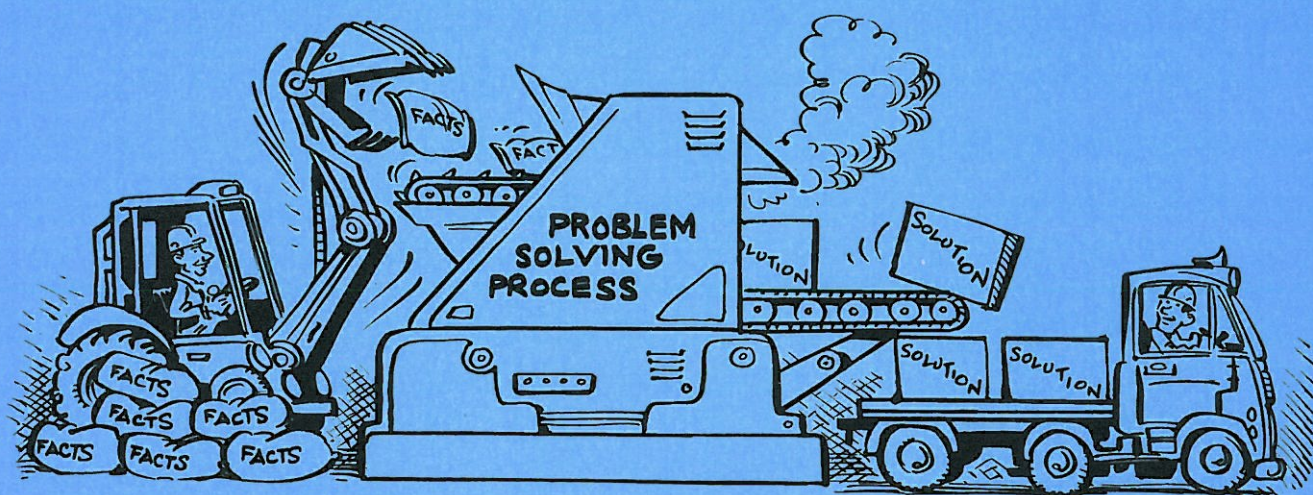


# Grow your Own Quality Improvement Team

1996

GROW YOUR OWN

# Quality Improvement Team



Compiled by Mark Dyson



ECI

**GROW YOUR OWN**

# **Quality Improvement Team**



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## Grow your own Quality Improvement Team

1	Introduction	The purpose of this workbook
2	What is a QIT?	What is TQ?
		Why start TQ?
3	Setting up a QIT	
4	Selecting a problem to tackle	
5	Developing the problem	
6	Choosing solutions	
7	Implementing solutions	
8	Checking they work	
9	How well did the QIT do?	
10	The future	





## The purpose of this workbook

This workbook is intended to be used by the team leader and facilitator as a practical, structured guide to forming and running a new Quality Improvement Team.

It contains a balance of guidelines, background information, reminders, exercises, sample forms, checklists and examples. The emphasis is on doing, not just reading.

It is written specifically for the construction industry, both large and small companies, so all the examples are 'flavoured' accordingly.

As a workbook, the aim is that teams complete the exercises and forms as they progress through the book. Many well known tools and techniques are employed, with an accompanying outline explanation. It is hoped that teams will use the abilities of a trained facilitator, who will be able to give more detailed coaching.

Quality improvement teams should be beneficial to both the company and those individuals involved. The process, tools and techniques introduced are widely applicable, and should be useful to the individual beyond the bounds of the QIT - analysing and tackling complex problems, planning and running efficient meetings, presentation preparation and tips, team building and working - many subjects covered in training courses.

It is a 'stand-alone' document, but the other ECI publication *Implementing TQ in the construction industry: A practical guide* may be found helpful, specifically chapters three and four on culture change and how to involve employees.

## What Is Total Quality?

Total Quality is nothing new, much of it is common sense and you are probably applying a majority of that already. It is a fresh approach to improving the efficiency, competitiveness and profitability of a company. Just because it refers to quality, it is not all about paperwork. It is about people and processes.

TQ is a long term programme and will not provide a 'quick fix' solution to any situation. Once TQ is embarked upon it is a continuous journey to improve your way of working. Indeed, if a company decides that it has reached the point of producing to the right quality without any further need for TQ, then that would be the start of a decline in quality.

TQ involves a culture change throughout the organisation where everyone is encouraged and able to satisfy both internal and external customers' demands or requirements and to strive for continuous improvement. This may be achieved by encouraging constructive criticism, self appraisal and a team spirit amongst employees, where the good of the company is seen as the objective, rather than the good of the department.

Improvements gained through TQ activities must be measured and monitored to show their benefits. Often this may be difficult to achieve as there are always visible and invisible benefits of TQ. However, various parameters must be highlighted, depending upon the improvement, to show that there are direct benefits in improving efficiency.

The word 'total' is meant to emphasise the fact that it must involve everyone in the organisation. This is different to implementing Quality Assurance, where not everyone is involved to the same degree- with TQ the benefits may be seen for everyone, including engineers, painters, directors, receptionists and security guards. TQ is a means of improving the way you operate at every level and every process you are involved in. Everyone is required to review the way they operate and suggest methods of improving both the way they work and the way work is given to them.

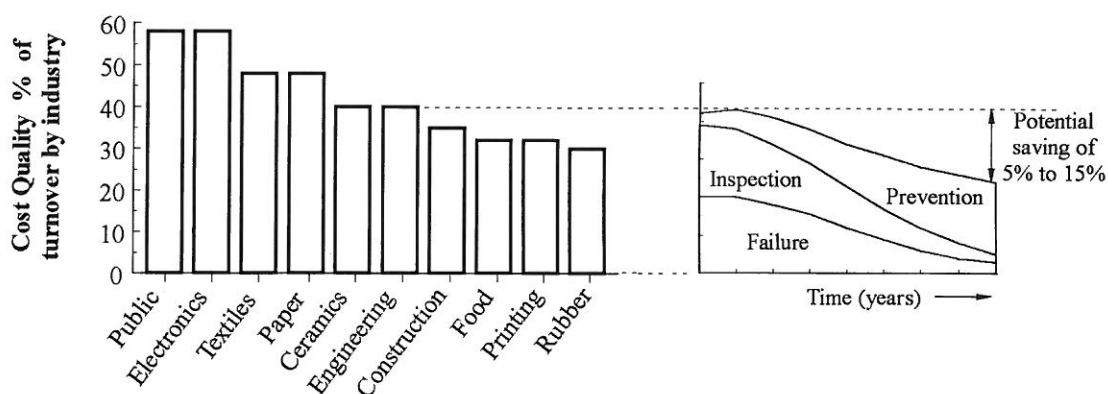
It is of course a matter of making money at the end of the day and TQ is recognised as a way of improving efficiency and effectiveness which in turn will lead to increased profitability. It is not only a means of reducing errors and wasted effort, although that is an important aspect of TQ, but is also a method of supplying your external client with a quality product. Quality is seen as 'fitness for purpose', and will ensure that your customers consider you for future work.



## Why should your company start TQ?

- ★ You want to keep your current customers by giving them a better product, a better service and by listening to them
- ★ You want to win new customers by having a reputation of being good to work with, customer focused and innovative
- ★ To save money. The 'Cost of Quality' - prevention, inspection and correction - may account for up to 40% of turnover (source ICAEM), so any reduction will have a direct effect on profits
- ★ To improve your company by instilling the attitude in all staff of continuously looking for improvements and better ways of working
- ★ Some attitudes in the construction industry cause needless expense and can be improved from 'them and us' to team work, from adversarial contracts to partnering and alliancing, from barriers to open communication
- ★ It is an opportunity to get ahead of your competitors - TQ is becoming more widely recognised, so starting on the road early will give you a competitive advantage in the future
- ★ You want to influence your suppliers to participate in the process of continuously improving service to your customers

Cost of Quality





# Grow your own Quality Improvement Team

1	Introduction	
2	What is a QIT?	<div>What is a QIT?</div> <div>QITs and TQ</div>
3	Setting up a QIT	
4	Selecting a problem to tackle	
5	Developing the problem	
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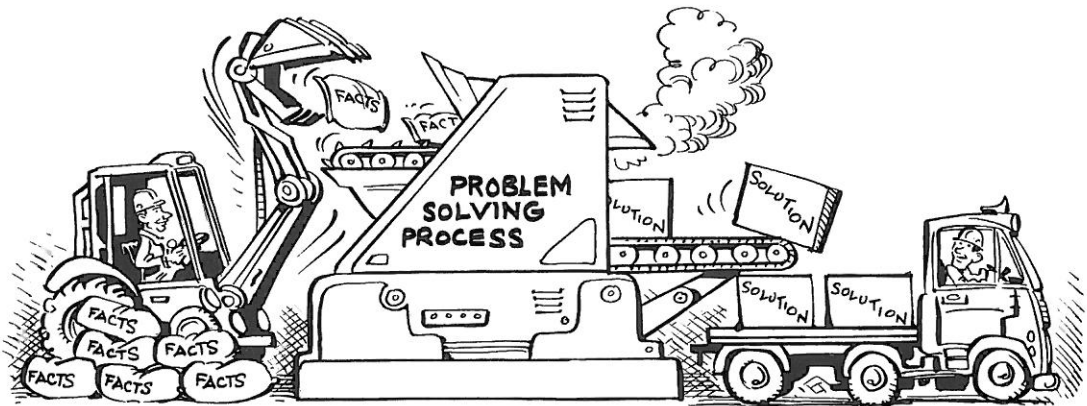


## What is a QIT?

In many respects, a QIT is like a small project team - it has a goal, a certain amount of time and money, and hopefully sufficient knowledge, skills and experience. Both types of teams will follow a similar problem solving process to reach the goal:

- ★ Defining the problem. (c.f. Specification)
- ★ Developing it. (c.f. Feasibility)
- ★ Considering solutions. (c.f. Preliminary design)
- ★ Choosing a solution and implementing it. (c.f. Detailed design, construction)
- ★ Checking it works. (c.f. Commissioning)

For example, the project may be 'to install an adequate heating system, and have it operating by December 14th.' **Defining the problem** will be done with a specification. Exactly what is an 'adequate' heating system? 'Fluid outlet temperature 35 Degrees C +/- 1 Degree C.' **Developing it** is finding out what are the real issues and constraints, by asking questions and gathering information. 'Yes there are plenty of 400 kW units available, but they all run on gas, and there is no gas main to the site.' **Considering solutions** involves analysis and choices. 'A 30 mm gas main would cost £2500, bottled gas is £50 per cylinder.' **Choosing a solution and implementing it** is making a decision and following it through. 'Fitting two 250 kW units, each running on propane cylinders meets the specification, can be installed by December and is the cheapest option over the first 15 years.' The final stage is **checking it works**, both the plan and the solution. 'Heating units delivered in week 14.'



*The problem solving process produces solutions based on facts*

This simplified comparison is fine once the problem has been selected, but a QIT usually selects its own problems as well. This is important. It means the team tackles problems it thinks it can realistically solve. Members have more 'ownership' of the problem, and hence a greater commitment to finding a solution. Suggestion schemes also use staff ideas, but a QIT is empowered to work their own questions through to answers, and is responsible for implementing the solutions.

QITs are set up primarily to solve problems. Their brief maybe to work in a particular area (e.g. how to win more work for the company?) or on a problem already identified (e.g. how to reduce the number of weld failures?). Teams given a specific problem to solve are often named Quality Action Teams (QAT). The size and nature of the company will affect the teams brief. A large contractors head office could have eight QITs, with an overall steering committee deciding in which areas QITs should be formed to have the most effect. In a small design firm, resources may only support one QIT (not the board), with a very wide brief. As an advisory note, experience has shown that one of the commonest causes for QIT failure is trying to tackle a problem that is too wide and poorly defined.

QITs may be established with a secondary purpose of seeding TQ into the grass roots of a company. Much of the cultural aspects of TQ are easily read about, but are quite difficult in practice to introduce. A new QIT can write its own rules (see the Team Charter on page 24), and is a safe environment for individuals to learn and use new tools and techniques.



*A QIT is not about having a traditional chairman to control the meeting*



## QITs and TQ

QITs are often set up as part of a TQ programme (see chapter two of the ECI handbook *Implementing TQ in the construction industry: A practical guide*). In a large organisation this may occur up to a year after the start of the programme. Prior to establishing QITs, there will have been a period of convincing and training of employees. Top management must fully understand what TQ is, and isn't, and have made a long term commitment to it. The rest of the company needs to be made aware of what it is, why it is being implemented, and how they are going to be involved. Once these tasks have been accomplished, QITs can be formed as a practical means for improving the business.

This is the usual route but QITs can still be set up and tackle problems without a formal TQ programme, especially on projects. Support, resources and authority will be required by the team, perhaps supplied by a line or project manager.



## Grow your own Quality Improvement Team

1	Introduction	
2	What is a QIT?	
3	<b>Setting up a QIT</b>	<ul style="list-style-type: none"> <li>Leader and facilitator roles</li> </ul>
4	Selecting a problem to tackle	<ul style="list-style-type: none"> <li>The rest of the team</li> </ul>
5	Developing the problem	<ul style="list-style-type: none"> <li>Before the first meeting</li> </ul>
6	Choosing solutions	<ul style="list-style-type: none"> <li>The first meeting</li> </ul>
7	Implementing solutions	<ul style="list-style-type: none"> <li>Training course plan</li> </ul>
8	Checking they work	<ul style="list-style-type: none"> <li>The team charter</li> </ul>
9	How well did the QIT do?	<ul style="list-style-type: none"> <li>Team development</li> </ul>
10	The future	<ul style="list-style-type: none"> <li>Potential pitfalls</li> <li>Milestone chart</li> </ul>



## Leader and facilitator roles

Each team has a leader who is invited to form and lead the team, not told to do so. Their role is

- ★ to ensure the chosen problem is solved
- ★ to keep the team on track
- ★ to manage tasks

They should have a good knowledge of the problem area, and receive training in leadership and meeting skills.

