pre-prepared for the **'Must Have'** and **'Should Have'** demonstration, as follows:

Flipchart 2:

Features my car <u>must have</u>:
Cost - maximum £10,000
Engine size - maximum 1600cc
5 doors
Fuel economy - at least 35 mpg
Manual gearbox

Flipchart 3:

Features my car <u>should have</u>:					
	Options				
	A	B	C	D	E
Seat 5					
Dark colour					
Climate control					
90 mph					
Made in Europe					
Petrol					
Comfortable					

- A flipchart poster showing the rules of brainstorming, as defined in the introduction to this activity Pack.
- Copies of the 'Must Have' and 'Should Have' Demonstration exercise provided at the end of this module
- Smooth vertical surface, at least 3' high by 6' wide. Ideally use a whiteboard, or six sheets of flipchart paper grouped together
- Packs of 'post it' notes, with sufficient for each participant to have six 'notes' each. Ideally provide each participant with a flipchart or similar marker pen

	• Flipchart Stand with Blank Pads • Marker Pens • Blue-Tack, etc • Paper, Pens or Pencils for Participants
How do I do it?	**PART 1: SOLUTIONS** **OPEN THE SESSION** Before starting, you may wish to stress the purpose of the session, which is to demonstrate the key steps and techniques involved. Whilst you will be using a real problem to demonstrate the steps and techniques, you won't have time to actually solve the problem. Effective problem solving does take more time than adopting a 'quick fix' approach. Before starting, you may wish to review the rules of Brainstorming, and display them on a flipchart poster. Stress why each one is important. By now the root cause(s) of the problem are known, and the remedial journey is about to begin. The team will soon be using Brainstorming to generate a number of alternative solutions to the problem. However, before this process starts, there is a very important task to be completed - deciding the criteria by which the alternative solutions are to be judged. Why do we do it in this order? Ask your participants to consider what happens when they make a major purchase for the home. • Do they decide what they want first, and then go out and see what's available? • Or do they see what's on the market first, and then decide what they want? After some discussion a consensus will emerge that most people generally decide what they want first, and then research the market to find out what's available. So this is the sequence used in the initial two steps of the remedial phase - first decide what you want to achieve, and then look for options which meet your requirements in full. If the team doesn't decide the criteria first, they may be tempted to 'modify' the criteria to match the potential options which are available - a formula for disaster! **CHOOSING SELECTION CRITERIA**

Stress that participants should take a lot of care choosing, and defining the selection criteria. Later, as each option is rated against the criteria, supporters of particular options will find it easier to accept the final decision, if they have played a full part in deciding the criteria.

Before you ask the team to develop their own list of selection criteria, you may wish to give a short demonstration of how the choosing of valid selection criteria assists the selection process.

DEMONSTRATION - BUYING A CAR

Tell your team that you are in the market to buy a car, and that you plan to hold an auction. Each participant will have a car to sell, and you wish to discover which car best meets your needs, in the shortest possible time.

Distribute the **'Must Have'** and **'Should Have'** Criteria Demonstration form to your participants (provided at the end of this activity), and ask them to complete the details either for the car they own, or the car they wish to buy. Reassure everyone that exact information is not required. About 5 minutes will suffice.

- Maximum price? (£)
- Engine size? (cc)
- How comfortable?
- How easy is it to maintain?
- Colour?
- Number of doors? (2 3 4 5)
- Is it petrol? (Yes/No)
- Maximum speed? (mph)
- Automatic or manual gearbox?
- Can seat how many?
- Climate control? (Yes/No)
- Insurance Group?
- Country of manufacture?
- Fuel economy? (mpg)

Once everyone is ready, ask them how long they expect it will take for you to find out which car best meets your requirements. The time estimates will range from about 15 minutes to 2 hours! Tell them that you will do it in less than 3 minutes!

Ask everyone to stand up, and then explain what will happen next. Tell them that you have already decided a list of features which your car must have.

At this point display a pre-prepared list of the **'Must Have'** criteria. **(flipchart 2)**

If you have a stopwatch, start it now. Ask everyone to start reading down the criteria and, when their car fails to meet any of the criteria, they should sit down.

Within 15 - 20 seconds this process will be over. Stop the clock. You will either have a few people still standing or everyone will have sat down. Those left standing will be the owners whose cars meet all of your **'Must Have'** criteria.
If everyone has sat down, you have two options open to you. Ask the team what they are, and they will quickly offer you two alternatives. (Before continuing, suggest that anyone still standing now sits down.)