The leader should be supported by a trained facilitator. Their function is

- ★ to help the leader and team operate efficiently (not by supplying coffee!)
- ★ to aid and coach
- ★ to introduce new tools and techniques

A small organisation without such a person should seriously consider investing in training someone. They would then be equipped to train other facilitators and also help in the introduction of TQ throughout the company.

The leader and facilitator would normally agree the division of their responsibilities, (and communicate this to the team). There is a suggestion for this on page 19 - the leader/facilitator contract.

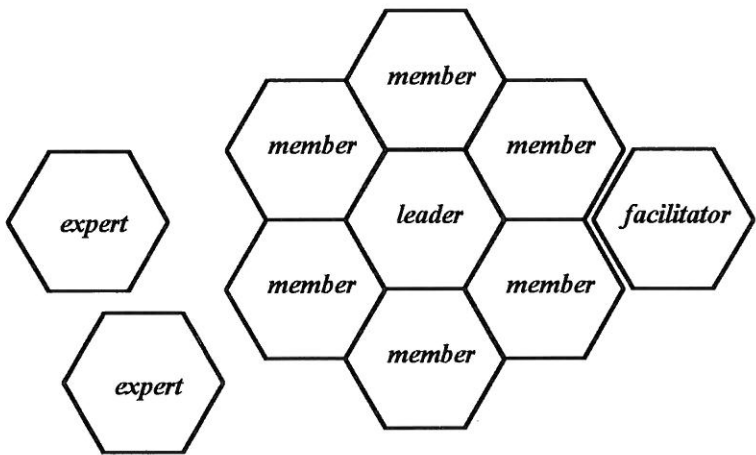
# The rest of the team

The leader and facilitator need to build a team with the right mix of skills, experiences and personalities to be able to tackle likely problem areas. The team should ideally have between five and eight members. Too few and it will lack ideas, too many and team members won't become so involved. Team members should be carefully chosen to represent all the disciplines involved, and also all levels within the organisation.

Someone in the team should have sufficient command to ensure the team is taken seriously, and be able to source staff support and equipment when needed. The team should also include input from experts and those directly involved in the problem areas (e.g. specialist engineers, safety officers, maintenance personnel, etc.). Whether they join the team for the whole process or for just a few specific phases is the teams decision. Seeking their input will pay dividends when it comes to implementing a solution, as they are likely to be more enthusiastic towards something which is partly their own work. The leader/facilitator may consider using the Belbin test (available from Belbin Associates, Cambridge) on potential team members to find an acceptable mix of personalities.

In the perfect situation members would be all be volunteers, although this may well be impractical given the requirement for a mixed team. Select and announce the team with tact and sensitivity.

*The ideal committee is one with me as chairman and two other members in bed with flu* Lord Melverton



The structure of a team

Team members		Team name _____		
Name	Skills	Date formed _____	Belbin profile	Available for 3 months?
		Experience		
1. _____	_____ _____ _____	_____ _____ _____	_____	Yes/No
2. _____	_____ _____ _____	_____ _____ _____	_____	Yes/No
3. _____	_____ _____ _____	_____ _____ _____	_____	Yes/No
4. _____	_____ _____ _____	_____ _____ _____	_____	Yes/No
5. _____	_____ _____ _____	_____ _____ _____	_____	Yes/No
6. _____	_____ _____ _____	_____ _____ _____	_____	Yes/No
7. _____	_____ _____ _____	_____ _____ _____	_____	Yes/No
8. _____	_____ _____ _____	_____ _____ _____	_____	Yes/No
9. _____	_____ _____ _____	_____ _____ _____	_____	Yes/No
10. _____	_____ _____ _____	_____ _____ _____	_____	Yes/No

## Before the first meeting

Prior to the whole team meeting for the first time, the leader and facilitator need to clarify relationships between

- ★ each other, by drawing up a leader/facilitator contract detailing their own responsibilities - this will avoid any public conflict between them, which would be very damaging for the team during the early stages.
- The text on the scroll is a parody of the Lord's Prayer, written in a cursive script. It begins with 'Our Father' and continues with 'the father who art in the heaven and the leader who art in the heaven...'. The text is written on a piece of parchment that is rolled up at the bottom.
- ★ the QIT and whoever is overseeing it, in a large organisation this would be the steering committee, in a small firm it could be the managing director and on a project this would most usually be the project manager. The overseer should be able to tell the QIT
    - ★ its budget and approximate lifetime
    - ★ who it reports to, and how often
    - ★ how much it can spend on its own authority
    - ★ what time members can give to the QIT
    - ★ what power the team has to gather information and test its ideas
    - ★ what training the team can have
    - ★ what kind of justification will be required, and by whom, before any proposed solutions are implemented



*The facilitator's role is to help the leader and team operate efficiently by aiding, coaching and introducing new tools and techniques*



## Leader/facilitator contract

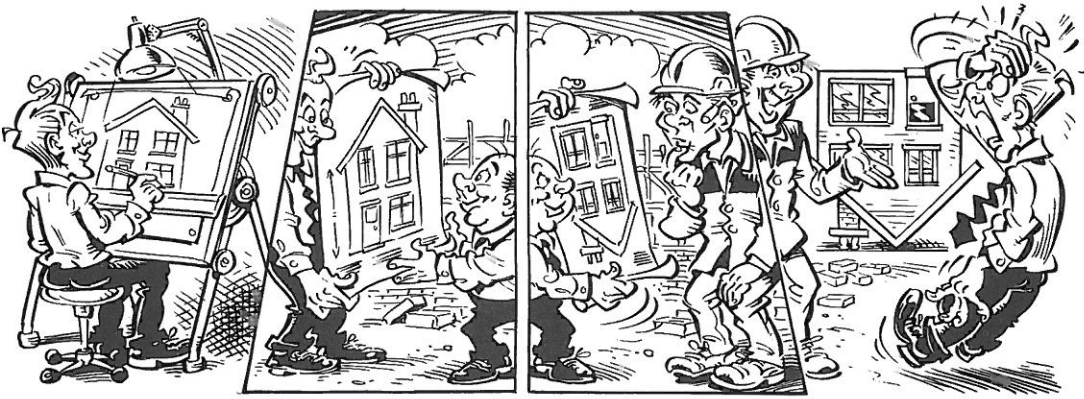


Responsible	Task
	Selecting team
	Drawing up agenda
	Printing and distributing agenda, minutes, etc.
	Ensuring entire team is available to meet
	Arranging meeting room and supplies
	Inviting guests and ensuring they are able to attend
	Chairing meetings
	Enforcing punctuality
	Introducing team, guests, etc.
	Reviewing minutes of previous meetings
	Keeping meetings to the agenda and to time
	Recording and writing up minutes
	Outlining meeting objectives
	Introducing and coaching a new technique
	Recording brainstorming etc. on flip chart
	Silencing dominant members
	Defusing conflict
	Encouraging participation of entire team
	Cautioning those breaking the team charter
	Redirecting non-productive discussions
	Summarising and clarifying issues
	Setting time/place for next meeting
	Assessing progress against the time schedule
	Ensuring members accomplish their actions
	Keeping this workbook up to date
	Replacing team members
	Observing and feeding back comments to the team

Signed (leader)	_____	Date	_____
Signed (facilitator)	_____	Date	_____

## The first meeting

The format of this will depend on the team - how well they know each other, and what experience they have of TQ and QITs. If the members already work together as a 'natural team' (e.g. scaffolders), little team building will be needed, so the first meeting could start with a short presentation on TQ, leading into the role of QITs and the Team Charter exercise. However, the occasions where the QIT is composed entirely of a ready-built team will be rare - all parties to a problem should be represented in the QIT as many problems are rooted in poor communication and mutual misunderstanding between parties (e.g. sales, design and construction).



*But you said..., but I thought....*

An ideal start for the QIT would be a one day course given by the team's facilitator. Held away from the usual work place, this would lay down the ground rules for the team, teach them some useful skills and techniques, and most importantly allow them to get to know each other a little.

Whatever format is chosen for the first meeting, it must be thoroughly preplanned, with a timed agenda circulated to all those attending. Time should be allowed for the meeting to 'warm up' before discussing the most important topics.

# Training course plan

Course,for a new QIT given by the team facilitator.

## Objectives for the day

- ★ Understand the role of QITs
- ★ How to work together
- ★ Learn useful skills and techniques together
- ★ Produce own Team Charter

Timing	Item	Materials
0900	<b>Welcome and self introduction by team members</b>	OHPs
0915	<b>Total Quality</b> Open interactive discussion of what the team thinks TQ is Presentation on TQ by facilitator Presentation of the role of QITs by facilitator	OHPs Flipchart
0945	<b>Teamwork</b> Introduction to team task - e.g. build a paper tower Team does task Facilitator leads learning point discussion	A4 paper Paper clips String
1045	<b>Tea/Coffee</b>	
1100	<b>Tools</b> Presentation on brainstorming/ranking and rating Team charter exercise Learning points	OHPs Flipchart
1230	<b>Lunch</b>	
1330	<b>Problem solving</b> Presentation on the problem solving process Team exercise - e.g. How to save time Learning points	OHPs
1430	<b>Problem definition</b> Communication/problem definition exercise: 'The Tower of Nod' Learning points	Appendix A
1500	<b>Tea/coffee</b>	
1515	<b>Problem analysis</b> Fishbone diagrams/cause and effect analysis Team exercise ; fishbone of 'Why QITs go wrong?' Learning points Introduction to teams real problem area	OHPs Flipchart
1630	<b>Summary of the day and end</b>	

Teams time contributions

	Team member	Week number																				Total hours
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1.																						
2.																						
3.																						
4.																						
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						
	Total hours																					

## Meeting preparation

- \_\_\_\_\_ Date, venue and time agreed.
- \_\_\_\_\_ All informed and able to attend.
- \_\_\_\_\_ Agenda written and circulated.
- \_\_\_\_\_ Minutes written and circulated.
- \_\_\_\_\_ Guests invited.
- \_\_\_\_\_ Room booked.
- \_\_\_\_\_ Room checked for seating, projector, flipcharts, etc.

## Agenda preparation

Date _____	Venue _____	Time _____
Chairing meeting	_____	
Facilitating meeting	_____	
Those attending	_____	_____
	_____	_____
	_____	_____
	_____	_____
Guests attending	_____	_____

## Items for discussion

Item 1	_____	Duration	_____
Item 2	_____	Duration	_____
Item 3	_____	Duration	_____
Item 4	_____	Duration	_____
Item 5	_____	Duration	_____
Item 6	_____	Duration	_____
Item 7	_____	Duration	_____
Item 8	_____	Duration	_____
Item 9	_____	Duration	_____
Item 10	_____	Duration	_____

Techniques to be used	_____
	_____
Preparation required	_____
by attendees	_____

## The Team Charter

This is a set of ground rules drawn up by the team at their first meeting which they all agree to work by. It should include intangible qualities such as trust and openness, and also definitive rules such as 'only one person speaking at once during a meeting.' The charter should be finalised before the team starts looking at problems, and displayed at every meeting.

One way of starting is to try and answer the questions

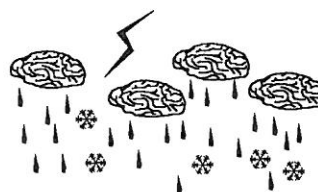
- ★ what makes a good leader?
- ★ what makes a good communicator?
- ★ what makes a good team worker?



Brainstorming these questions will generate a lot of ideas, and is also an opportunity for the team to learn and practice the technique.

Remember the rules of brainstorming.

- ★ No discussion of ideas
- ★ Everyone to contribute
- ★ Lots of ideas
- ★ Positive, encouraging atmosphere
- ★ Allow time for thought
- ★ Accept and record every idea, no matter how crazy



Ideas

and write up the question that you're considering so everyone can focus on it.

Group these ideas together and condense them into statements. Try to limit the charter to a maximum of ten statements.

**Team Charter for the**  

---

**Quality Improvement Team**

1. \_\_\_\_\_  
\_\_\_\_\_  
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2. \_\_\_\_\_  
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3

## Team development

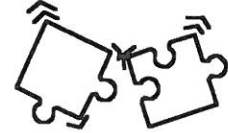
No team works perfectly from day one. It takes time for members to find their place in a team. QITs are no exception, the mix of skills, experiences and personalities may make things worse.

Teams develop through four loose stages:

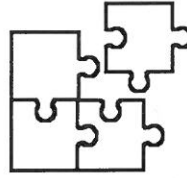
- ★ **Forming** - weighing each other up



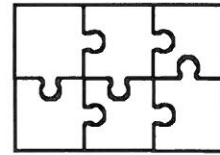
- ★ **Storming** - members jostle to find their position in the team



- ★ **Norming** - settling into positions



- ★ **Performing** - team settled, energy focused on task



A certain amount of conflict is usual, and if handled correctly can be constructive. The team should be open and honest with each other, but criticism must be kept positive.

Successful teams are

- ★ enthusiastic
- ★ focused
- ★ supportive
- ★ listeners
- ★ committed
- ★ positive
- ★ motivated

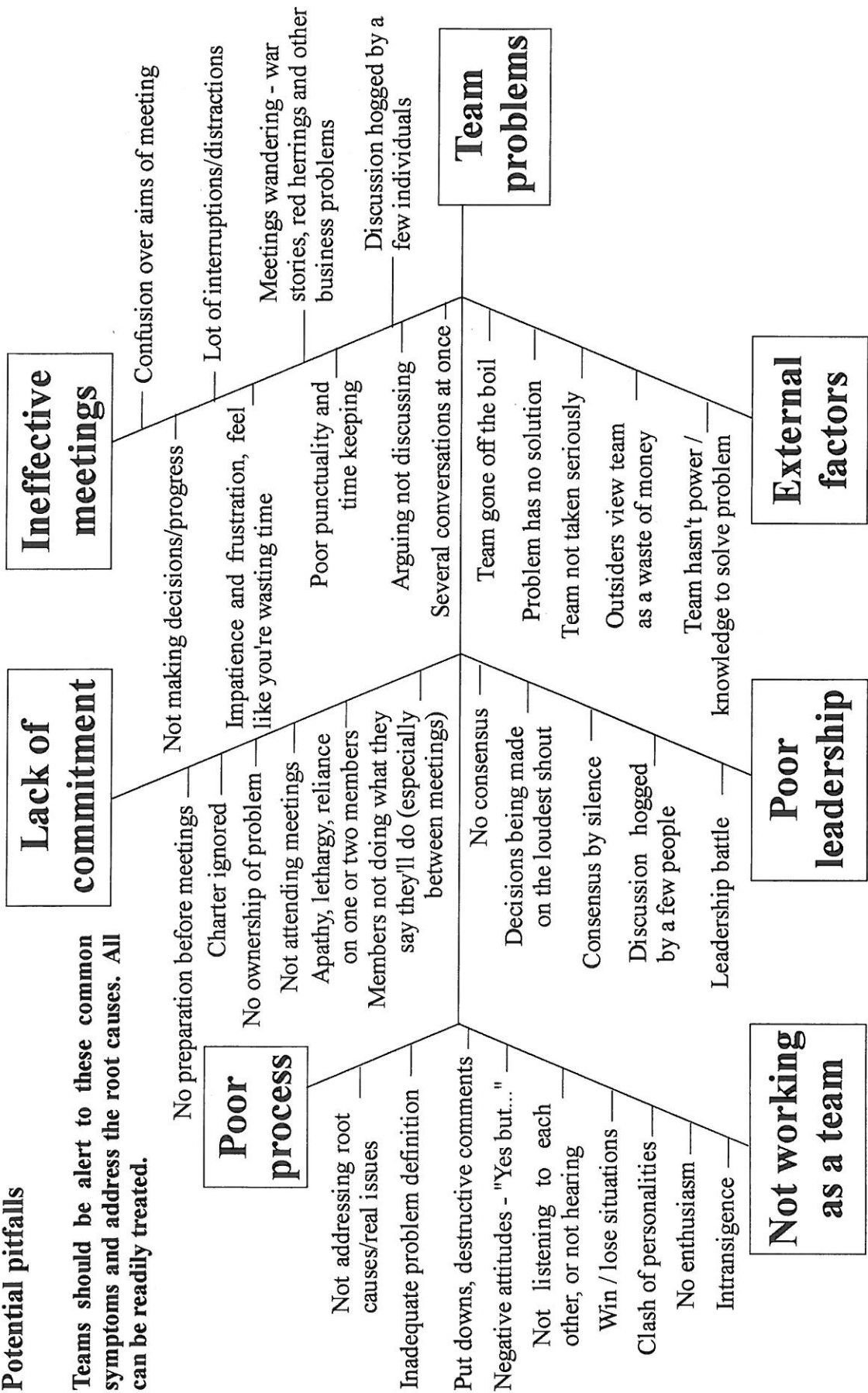


*A QIT is not put together to apportion blame*



## Potential pitfalls

Teams should be alert to these common symptoms and address the root causes. All can be readily treated.



# Milestone chart

The team should draw up a milestone chart so they are able to review their progress through the problem solving process. This process should be limited to six months or less to retain the energy of the team. If this is viewed to be insufficient for the type of problem likely to be considered, it should be broken down into smaller chunks. If the effects of an implemented action will take many months to become apparent, the monitoring phase should be left to one team member, and the team reformed once the results have been gathered.

At this stage the milestone chart will be approximate as the team has not even selected a problem to investigate. However an idea of the relative durations between milestones plus the total period available for the problem should permit some rough dates to be written in.

Team name \_\_\_\_\_

Chapter	Milestone	Goal	Actual
3	First team meeting		
4	Problem statement produced		
5	Root causes identified		
6	Solutions selected		
7	Action plan approved		
8	Results reviewed		
10	Future plans agreed		

**Meeting minutes**

Meeting date \_\_\_\_\_  
Meeting venue \_\_\_\_\_  
\_\_\_\_\_

Present \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Items discussed \_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_  
\_\_\_\_\_

Decisions made \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Agreed actions	_____	By	_____
	_____	By	_____
	_____	By	_____
	_____	By	_____
	_____	By	_____
	_____	By	_____
	_____	By	_____
	_____	By	_____

Date of next meeting \_\_\_\_\_

### Output from chapter 3

1. Leader, facilitator and team chosen, agreed and available \_\_\_\_\_
2. Leader/facilitator contract drawn up \_\_\_\_\_
3. Team aware of principles of TQ, and role of QITs \_\_\_\_\_
4. Team Charter agreed and drawn up \_\_\_\_\_

## Grow your own Quality Improvement Team

1	Introduction	
2	What is a QIT?	
3	Setting up a QIT	
4	<b>Selecting a problem to tackle</b>	Problem areas
5	Developing the problem	Brainstorming problems
		Problem selection criteria
6	Choosing solutions	Ranking and rating
		Choosing the problem
7	Implementing solutions	Developing a problem statement
8	Checking they work	
9	How well did the QIT do?	
10	The future	

## Problem areas

With the Charter agreed and roles finalised, the team is ready to look for problems, and then decide on one to solve.

In a large organisation, the team will have been formed to look into problems in a particular area (e.g. deliveries). It may be the case that a specific problem may have already identified for the QIT (e.g. how to ensure buildings are erected as designed).

A team in a smaller organisation has more choices to make, it cannot address the whole company at once, and must decide on a problem to tackle first (e.g. procurement). A useful initial exercise is to clearly define the purpose and key activities of each department and identify their customers and suppliers, both internal and external. Look at the flow of work, what value each step adds and the interfaces between departments. In the course of the analysis and discussion with departments, potential or actual problem areas may come to the surface.

*Workers are responsible for only 15% of the problems,  
the system is responsible for the other 85% Deming*

Example sheet

Department

Commissioning

Manager

Peter Jenkins

Suppliers

Design dept and construction contractor

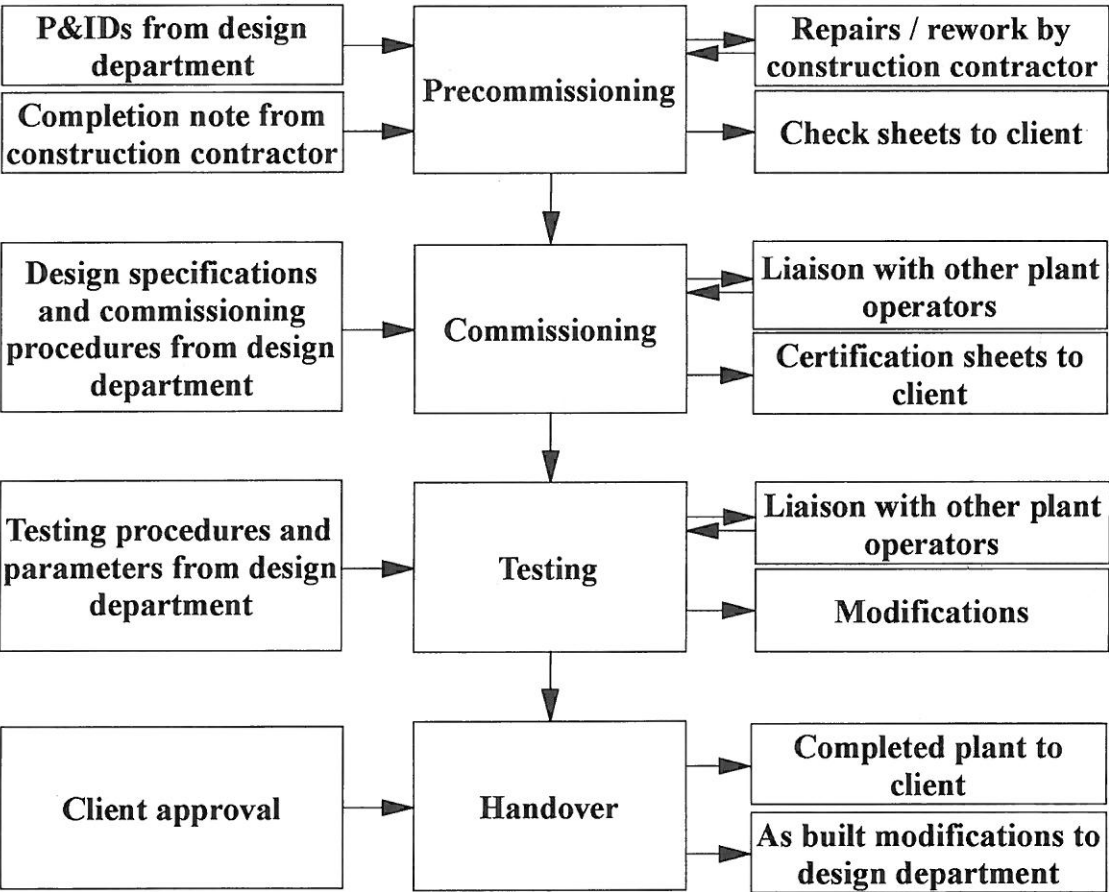
Customers

Client and other plant operators

Purpose

To check and test constructed plant against the design specification to the satisfaction of the client.

Workflow



Problems

Authorisation for modification

Construction errors only becoming apparent during testing

Delays in securing client approval

## Brainstorming potential problems

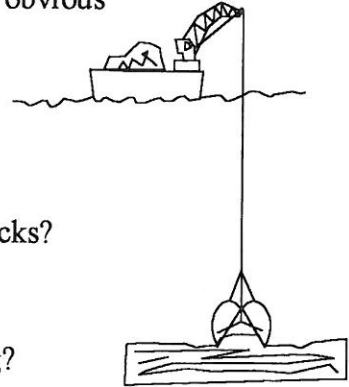
The team should now brainstorm the problem area to spawn lots of potential problems to review.

Remember to **write up the problem area** so that everyone can focus on it, and **keep to the brainstorming rules**. The premise behind brainstorming (and teamwork) is that 'the sum is greater than the constituent parts', members use others ideas to 'spark' off, hence even crazy ideas have a role. Often some of the best ideas are dredged up when the team has almost dried up, so don't stop once all the obvious ones have been said.



Spark off  
others ideas

To revitalise the session consider the following questions:



Dredge up ideas

1. What specific jobs cause the most problems?
2. What jobs are held up because of delays or bottlenecks?
3. What jobs frequently require overtime?
4. What jobs require too many people?
5. What jobs require lots of chasing around or walking?
6. What jobs cause a lot of rework?
7. Where can forms, equipment, or supplies be eliminated?
8. What reports, forms, etc. require unnecessary information?
9. What operations can be combined to save time?
10. What jobs or procedures take too long?
11. Where can better use of space be made?
12. Where is work distributed unevenly among employees in respect to quantity, difficulty, urgency or importance?
13. What jobs have too many mistakes being made or unsatisfactory quality of work?
14. What short cuts can be employed?
15. Where can wear and tear of equipment be reduced?
16. How can materials, parts or supplies be reused?
17. Where can the use of machines or equipment reduce handwork?
18. What jobs require a lot of checking?
19. What records are difficult to locate?

Lateral thought - look at the problem area from different viewpoints:

- ★ a fly on the wall
- ★ a computer
- ★ a customer

Allow a few days for reflection before the next stage, which is ranking and rating the output from the brainstorm.



**Problem brainstorm output**



1.	_____
2.	_____
3.	_____
4.	_____
5.	_____
6.	_____
7.	_____
8.	_____
9.	_____
10.	_____
11.	_____
12.	_____
13.	_____
14.	_____
15.	_____
16.	_____
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18.	_____
19.	_____
20.	_____
21.	_____
22.	_____
23.	_____
24.	_____
25.	_____
26.	_____
27.	_____
28.	_____
29.	_____
30.	_____
31.	_____
32.	_____
33.	_____
34.	_____
35.	_____

## Problem selection criteria

The goal of a QIT is a problem solved. It cannot move mountains or turn a business around overnight, these things take a sustained effort over many years. Attempting issues that are too large and amorphous is the most common cause of failure for QITs. The team should be ambitious, but also realistic when deciding what it is going to solve. Use these criteria to judge a potential problem;

- ★ **Effect** What is the scale or effect of the problem? There is no point the looking into the theft of bricks from site if they only disappear at the rate of fifty a month. The aim is to save money, time, material, mistakes or effort. Try to make decisions based on fact not assumption.
- ★ **Ability to influence** How much control does the team have over the problem? Can the number of working days lost due to bad weather really be reduced? How can you stop the client changing their mind?
- ★ **Time** How long will it take to select and implement a solution? Preferably less than four months.
- ★ **Resources** What money and man-hours will the problem require? What is available?
- ★ **Measurement** What can be measured? What gets measured, gets done.
- ★ **Permanence** Is there a reasonable chance the solution will solve the problem once and for all?

For a new TQ programme or QIT, early success is vital for credibility and morale.



*A QIT cannot move mountains or turn a business around overnight*

## Ranking and rating

This TQ tool should aid the team in selecting the five most suitable potential problems from the brainstorm, on the basis of problem selection criteria. Each potential problem is given a score for each of the criteria. Scores are added or multiplied to give a single number for each problem, giving the top five.