One option is to review your Must Have criteria. Are you expecting too much, or are they really your minimum requirements? If so, then you should not change them.

If you decide to make your criteria less exacting, then you may find that one of the cars now meets your minimum requirements.

However, if you cannot change your criteria, then the only option available to you is to widen your market, to find a car which does meet all your **'Must Have'** requirements.

SHOULD HAVE CRITERIA
You are now ready to move on to the second phase of the demonstration. Reveal your list of '**Should Have**' criteria, and start to work through the criteria to find out which car meets the greatest number of '**Should Have**' features **(flipchart 3)**.

Start the clock again, and ask each 'owner' to tell you how his/her car rates against the '**Should Have**' criteria. Gradually you will whittle down the original number to a few, or even one owner.

Finally, show how you make the final choice by comparing the remaining candidates against the '**Should Have**' criteria, and deciding which option meets most of them. Stop the clock, and you will find the total time should be less than 3 minutes.

Check that everyone understands what you have done so far, and discuss any issues that arise. Now you can give them a practical team exercise to confirm their understanding.

BRAINSTORM SELECTION CRITERIA
The first step is to brainstorm a full list of possible selection criteria. If your team has difficulty getting started, the following general list may help them:

> **IMPORTANCE** - how important is the solution to our company or department?

> **MEASUREMENT** - how easily can we measure the solution?

FEASIBILITY - how achievable is the solution?

COST BENEFITS - how cost effective is it?

TIME - are the timescales realistic and acceptable?

Clearly there will be others which relate specifically to the team's working environment. Now give the team the opportunity to find out what they are.

Gather the team around a flipchart, and ask them to brainstorm their list of criteria. This will take about 10 - 15 minutes, after which time they should review their ideas, and reduce it to a manageable number.

'MUST HAVE' AND 'SHOULD HAVE' CRITERIA
Once the team has a final list of criteria, then encourage them to refine the list into one of two types:

- **'MUST HAVE'** criteria - which will be mandatory and, to enable a clear Yes/No decision to be made, must also be easily measurable
- **'SHOULD HAVE'** criteria - the features which the ideal option or solution should also have. The winner will be the one which best meets all of these criteria

They will soon identify a number of **'Must Have'** criteria, but ask the team to check that they are all readily measurable.

If they suggest some **'Must Have'** criteria which are not easily measurable, then they have two options:

- Redefine the feature so that it can be readily measured. For example, 'Must be light' can be redefined as 'No heavier than 5 lbs.' 'Must be safe' could become 'Conforms to British Standard BSXXXX.'
- If that is not possible, then the criterion must be relegated to the **'Should Have'** list.

BRAINSTORM POSSIBLE SOLUTIONS
The team is now ready to generate a list of possible solutions to the problem. Agree how long they should have - about 20 minutes will produce a lot of good ideas.

Ask the whole team to gather round a flipchart, give them each a marker pen, and ask them to write up their own ideas. It will make the next stage easier if ideas are listed one per line.

As flipchart pages are filled, post them on the wall so that everyone can see ideas which have already suggested.

TRAINER PREPARATION

Whilst this activity is going on, you need to prepare for the next step in the process, which is when the team evaluates each possible solution against the selection criteria. This is what you do.

Write the **'Must Have'** criteria on a clean sheet of flipchart paper, and have it ready to post on the wall.

Prepare a grid on a fresh sheet of flipchart paper, with the **'Should Have'** criteria across the top, and space down the left-hand side to write in a list of possible solutions.

If you have more than six **'Should Have'** criteria, then consider extending the grid onto another sheet of flipchart paper.

Similarly, if the list of possible solutions being generated by the participants has filled more than one sheet, then your grid will need to extend to another sheet.

Whilst you are doing this preparation, make sure you keep your eye on the team, and help to facilitate their discussions should they become stalled.

CLOSING THE SESSION
After 15-20 minutes the ideas will begin to dry-up. Choose an opportune moment to end the brainstorming, and ideally give the team a short break. This will give them time to develop their list and add any items which may be missing.

It will also give them a chance to take a break before the next step in the process, which may take some time to complete.

PART 2: A COURSE OF ACTION

OPEN THE SESSION
You will be using a real problem to demonstrate the steps and techniques, but it is not the intention to solve the actual problem. At times, you may need to do things in a 'quick and dirty' way just to contain the training session within a manageable time period.