This is an extremely flexible tool. The team may choose any number of criteria to use, and can mark out of 5, 10 or 100. Keep in mind that the more complex the process, the longer it will take, and the aim is only to find the top five. As a guide, ten potential problems could be ranked 1 to 10 straight away, fifty could be scored against effect and ability to influence criteria, with the results multiplied together.

A quick method is to allot each team member a few votes (approximately one vote for every three potential problems). Everyone then secretly writes down which of the problems they consider most suitable. Once all members have decided, the votes are totalled to show the top five.

It is common that several of the potential problems produced by the brainstorm will be paraphrasings of the same thing. It is therefore helpful to do a small amount of classifying before the team starts ranking and rating.



*Ranting and raving!*

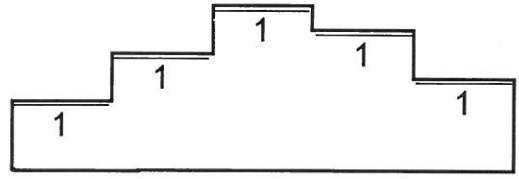
Problem ranking and rating sheet

Rating (e.g. 1 to 10)

<div>Criteria</div> <div>Problem</div>				Total (+ or x)	Ranking (e.g. 1st)
	e.g. effect				
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					

## Choosing the problem

Picking which of the top five problems to solve should be done by consensus, not by immediately choosing number one.



Consensus means that everyone has their say, so that all are comfortable and able to buy into the solution. Voting is not consensus. If the team is finding it difficult to reach consensus, try the wilderness survival exercise on page 103.



*A QIT takes decisions by consensus*

# Developing a problem statement

The aim of the problem statement is twofold:

- ★ to clearly define the problem for the team to focus in on.
- ★ to publicise what the team is working on so there is no duplication of effort within the company and others know who they should give their ideas on the topic to.

What to do	What not to do
<ul style="list-style-type: none"><li>★ Ensure the problem defined is measurable and observable</li><li>★ Focus on the difference between what is and what could/should be.</li><li>★ Try to describe the problem as a deviation from a norm or standard</li><li>★ Answer who, what, where and when</li><li>★ Quantify the problem with facts and numbers where possible</li></ul>	<ul style="list-style-type: none"><li>★ Do not use the term 'lack of', as you can't measure a lack of anything</li><li>★ Do not state the problem as a question</li><li>★ Do not give a solution or cause of the problem in the statement</li><li>★ Do not address why or how</li></ul>

## Example

In the last twelve months, only 10% of tenders for work have been successful, compared to 25% in the previous two years.

**Problem statement**

Team name \_\_\_\_\_

Problem statement \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Team leader \_\_\_\_\_ Date \_\_\_\_\_

Circulated to \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Milestone chart on page 28 updated? \_\_\_\_\_

**Output from chapter 4**

- 1. List of ideas from brainstorm \_\_\_\_\_
- 2. Ideas ranked and rated against criteria \_\_\_\_\_
- 3. Problem chosen from top five by consensus \_\_\_\_\_
- 4. Problem statement produced \_\_\_\_\_



# Grow your own Quality Improvement Team

1	Introduction	
2	What is a QIT?	
3	Setting up a QIT	
4	Selecting a problem to tackle	
5	<b>Developing the problem</b>	Possible problem causes
		Understand current situation
6	Choosing solutions	Gather data
		Data analysis tools
7	Implementing solutions	Identify root causes
		Objectives
8	Checking they work	
9	How well did the QIT do?	
10	The future	

5

## Look for possible problem causes

The team should start by thinking about all the possible causes of the problem. The aim is to go on and gather information to identify the true causes, so at this stage the team should keep an open view and not rush down any particular avenue.

Fishboning, which is quite similar to brainstorming, is a helpful technique to use. It directs the teams thinking to all the factors which make up the problem. Conventionally six 'bones' - machinery, manpower, materials, money, market and methods - are used on a fishbone, but the team should use what it believes most appropriate. The rules are the same as for brainstorming:

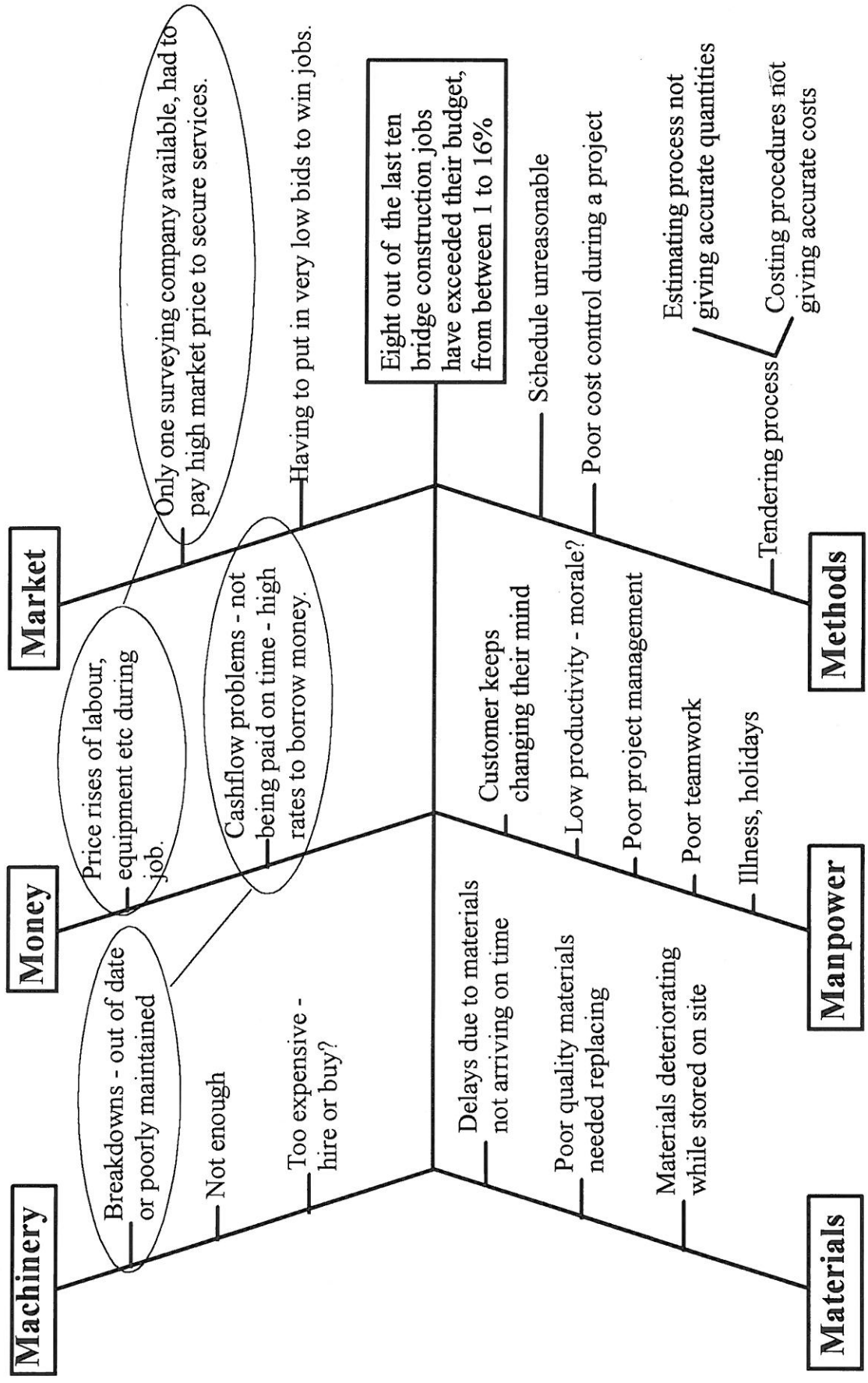
- ★ no discussion of ideas
- ★ accept and record every idea, no matter how crazy
- ★ everyone to contribute
- ★ lots of ideas
- ★ positive, encouraging atmosphere
- ★ allow time for thought

The first fishbone is likely to be jumbled, the 'bones' chosen initially may need changing, some ideas may not fit onto any of the 'bone' or onto several. Refine it a couple of times, and mark on any strong links.

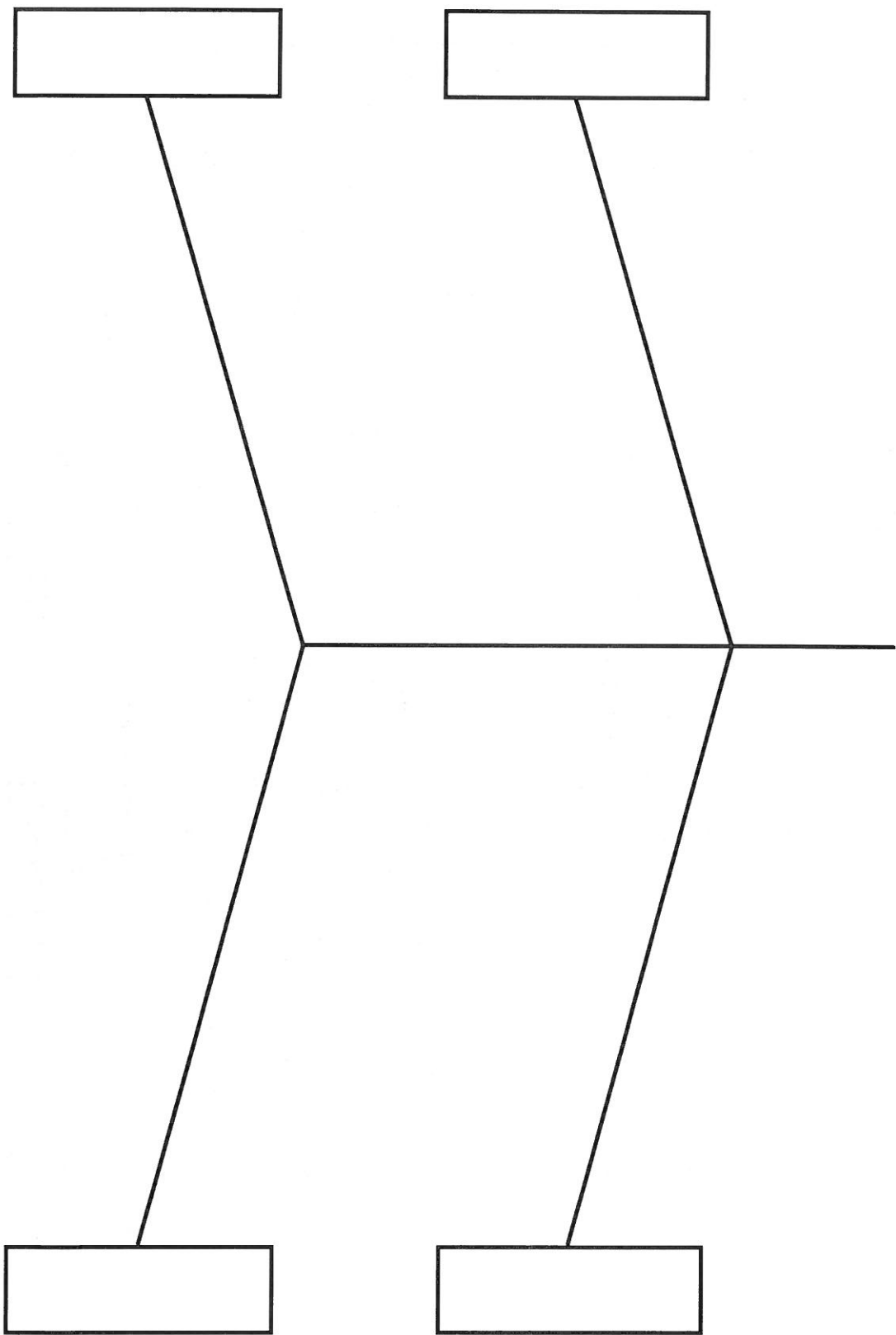
The example fishbone on the facing page is for the problem 'eight out of the last ten bridge construction jobs have exceeded their budget by between 1% and 16%.'



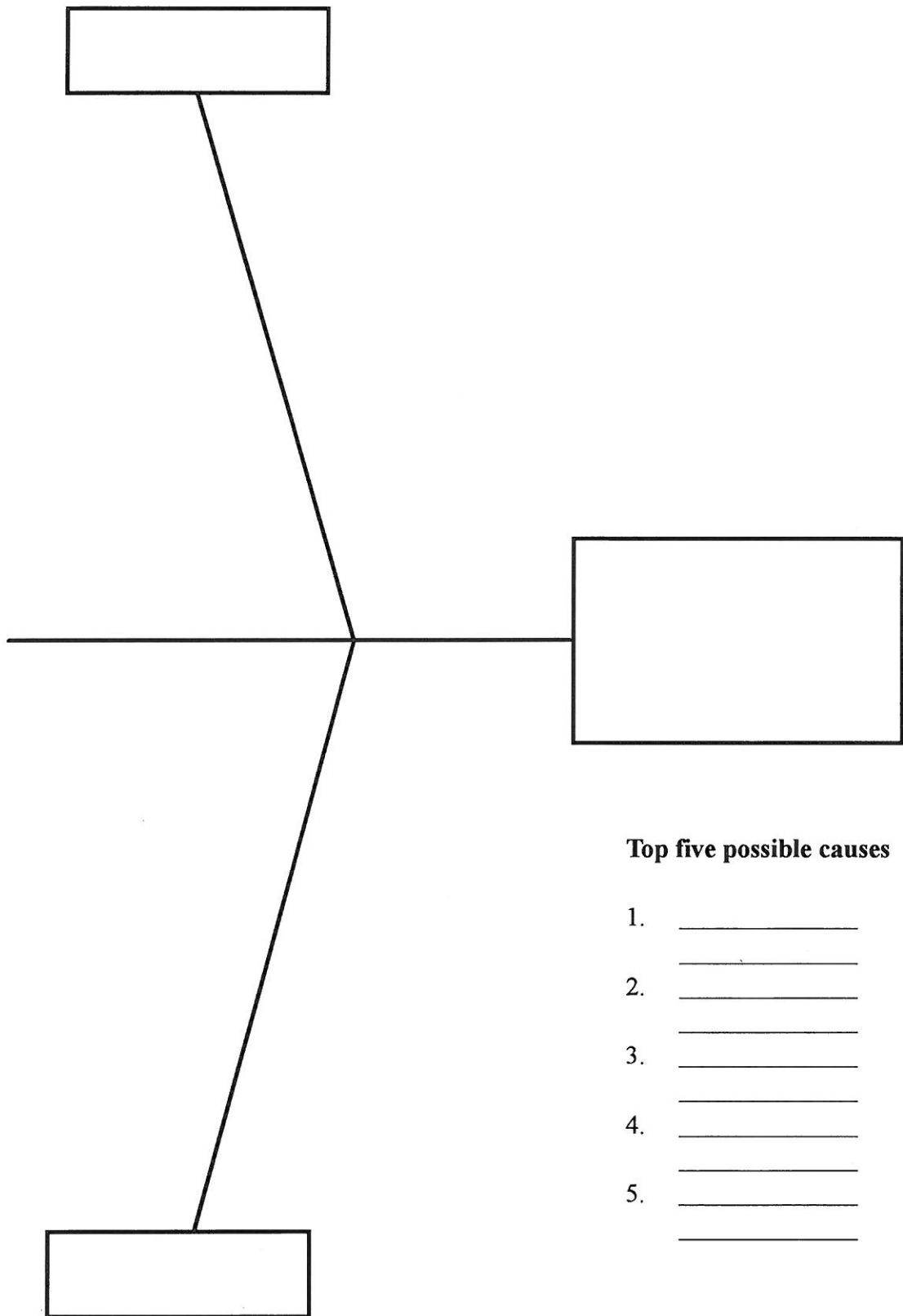
*A QIT is determined to focus on the real problem*



**Your final**



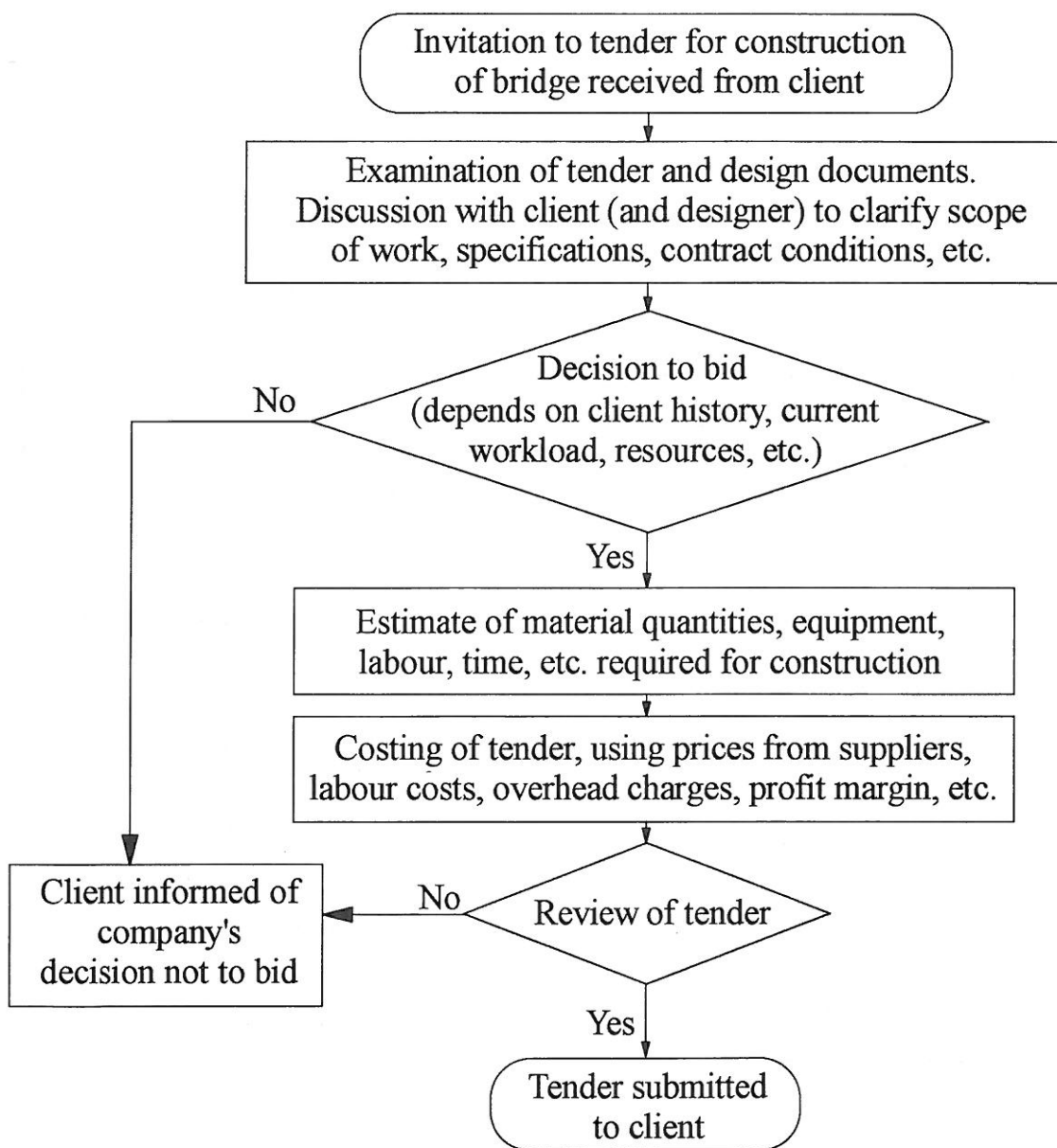
# problem fishbone



## Understand current situation

It is important that this step is done thoroughly, as it sets the scene for the rest of the problem solving process. If you do not completely and properly understand what actually happens at present (not what should happen according to the manual), then any solutions you settle on could be flawed.

The most usual starting point is to flowchart the processes involved in the problem. Continuing with the same example as used for the fishbone, below is a simple flow chart for the tendering process.



## Flow chart of your current process

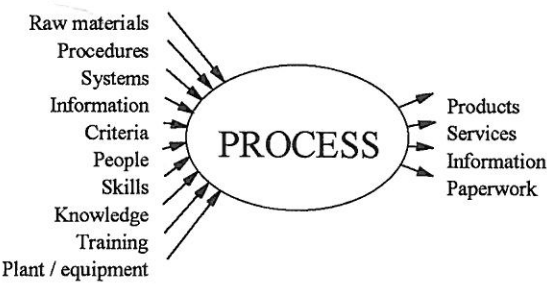
5

Drawn by \_\_\_\_\_ Date \_\_\_\_\_

Expanding a flow chart

The individual boxes in a process flow chart should next be expanded.

What are the inputs and outputs of each process?



Estimate of material quantities, equipment, labour and time required for construction

Inputs	Outputs
<ul style="list-style-type: none"><li>★ Previous experience of bridge construction jobs: close out reports, budgets</li><li>★ Design documents from client: bridge type, size, specification</li><li>★ Engineers/estimators experience</li><li>★ Usual allowances for contingency, material take off, changes, etc.</li><li>★ Preliminary site survey</li></ul>	<ul style="list-style-type: none"><li>★ Written estimated quantities for materials, equipment, labour, time, etc,</li><li>★ Schedule for job</li></ul>

In many cases there will be a sub-process associated with a box. For costing there will be discussion and some judging between competing suppliers (the cheapest quote may not necessarily be the best - they may have a track record of delivery delays).

For the example problem of jobs exceeding their budgets, there are other processes involved in addition to tendering, such as cost control, procurement and project management. Flow chart the other processes to build up a complete picture.

Try to avoid thinking about solutions at this stage. Keep asking

- What?
- Where?
- Who?
- When?
- How?

and especially

Why?



**Investigating a process step**

**Process step** \_\_\_\_\_

What is done? What are the inputs and outputs? How are they measured?
When is it done?
Who does it? Who is responsible? Who are the suppliers and customers?
Where is it done?
How is it done? How well? How is success measured?
Why is it done?
Why is it done this way?

Completed by \_\_\_\_\_ Date \_\_\_\_\_  
Information from \_\_\_\_\_  
\_\_\_\_\_

# Gather data

Data are essential if decisions are to be based on fact, not assumptions. Try to collect data for the top five possible causes on the fishbone. Data could already be available from reports, budgets, etc. Often the problem has never been measured, and it may be particularly difficult to measure (e.g. teamwork).

- ★ What data are needed? What supporting information is needed?
- ★ What data exists already? Where? Who owns it?
- ★ How are data to be gathered? When? By whom?

Surveys, questionnaires and interviews can be used to gather facts concerning peoples opinions, attitudes, morale, etc. Use open questions such as 'how else could this be done?', to gather ideas for solutions. Customers are a valuable source of information, both because of their opinions and because they may record data which you don't. Check sheets for counting damaged materials, late deliveries, telephone calls to suppliers, etc. are a simple way of gathering data. Observation, self assessment and physical measuring (e.g. cycle times, temperatures, response times, size, etc.) could also play a role. All processes have a natural amount of fluctuation, so be sure you measure over a long enough period to measure this

This is a demanding stage for the team, who is to collect what and by when should be clearly agreed and documented. Team members have a responsibility to complete their own tasks between meetings, and the leader should make sure all the data needed are collected in reasonable time.

## Example check sheet

Accounts settled	Jan	Feb	Mar	Apr	May	Jun	TOTALS
Early							2
On time							7
< 1 month late							33
< 2 months late							22
< 3 months late							13
> 3 months late							6
TOTALS	14	16	11	9	14	19	83

## What data

## Format

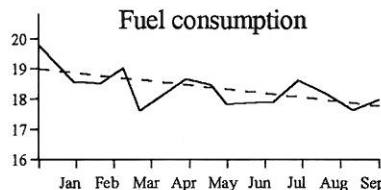
By when

[illegible]

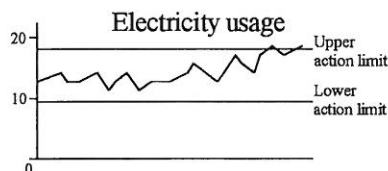
# Data analysis tools

There are many ways of displaying data which the team can use to help them look for the root causes of a problem.

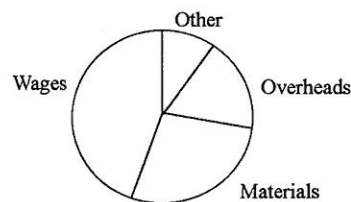
★ Trend graphs 'give a clear view of any gradual trends or abnormalities (e.g. seasonal variation in river current, effect of a thunderstorm).



★ Control charts are trend graphs with imposed upper and lower action limits. These are often used by manufacturing companies to pre-empt future problems (e.g. machines wearing out).



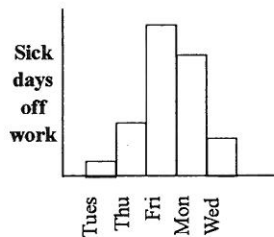
★ Pie charts are used in presentations to show the proportional split of data between issues (e.g. annual expenditure broken down between wages, materials, equipment, transport, overheads, etc.)



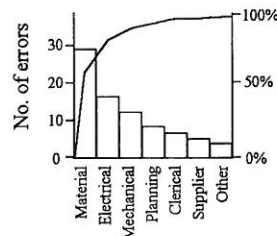
★ Bar graphs are useful for displaying raw data



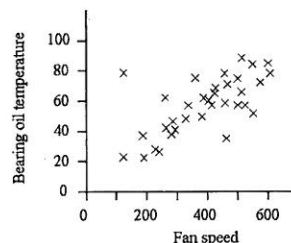
★ Histograms show the distribution of data across categories.



★ Pareto plots are a special type of histogram, which emphasise the '80 - 20' rule that 80% of the symptoms can be attributed to 20% of the causes (e.g. 80% of sick days are taken by 20% of the workforce).



★ Scatter graphs are used to see how strong the relationship is between a cause and an effect (e.g. errors and days of the week - are more mistakes really made on Friday afternoons, or is it just an opinion?). The strength of the relationship can be calculated using statistics, such as the correlation coefficient, to give a number between zero and one.



## Identify root causes

In the ideal situation the problem would have several clear and unconnected causes. In practice data will usually need breaking down by shift, location, supplier, age, manager, etc. to isolate the effect of each of the factors. Scatter diagrams can show how strongly each cause contributed to the problem - **discovering relations**. The team could then tackle the causes with the greatest effect - the root causes.

It may be that the data are inconclusive. Gathering more data may make the picture clearer, but for some problems data will not identify the root causes. In these cases the causes are likely to be people or communication related. The team should go out, talk, listen and ask questions. Don't become bogged down in data, use practical judgement.

Use the flowcharts and data as a basis for improvement, not to apportion blame.

Revisit your fishbone diagram. Can you back up your choice of the root cause or causes with facts? Make sure you agree your root causes by consensus.

## Agreed root causes of the problem

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Milestone chart on page 28 updated?



*Discovering relations!*

## Objectives

The team now has a clear idea of what is happening and what are the root causes of the problem. It should now lay down what it would like to achieve - its goals, targets or objectives. These should be as specific and quantified as is possible. At the end of the problem solving process the degree of success of the project will be judged by comparing the results to the objectives.

A tool which the team may find a useful starting point for setting their objectives, is 'from-to' analysis. Consider the current situation, write down a series of statements which describe it - where you want to move from. Opposite these, draw up matching statements of what the ideal or ultimate situation would be - where you want to go to.