However, the team will soon discover that effective problem solving does take more time than the traditional 'quick fix' approach. When solving real problems, they will have to make conscious decisions about time management.

Before starting, you may think it useful to review the rules of brainstorming, and display them on a flipchart poster. Stress why each one is important.

CHOOSING THE BEST SOLUTION

In an earlier session the team will have brainstormed a number of possible solutions to the problem. They now require a structured and logical method to weigh the benefits and features of the alternative options.

Once the brainstorming dries up, you are ready to move onto this step of the process. Rearrange the list(s) of possible solutions so they are together, and post up alongside the team's **'Must Have'** criteria.

'MUST HAVE' CRITERIA
Now ask the team to consider each possible solution against the list of **'Must Have'** criteria and, as soon as any idea fails to meet any one criterion, they should discard it.

This process will take a fair amount of time, depending on the number of variables being considered, and how measurable the **'Must Have'** criteria are. When complete, the team will have a list of possible solutions which all meet their minimum requirements.

'SHOULD HAVE' CRITERIA
The team can now move to the next stage in the process, which is to rate each possible solution against the **'Should Have'** criteria.

When deciding how well an option meets a particular criterion, the team can use a variety of different methods. Suggest they use something measurable whenever possible, such as:

- Numerical scale: 1-5 or 1-10
- £££s
- Yes or No
- High, Medium, or Low
- Easy or Hard.
- Days, weeks, or months

Again this process will take a variable amount of time, depending on the range of solutions being evaluated, and the number of **'Should Have'** criteria.

EVALUATE THE RESULTS
Once this is completed, the team will be left with a short list of possible solutions, which meet the **'Should Have'** criteria to varying degrees.

So now the team should evaluate which potential solution(s) offer the most promising overall result. Remind them that these are 'Tools, not Rules!' So they should be guided by the outcome, but not follow it slavishly.

If the highest scoring solution produces an unexpected result, or lacks general support, then they should re-examine the criteria, or the data that was used to arrive at the decision. The answer is there somewhere!

WHAT ELSE CAN BE USED?

The above approach will be perfectly acceptable for many situations. However, the team will recognise that rarely do all the criteria have equal importance. We often need to allocate different 'weightings' so that some criteria have a greater impact on the final solution than others.

If this approach is necessary, the team will need to revisit the **'Should Have'** criteria and allocate weightings to each item. The potential solutions will then be re-evaluated, allocating a weighted rating to each one.

Using the selection criteria will have reduced the list of possible solutions down to a more manageable number, but it is quite possible that the team may still have a few apparently worthy solutions still under consideration. How can they choose the best one?

There are many techniques available, and the team should be encouraged to use any with which they are already familiar. For example, there will be many situations when a cost-benefit analysis would provide an excellent comparison, and the help of a specialist financial advisor would be welcome.

THE FINAL FILTER

You may wish to offer another technique which can serve as the final filter in the funnel, which is solution-effect analysis. This will provide a visual way of comparing the effects, both positive and adverse, of implementing each solution.

First of all the team should decide which potential solutions are really in the running; it may be worth spending a few minutes reviewing the ratings given so far, to see if any 'marginal' solutions can be eliminated.

The team will need to develop a Solution-Effect diagram for every solution still worth considering. This is how they can do it.

Draw an outline diagram for each solution. Use either a horizontal or vertical design, whichever suits you best. Draw a box at the start of the diagram, in which you write the 'solution.'

Solution

Draw in the main branches or ribs, which represent the major categories of effects. Before you can do this, you need to decide how many branches to use and what they will be called.

There are several options the team can choose, and whichever approach they adopt can be reviewed in the light of experience.

The best approach is to ask the team to brainstorm a list of major categories of effect. Record their ideas on a flipchart and, through a process of discussion, whittle them down to three or four major categories.

Alternatively use the **'4Ms'** approach. This supposes that the effects of their solutions may be grouped into four major categories: Manpower, Methods, Machines and Materials.

Another approach is to use **'PEM PEM'**. This supposes that the effects of the solutions may be grouped into six major categories: Plant, Equipment, Materials, People, Environment, and Methods.

Once the team has decided how many branches to use, draw them in, and write the category name in a box at the end of the branch or rib.