For example

From	To
★ Adversarial relationships with customers	★ Alliances with customers
★ Mutual mistrust	★ Mutual trust
★ Claims at end of the job	★ No claims
★ High litigation costs	★ Problems resolved amicably
★ Extensive inspection	★ Limited inspection
★ Large quantities of documents passing between parties	★ Vastly reduced documentation, only that required by legislation
★ Separate, single company teams	★ Mixed teams
★ Physical/geographical separation of parties	★ Parties working side by side

Use these issues to start building up an objectives statement, but try to be much more precise - consider how you will measure when each objective has been met. Be ambitious but realistic in your targets.

## Objectives Statement

Date \_\_\_\_\_

Team name \_\_\_\_\_

Problem \_\_\_\_\_

Objective 1 \_\_\_\_\_

Objective 2 \_\_\_\_\_

Objective 3 \_\_\_\_\_

Objective 4 \_\_\_\_\_

Objective 5 \_\_\_\_\_

Objective 6 \_\_\_\_\_

Objective 7 \_\_\_\_\_

Objective 8 \_\_\_\_\_

Objective 9 \_\_\_\_\_

5

## Output from chapter 5

1. Fishbone diagram of problem causes \_\_\_\_\_
2. Current situation flowcharted and understood \_\_\_\_\_
3. Data gathered and analysed \_\_\_\_\_
4. Root causes identified and agreed \_\_\_\_\_
5. Objectives statement \_\_\_\_\_



# Grow your own Quality Improvement Team

1	Introduction
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2	What is a QIT?
---	----------------

3	Setting up a QIT
---	------------------

4	Selecting a problem to tackle
---	-------------------------------

5	Developing the problem
---	------------------------

<b>6</b>	<b>Choosing solutions</b>
----------	---------------------------

7	Implementing solutions
---	------------------------

8	Checking they work
---	--------------------

9	How well did the QIT do?
---	--------------------------

10	The future
----	------------

Solution brainstorm

Ranking and rating

Solution effect diagrams

Cost benefit analysis

Force field analysis

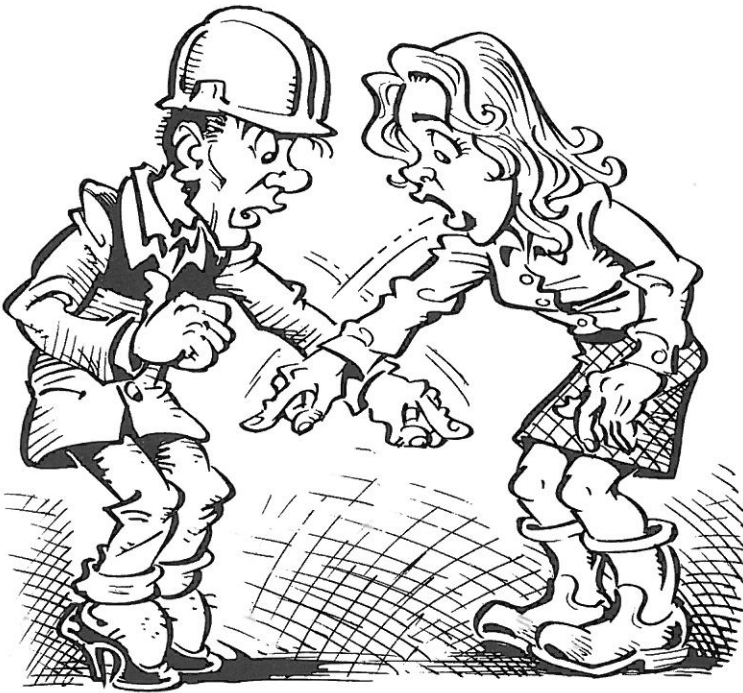
Solution summary matrix

Package of solutions

## Solution brainstorm

The search for a solution is a similar structured process to selecting a problem to tackle. The team's first step is an important brainstorming session to come up with numerous ideas on how to solve the problem by tackling the root causes. By now the team should be familiar with the rules for using the technique, but it would still be useful to have a poster on the wall spelling them out. Also up on the wall should be the teams problem statement and the agreed root causes to aid concentration. Keep thinking: 'dredge up ideas.'

- \_\_\_\_\_ Brainstorming rules poster
- \_\_\_\_\_ Problem statement poster
- \_\_\_\_\_ Root causes poster



*Look at the problem from different viewpoints - put yourself in someone else's shoes.*

## Solution brainstorm output



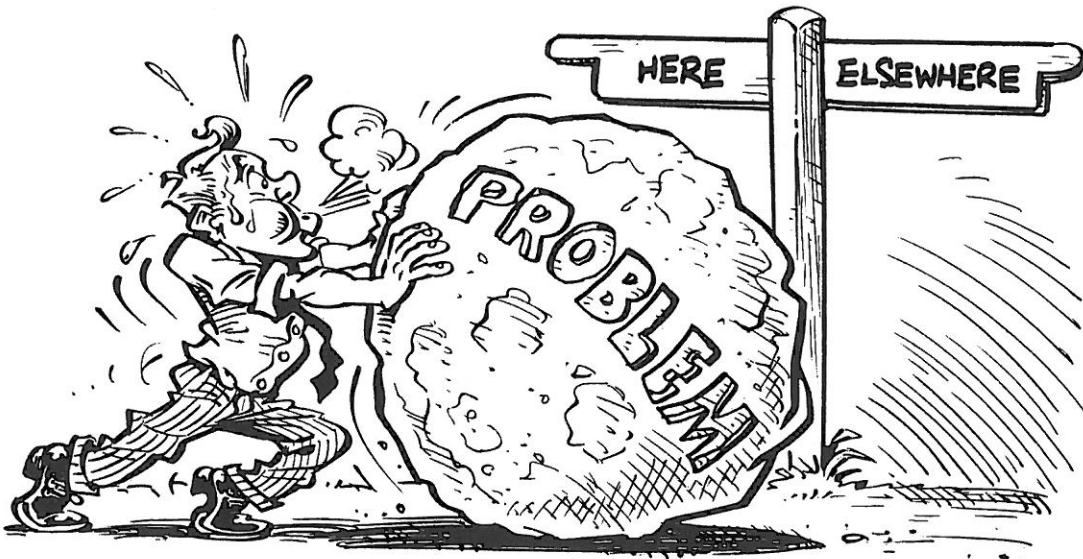
1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
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30. \_\_\_\_\_
31. \_\_\_\_\_
32. \_\_\_\_\_
33. \_\_\_\_\_
34. \_\_\_\_\_
35. \_\_\_\_\_

## Ranking and rating criteria

As before, the team should grade the outputs of the brainstorm against agreed criteria. The aim is to produce a descending list, from which the top X are picked as the best package to solve the problem. Similar solutions should be grouped together as one.

- ★ **Effect** How much effect would the solution have ? Would it deal with one (or more) of the root causes? Try to make decisions based on fact, not assumptions.
- ★ **Ability to implement** How easy would it be for the team to implement the solution? Would the team be able to raise wages to improve morale?
- ★ **Time** How long will it take to select and implement a solution? Preferably less than three months.
- ★ **Resources** What money and man-hours will the solution require? How much is available?
- ★ **Measurement** What can be measured? What gets measured, gets done.
- ★ **Permanence** Is there a reasonable chance the solution will solve all or part of the problem once and for all?
- ★ **Side effects** What would be the wider effects of the proposed solution? Would the problem be cured or just moved elsewhere?

After completing the ranking and rating, three different analysis tools are introduced: solution effect analysis, cost-benefit analysis and force-field analysis. These tools are intended to assist the team to weigh up the potential solutions and decide which ones to implement. Whether all or none of them are employed is entirely up to the team, this workbook is a structured guide, a recipe book of ideas, not a rigid procedure.



*Would the problem be cured or just moved elsewhere ?*

# **Solution ranking and rating sheet**

**Rating (e.g. 1 to 10)**

<div> <div>Criteria</div> <div>Problem</div> </div>				<b>Total</b> (+ or x)	<b>Ranking</b> (e.g. 1st)
	e.g. effect				
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
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## Solution effect analysis

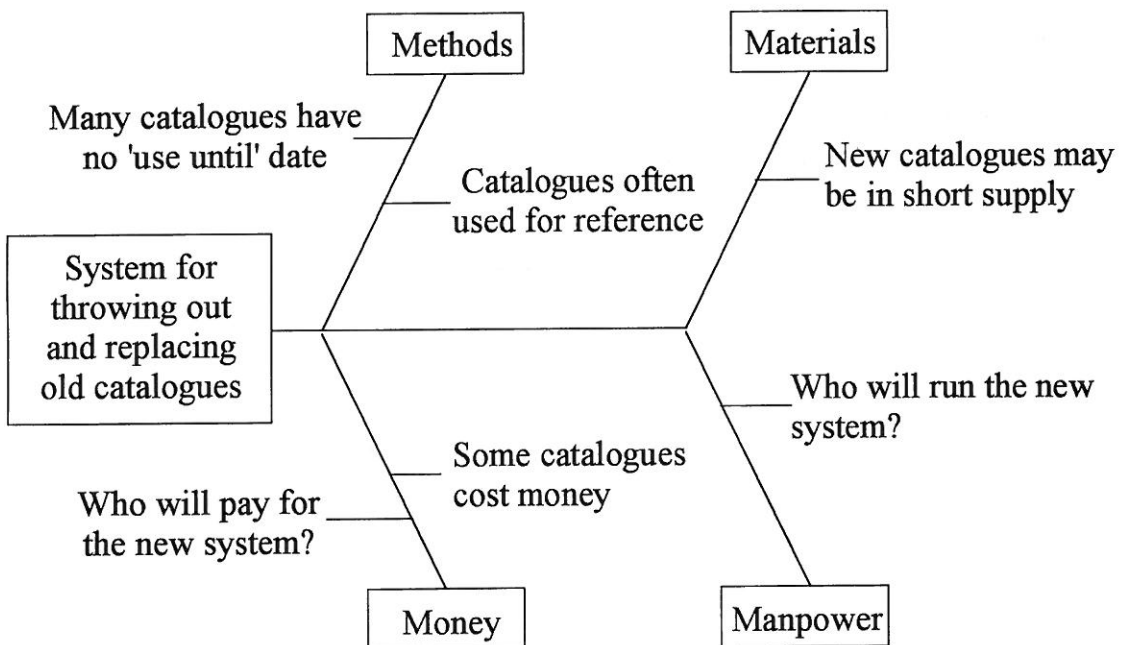
This tool is effectively fishboning (see chapter 5) in reverse. It should be used to help the team to look at the wider effects of a proposed solution before implementing it. Draw up a diagram for perhaps each of the top six solutions.

### Check

- ★ that the solutions **do** solve the root causes of the problem.
- ★ that any side effects aren't more serious than the original problem.
- ★ any unexpected results.
- ★ what other actions will be needed to implement the solution.

### Example

- ★ Problem: incorrect goods being ordered.
- ★ Root cause: supplier catalogues out of date.
- ★ Solution: system for throwing out and replacing old catalogues.



# Cost-benefit analysis

Some estimate must be made of the costs and savings associated with each of the proposed solutions. As with solution effect analysis, complete the form below for each of the top six ranked solutions. Estimate daily, weekly, monthly or annual costs as appropriate.



*Don't let costs run away!*

Problem \_\_\_\_\_

Solution \_\_\_\_\_

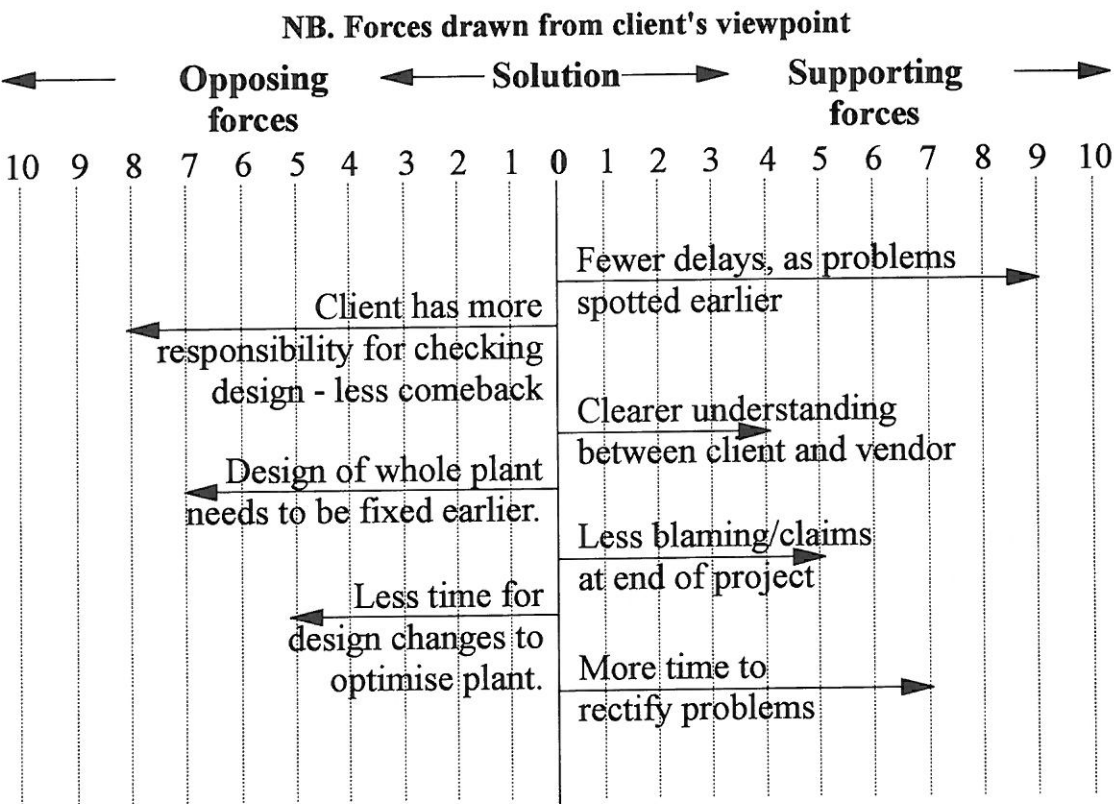
Cost item	Current situation costs	Improved situation costs	Implementation costs
Materials	£	£	£
	£	£	£
	£	£	£
Labour	£	£	£
	£	£	£
	£	£	£
Overheads	£	£	£
	£	£	£
	£	£	£
Time savings, cost of delays, etc.	£	£	£
	£	£	£
	£	£	£
Other	£	£	£
	£	£	£
	£	£	£
	£	£	£
Total	£	£	£

# Force-field analysis

In force-field analysis, factors supporting and opposing a potential solution are examined, a slightly different viewpoint from the usual advantages and disadvantage. It focuses on the non-monetary effects and benefits of a solution, such as frustration and motivation. As with the previous types of analysis, it is suggested only to use this tool on the top few potential solutions. Do not waste time analysing ideas which have no chance of being implemented.

**Problem:** Client discovering late in the procurement process that vendor equipment doesn't meet the requirements.

**Solution:** Detailed design documentation to be supplied earlier by vendor.





## Solution summary matrix

Having analysed the potential solutions, the team must now decide which ones it is going to implement as a package of solutions. The matrix brings together the decisions from this and the previous two chapters, showing the path from the Problem Statement to a package of solutions. The ranking and rating columns of the matrix should be completed using the initial scoring in chapter 6 combined with the conclusions of the analysis.

### Example

Problem	Causes	Root causes	Frequency	Solution	Feasibility	Total	Action Yes/No
Incorrect goods being supplied	Incorrect goods being ordered	Wrong details put on order form	3	More order checking before sending	9	27	No
		Orderer confused by sales information/catalogues	8	Phone supplier	8	64	Yes
				Seek help from within firm eg. procurement	7	56	Yes
		Misunderstanding between user and orderer	4	Orderer to check back with user before sending	7	28	No
				User to give more detailed specification	6	24	No
	Supplier not sending goods ordered	Catalogues out of date - supplier sent equivalent item	5	Check catalogue date before use	5	25	No
				System for keeping catalogues current	6	30	Yes
		Lack of stock - supplier sent equivalent item	6	Order earlier	3	18	No
				Check stock availability before ordering	7	42	Yes
		Human error - clerical, data entry, packing etc	3	Have supplier check order before dispatch	6	18	No

## 68

*Grow your own Quality Improvement Team*

**Package of solutions**

Having decided which of the solutions are to be implemented, the team should now produce a statement with a detailed description of these solutions. Use this for publicity/circulation to managers, and to define precisely what the team plans to do.

**Team name** \_\_\_\_\_

**Problem** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Package of solutions**

1. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Milestone chart on page 28 updated? \_\_\_\_\_

**Output from chapter 6**

- 1. List of ideas from brainstorm \_\_\_\_\_
- 2. Top six ideas selected and analysed \_\_\_\_\_
- 3. Solution summary matrix completed \_\_\_\_\_
- 4. Package of solutions produced \_\_\_\_\_

# Grow your own Quality Improvement Team

1	Introduction	
2	What is a QIT?	
3	Setting up a QIT	
4	Selecting a problem to tackle	
5	Developing the problem	
6	Choosing solutions	
7	<b>Implementing solutions</b>	Action planning
		Schedule
8	Checking they work	Budget
		Presentation and justification
9	How well did the QIT do?	Doing it
10	The future	

7

## Action planning

The team has achieved a great deal so far: they have isolated and investigated a problem, then analysed and developed a package of solutions. However, as stated on page 10, QITs are set up to solve problems. Having decided what is to be done, the team now needs to plan out how to do it, implement the plan, and confirm that the package of solutions works. Without implementation, all the team's previous effort is merely an exercise.

For each of the solutions in the package, the team needs to sort out

- ★ what needs to be done, in detail
- ★ who is going to do it
- ★ how they are going to do it
- ★ when and where to start (pilot or experimental scheme)
- ★ what to measure, and how
- ★ how they will know when it's done
- ★ what resources are needed
- ★ how the solution can be tested
- ★ what could go wrong/side effects, and how to cope (review solution effect diagram)

When building the action plan, allow time for people to get used to changes before the next step. There will be some degree of resistance to overcome by involving and training people and ensuring they participate in the change. Seek comments and feedback from your customers - those affected by your solution package.

## Example

### Problem

- ★ Staff dissatisfied that expense claims take six weeks on average to be settled

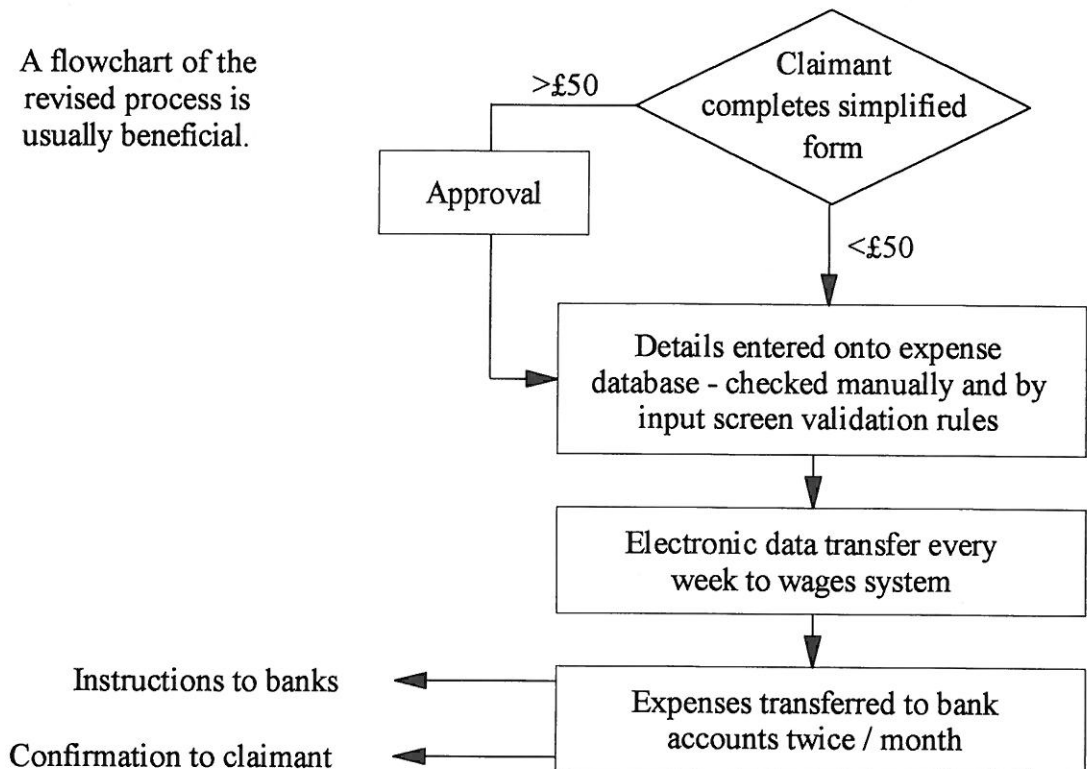
### Root causes

- ★ Complexity of expense claim form gives rise to errors, so claims often need to be corrected, resubmitted and reapproved
- ★ Expenses sent out once a month, with wages
- ★ Forms are checked, approved, entered onto expenses database, printed out and re-entered onto the wages system

### Actions

- ★ Form to be simplified to only include information required by wages / expenses databases
- ★ Expenses to be sent out twice a month
- ★ Approval required only for claims above £50
- ★ Expenses database to be made compatible with wages system - electronic data transfer

A flowchart of the revised process is usually beneficial.



**Action Plan** (for same expense claims example)

	<b>Action</b>	<b>Responsible</b>
1	Redesign claim form to request only relevant information and to give instructions on how to complete the form.	Andy Brown
2	Organise and co-ordinate reprinting and distribution of six months' supply of new claim forms.	Andy Brown
3	Redesign expenses database entry screen to match new form and include validation checks to detect errors.	Carl Davidson
4	Redesign confirmation to claimant slips, a sample of which to include a brief questionnaire.	Andy Brown
5	Liaise with banks to organise a mid-monthly payout.	Glenda Harwell
6	Design, organise and lead training session for those in accounts and payroll affected by changes.	Elaine Fristelle
7	Send memo to all staff about changes, proving period and new system.	Andy Brown
8	Devise measurements and collect data to prove/disprove effectiveness of new system.	Andy Brown / Carl Davidson
9	Communicate results of changes to staff.	Andy Brown
10	Devise and manage a proving period when current and new system are run in parallel.	Andy Brown / Carl Davidson
11	Supervise the handover of the new system.	Andy Brown



**Schedule** (for same expense claims example)

Action		Who ?	Weeks											
			1	2	3	4	5	6	7	8	9	10	11	12
1	Redesign form	AB												
2	Organise form reprinting	AB												
3	Redesign database entry screen	CD												
4	Redesign confirmation slips	AB												
5	Liaise with banks	GH												
6	Organise and run training session	EF												
7	Send memo to all staff	AB												
8	Devise and collect measurements	AB/CD												
9	Communicate results	AB												
10	Devise proving period	AB/CD												
	Manage proving period	AB/CD												
11	Supervise handover.	AB												

Budget		
Item	Qty	Total cost
<b>Materials</b>		
New forms	1000	£200
Data interface package	1	<u>£200</u>
<i>Total</i>		£400
<b>Labour</b>		
Andy Brown at £10 per hour	80 hrs	£800
Carl Davidson at £15 per hour	56 hrs	£840
Elaine Fristelle at £20 per hour	8hrs	£160
Glenda Harwell at £15 per hour	8 hrs	£120
Workshop participants at £15 per hour	20 hrs	<u>£300</u>
<i>Total</i>		£2,220
<i>Total implementation cost</i>		£2,620
<b>Savings</b> Average time saving in completing, checking, approving and re-entering = 15mins/form Average quantity = 30 forms/week (for 50 weeks per year) Average hourly rate = £13 per hour Hence annual savings = $0.25 \times 30 \times 50 \times £13 = £4,875$		
<b>Additional running costs</b> Mid monthly bank transfer £0.50 per transfer Average 60 mid monthly transfers per month Hence annual costs = $£0.50 \times 60 \times 12 = £360$		

# Approval

The team will need to have its action plan approved before it can start implementation. This approval may require a full-blown presentation, giving full justification for all of the team's decisions. If management has been closely involved with the activities of the QIT, approval may be a brief assessment of the budget and schedule, and a signature. Even if the action plan requires few resources, official backing will be needed to overcome any likely resistance to change.

When approaching management, the team should bear in mind that it **must** gain approval, otherwise its work has been fruitless. If the plan is not approved first time, thoroughly understand why, and return to chapter 6.

The team should consider whether it would be worthwhile lobbying some of the key individuals before they come to the presentation, explaining any complex issues and finding out their concerns.

Approved \_\_\_\_\_ By \_\_\_\_\_ Date \_\_\_\_\_

Disapproved \_\_\_\_\_ By \_\_\_\_\_ Date \_\_\_\_\_

Reason \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Action taken \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Milestone chart on page 28 updated? \_\_\_\_\_

## Presentation planning

This is the time when keeping this workbook up to date will pay dividends as all decisions will have been recorded, and in a logical manner.

**P**reparation  
lus  
ractice  
roduces  
olished  
resentations

### Purpose

- ★ What is the aim of the presentation, what do you hope to achieve?
- ★ Approval, support for your solution, publicity, more ideas?

### Audience

- ★ Who will be the audience? Who do you need to be there?
- ★ How much do they know on the subject already?
- ★ Why will they each be there, what do they hope to gain?
- ★ What do you want them to gain?

### Structure

- ★ Introduction 'Tell 'em what you're going to tell 'em.'
- ★ Main presentation 'Tell 'em.'
- ★ Summary 'Tell 'em what you just told 'em.'
- ★ Who will speak?
- ★ What diagrams and visual aids will you use? (Diagrams hold attention more)
- ★ How are you going to deal with questions? What is likely to be asked?
- ★ Where and how long will the presentation be? (20 mins is the average attention span)

### Organisation

- ★ Arrange and check the room, seating and equipment.
- ★ Invite guests and thank them for attending at the end of the presentation.
- ★ Produce any handouts needed.
- ★ Practice, practice, practice.

## Presentation tips

- ★ Keep OHPs down to seven or fewer words per line and seven or fewer lines per sheet
- ★ Flip charts should be simple
- ★ Title each OHP and flip chart
- ★ Try to look confident and relaxed
- ★ Look at your audience, make eye contact with everyone
- ★ Speak slowly and clearly
- ★ Try to avoid any nervous habits (e.g. jangling coins, swaying, etc.)
- ★ Use short sentences and pause regularly
- ★ Keep control of the situation - avoid entering a discussion or argument
- ★ Do not interrupt a speaker
- ★ Occasionally change your position, stance and tone of voice to maintain interest
- ★ If you need notes, use small cards with the main points on and any comments to yourself (e.g. speak slowly). Tie them together in the order of presenting

Presentation Checklist

Purpose of presentation

Expected audience - include names and positions as appropriate

Date of presentation

Type of room

Venue

Presentation aids	To be used	Checked
Flipcharts		
Overhead projector		
Video		
Lecturn		
Slide projector		
Handouts		

Sections	Main points	Speaker	Duration
Introduction			
Conclusions			
Questions			
Total duration			

## Implementation

Not everyone will share your enthusiasm for the solution. The more input those directly involved in the problem had during the early decision making stages, the smoother will be the implementation, and the easier it will be to win over sceptics. Be particularly sensitive to those whose job security and prestige is affected, and allow them time to accept the changes.