Let's assume that you're going to use the **4Ms** approach - the diagram will look like this:
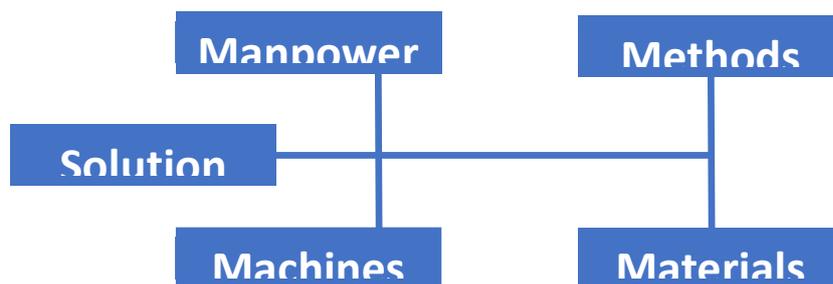
A useful enhancement is to suggest that positive effects or consequences are written to, say, the left of the branch, with negative effects or adverse consequences being written to the right of the branch.

Manpower

(+ve) | (-ve)

This will enable subsequent comparison of the solutions to be made much easier, as the relative balance of positive and negative features will stand out more clearly.

The team will need to prepare a separate solution-effect diagram for each solution still under consideration.

Make sure the diagrams are large enough for everyone to see all the ideas clearly; if they can't read what has been suggested, they cannot be expected to join in!

Depending on how many solutions are to be evaluated, you might consider breaking the team into a number of smaller teams, allocating each one to a separate solution-effect diagram.

Once this is decided, gather everyone around the diagrams, and ensure that everyone has a marker pen. Agree how long the team(s) can have – about 15 - 20 minutes will produce a lot of ideas.

Ask everyone to brainstorm possible effects of implementing the solutions, and to write their ideas on the solution-effect diagrams against the likely major category of effect. If there is any doubt about where an idea belongs, then why not write it against more than one branch?

Asking people to write their own ideas is a more effective way than having the team sitting at a table calling out ideas, with only one person writing them up. It gets everyone involved, and ensures that no ideas are lost.

After about I0 minutes the obvious ideas will dry up and the pace of things will slow down. Resist the temptation to end the exercise as, after a few minutes, the flow of ideas will start to pick up again.

Encourage everyone to build on the ideas already suggested. If possible, use colour or symbols, provided everyone can still see and understand what is on the diagram. If people can see links developing between ideas on different parts of the diagram, then link them up.

EVALUATE THE RESULTS

Only when the ideas really dry up are you ready to move into the final, analytical stage of the exercise. Remember, people will need some time to consider all the ideas that have been suggested, before you can proceed.

So finally, ask the team to consider each solution effect diagram in turn and compare the effects of implementing each possible solution.

Remember the Pareto principle, the **'80:20 rule'**. It is quite likely that a small number of possible effects (the 'vital few') may have a really significant impact on the whole situation, and may make an otherwise perfect solution quite unacceptable.

In a real situation this evaluation process will take a fair time to complete. Each possible effect should be considered from two points of view:

1. **How likely it is to occur?**

2. **If it occurs, how serious will it be?**

When working through the diagrams, the team should be asking searching questions. For example: Who would be involved? How often might it Happen? What would it cost? Where would it occur? How would it appear? Why would it happen then? How much do we really know about this possible effect? What more do we need to know?

If they're stuck for questions; suggest they ask the simple ones given in the checklist by Rudyard Kipling (from his poem The Elephant's Child);

> **'I kept six honest serving men**
> **(they taught me all I knew)**
> **their names are What and Why and When**
> **and How and Where and Who.'**

What to do next? Almost certainly the team will need to gather more data on the possible effects which have the greatest impact. Because they cannot tackle everything at once, the ratings just developed will help to give some order of priority.

Check for understanding on the concept, and ask your delegates if they have any personal experience to offer.
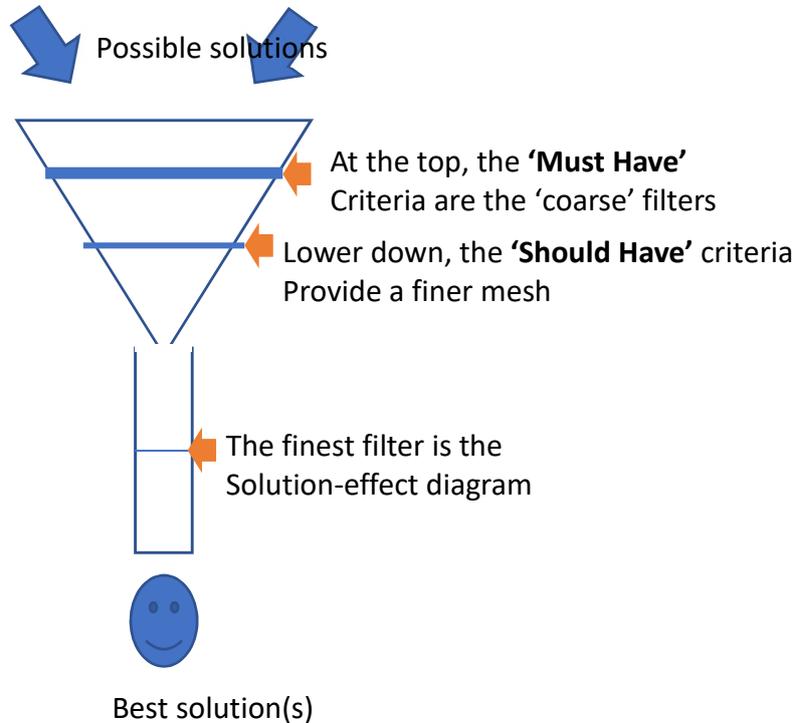

CLOSE THE SESSION
Your close to this session will depend on what is planned to happen next. There are really two ways to follow this:

1. If the team is involved in selecting a real solution to an existing project or problem, then they will now be well equipped to make the decision in a structured and objective way.
2. Alternatively, you may wish to continue the training session through to the final Step of the remedial phase, which is to plan implementation.

Before moving on, check for understanding on the process you have been through. Ask for examples that the team can think of how when using this approach might have produced a better solution or the same result but faster.

Note	People often underestimate how hard it is to come up with ideas and actions which are fresh and unrestricted by previous experience.

When the team starts to produce possible solutions for their chosen topic, it may be quite some time before new and novel ideas start to appear. Also, you may need to remind people of the other brainstorming rule which is hard to follow - the need to defer discussion until all the ideas have been listed.

There are many different ways you can handle the actual brainstorming. From experience, the team will generate more energy and commitment by everyone having a pen and writing up their own ideas

The more traditional approach of the team sitting down, with one 'scribe' writing up the team's ideas just doesn't have the same feel. Getting people up on their feet around the flipchart seems to create energy, and changes the group dynamics.

The demonstration of the **'Must Have'** and **'Should Have'** criteria will only take a few minutes, but will leave a lasting impression on the team. People are amazed at the speed and accuracy of the process.

The model lends itself to a variety of different scenarios, ranging from buying a house to selecting a hotel or holiday. You choose what will work best for your team.

In the ACTIONS stage, if the team have not defined the **'Must Have'** criteria tightly, they will quickly find during the early stages of this step that they are spending a lot of time discussing whether or not a solution fulfils the **'Must Have'** criteria.

A further sign of ineffective **'Must Have'** criteria is that the list of solutions is still very long, after having compared them with the **'Must Have'** criteria.

Do stress to the team the importance of everyone being fully involved in developing the list of criteria. People will come to a decision making process with their own 'pet' solutions, which they will genuinely believe will solve the problem better than any other ideas.

	Overcoming their natural defensiveness will be best overcome when they can see how well their solution compares with others, when rated against objective selection criteria. You may wish to compare this overall process to a funnel, which has a series of filters, which become ever finer. Possible solutions At the top, the **'Must Have'** Criteria are the 'coarse' filters Lower down, the **'Should Have'** criteria Provide a finer mesh The finest filter is the Solution-effect diagram Best solution(s)
When?	• Any opportunity requiring the generation of ideas to solve problems and the best course of action for implementation

MUST HAVE AND SHOULD HAVE CRITERIA - DEMONSTRATION

PURPOSE:
To demonstrate how **'Must Have'** and **'Should Have'** criteria can help you to choose between several options, in a structured way.

TASKS:
Please imagine that you wish to sell your car, and that the manager wishes to buy one. Below you'll find listed a number of car features; would you please fill them in, either for your own car, or the car you've always wanted to own!

We'll then hold an auction, and see which car the manager buys.

The features are:

- Maximum price? (£)
- Engine size? (cc)
- How comfortable?
- How easy is it to maintain?
- Colour?
- Number of doors? (2 3 4 5)
- Is it petrol? (Yes/No)
- Maximum speed? (mph)
- Automatic or manual gearbox?
- Can seat how many?
- Climate control? (Yes/No)
- Insurance Group?
- Country of manufacture?
- Fuel economy? (mpg)