**Training, participation, communication and feedback are critical**, and should all be addressed in the action plan.

The team should personally supervise the implementation of the solution package to show their commitment and to monitor for side effects and schedule slippage. The action plan should include a final handover step, so the ball isn't dropped when passed on to operations.



*Don't drop the ball when passing on to operations*

**Output from chapter 7**

- 1. Action plan developed \_\_\_\_\_
- 2. Schedule finalised \_\_\_\_\_
- 3. Budget prepared \_\_\_\_\_
- 4. Approval given \_\_\_\_\_



## Grow your own Quality Improvement Team

1	Introduction
---	--------------

2	What is a QIT?
---	----------------

3	Setting up a QIT
---	------------------

4	Selecting a problem to tackle
---	-------------------------------

5	Developing the problem
---	------------------------

6	Choosing solutions
---	--------------------

7	Implementing solutions
---	------------------------

8	<b>Checking they work</b>
---	---------------------------

Before and after data

9	How well did the QIT do?
---	--------------------------

Review of results

Results summary sheet

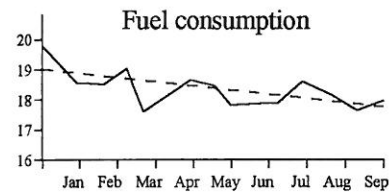
10	The future
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## Before and after data guidelines

The team must be confident that the solution is working. The only way to ensure this confidence is to back it up with numbers. Emphasise fact, not opinions. As part of the Action Plan (see chapter 7) what to measure, and how, has already been decided. This should be comparable with data taken before implementing the solution package to show its effect. For a simple problem it may be possible to switch the solutions off and on again after implementation. This would show beyond doubt that the changes are due solely to the solutions.

Remember that internal/external **customer satisfaction** is one of your overall aims, and this can be measured with questionnaires and surveys.

Plot the data on a trend graph as it is gathered, so the team can monitor what is happening now, not last month. Are you heading to meet your objectives? (see page 57). Does the plan and/or solutions need 'tweaking'?



Keep others informed of your progress, especially those who have approved your ideas, perhaps with periodic memos.



Perhaps use **periodic** memos to keep others informed

**Before and after data**

What is being measured

How

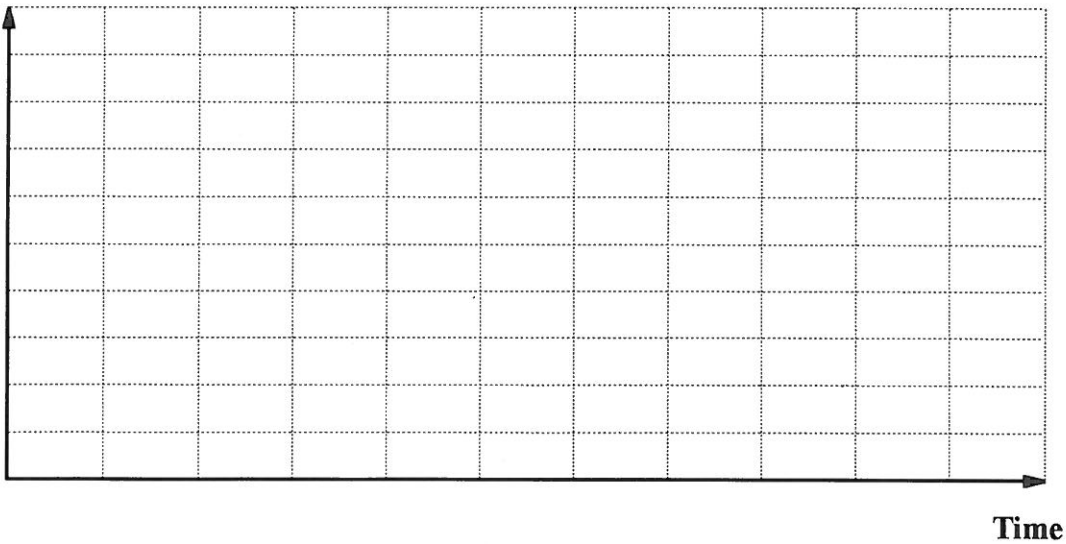
By whom

What 'before' data are available for comparison

**Data**


**Plot it on a trend graph**

**Data**



## Review of results

The Action Plan (chapter 7) should include details of how the team will know when the solutions have been fully implemented. During implementation there will almost always have been some 'tweaking' as progress was plotted, but the full results will not be apparent until the end (assuming there are no dire unpredicted side effects).

The team should review the results and compare them to the Objectives Statement on page 57.

- ★ Have the objectives been 90%, 100% or 150% met?
- ★ What items are still outstanding?
- ★ How important are they?
- ★ How much more effort is needed to complete them?
- ★ Can the team deal with them now or are they 'future work'?
- ★ How stable are the new systems?
- ★ Is it a permanent solution, or will it revert back to the old ways?
- ★ Are all the new procedures fully documented?

Results summary sheet

Date \_\_\_\_\_

Team name \_\_\_\_\_  
Problem \_\_\_\_\_  
\_\_\_\_\_

Objective 1 met ____ %	Objective 2 met ____ %	Objective 3 met ____ %
Objective 4 met ____ %	Objective 5 met ____ %	Objective 6 met ____ %
Objective 7 met ____ %	Objective 8 met ____ %	Objective 9 met ____ %

Outstanding work to be done

Item	By whom	Target end date
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Future work

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Milestone chart on page 28 updated? \_\_\_\_\_

**Output from chapter 8**

- 1. Before and after data gathered \_\_\_\_\_
- 2. Data plotted and analysed \_\_\_\_\_
- 3. Results reviewed against objectives \_\_\_\_\_
- 4. Outstanding and future work identified \_\_\_\_\_

# Grow your own Quality Improvement Team

1	Introduction	
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6	Choosing solutions	
7	Implementing solutions	
8	Checking they work	
9	How well did the QIT do?	Feedback
		Lessons learnt
		Publicity and recognition
10	The future	Celebration

## **Feedback**

QITs are set up primarily to solve problems. Participating in a QIT should also be worthwhile to the individuals. They should learn, be satisfied in their achievements and have enjoyed at least some parts.

The feedback questionnaire starting on the facing page should first be completed by each of the team members. The aim of the questionnaire is to provide advice to other Quality Improvement Teams, and also to each other - team members, leader and facilitator.



# Feedback questionnaire

## General questions

1. Are you satisfied with the work and results of the team?

---

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---

---

2. What parts of the work have you enjoyed and why?

---

---

---

---

3. Communication

What went well? \_\_\_\_\_

---

---

---

What could be improved? \_\_\_\_\_

---

---

---

4. Teamwork

What went well? \_\_\_\_\_

---

---

---

What could be improved? \_\_\_\_\_

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---

5. What conflicts arose, how were they resolved, and could they have been better dealt with? \_\_\_\_\_

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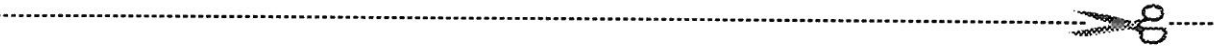
6. What comments do you have on the process laid out in this workbook?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
7. How easy was it to measure? What advice would you give to other teams on the subject of measurement?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
8. How well do you think did the team stick to its original charter? (page 25). This should be up on the wall.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
9. What have you learnt by being an individual member of this QIT?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
10. Complete the short confidential section questions about other team members

### Confidential questions

Use this sheet to give advice anonymously to other team members. Keep the comments **positive** and **practical** e.g. 'could improve listening skills during meeting' is more useful to someone than 'terrible meeting behaviour'. Cut copies of this sheet into three. Do not keep any official records of this session.

Name	What they did well	What they could improve

What roles do you think they played in the team? (e.g. leader, mediator, thinker, doer)



Name	What they did well	What they could improve

What roles do you think they played in the team? (e.g. leader, mediator, thinker, doer)

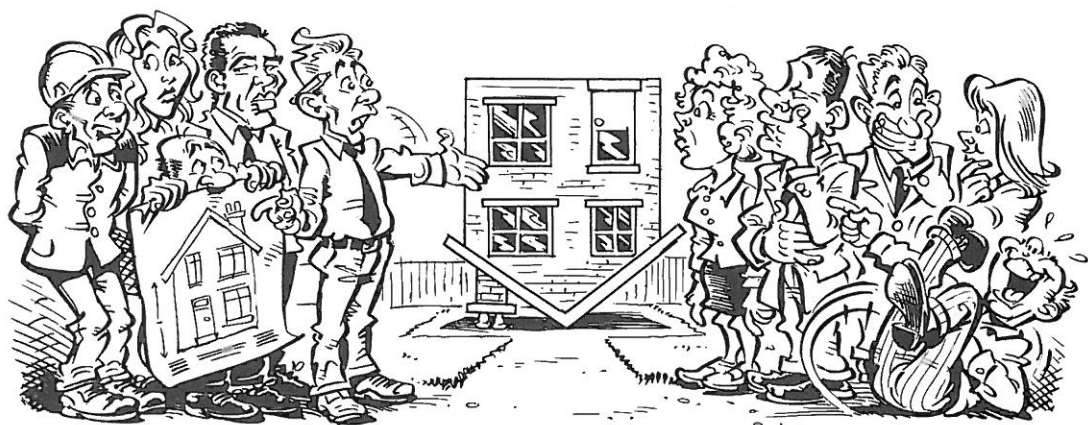


Name	What they did well	What they could improve

What roles do you think they played in the team? (e.g. leader, mediator, thinker, doer)

# Lessons learnt

The output from this section is ten team statements of lessons learnt, advice to other teams, comments on the process, etc. Use everyone's questionnaire answers as a basis for the discussion.



**Quality Improvement Team**

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_
4. \_\_\_\_\_  
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5. \_\_\_\_\_  
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6. \_\_\_\_\_  
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7. \_\_\_\_\_  
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8. \_\_\_\_\_  
\_\_\_\_\_
9. \_\_\_\_\_  
\_\_\_\_\_
10. \_\_\_\_\_  
\_\_\_\_\_

## Publicity and recognition

The team should communicate its results for the following reasons.

- ★ Time, energy and resources have been invested in the team by the company
- ★ People inside the organisation will have heard about, and perhaps supported, the team's work
- ★ Publicity may inspire other groups to start up QITs

### Forms of publicity

- ★ Final report
- ★ Presentation
- ★ Newsletter article
- ★ Display/poster

## Celebration

To round off the work of the team, it should organise an event to celebrate.

Ideas could include

- ★ A meal at a restaurant
- ★ A trip
- ★ A sporting or cultural event

The team should look at this event as a reward for their efforts, and as an opportunity to thank those who have helped (e.g. experts, data gatherers).



**Output from chapter 9**

- 1. Completed questionnaires \_\_\_\_\_
- 2. Ten statements by the QIT \_\_\_\_\_
- 3. Publicity material \_\_\_\_\_
- 4. Celebration event organised \_\_\_\_\_



## Grow your own Quality Improvement Team

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6	Choosing solutions
7	Implementing solutions
8	Checking they work
9	How well did the QIT do?
10	<b>The future</b>
	New QITs, new problems

## **New QITs, new problems**

With success behind you, there is likely to be pressure on the team to continue, but what happens in the future will depend on who is in the team and why it was formed at the start.

If it is a traditional QIT composed of experts brought together to solve a specific problem, then with the problem solved the team should disband leaving one person monitoring the changes that have been implemented. The fragments of the team could go on to start up several new QITs based on their experience.

However, now the team is working well together it could start again with a new problem in a similar area to the last one, perhaps another from the top five identified in chapter four.

Alternatively, with some swapping of members to bring new expertise and experience, the team could look at different problem areas. With new members the team will need to go through the forming, storming and norming phases again.

In a small organisation the QIT will have been established to address problems throughout the company. Thus the team will be equipped with a wide range of skills and should be able to turn to another problem without any changes.

## Appendix A

### The Tower of Nod

An exercise for five to thirteen people, highlighting the importance of problem definition and communication skills. Below are 26 clues which together give the problem and solution to the Tower of Nod. Cut this sheet up into slips of paper with one clue on each. Divide up the slips between all the participants. The only rules of the exercise are that participants cannot show each other their own clues and the team cannot make a list of all the clues. The exercise should take about 20 minutes if you allow writing. It is much harder if it has to be done entirely orally.

What day of the week is the tower completed?

Sun rises at Fanti, sets at Yinti

Yinti is eight hours after Fanti

A zing is a tenth of a pasti

Scrasor is the fifth day of the week

Yafti falls between Ninian and Scrasor

Scrasor and Scratchit are the fifth and sixth days of the week

Scratchit, Frenor and Pinti are the final days of the week

Each worker can lay one klink in two hours

There are 100 workers available

Work starts Zanzi, 1st of Pootle

Workers are paid every Frenor

Ninian follows Tobago

Two pasties equal one yonk

Tobago is three days before Scrasor

Yafti is a religious day, no work is undertaken

Workers work only daylight hours

Zanzi is the first day of the week

There are 32 days in a month

The Tower of Nod is 30 yonks high

One klink measures 1 x 1 x 1 pasti

Workers are paid 2 Dinegs/hour

Base of the tower is 10 x 20 pasties

The first and fourth Pintis in a month are taken off - no work is undertaken

Yafti, Zanzi, Tobago and Frenor are some of the days of the week

Usires is in charge

Here are twelve questions concerning personal survival in a foreign wilderness situation. Your first task is to select the best one of the three alternatives given under each item. Try to imagine yourself in the situation depicted. Assume that you are alone and have a minimum of equipment, except where specified. It is autumn. The days are warm and dry, but the nights are cold.

After you have completed this task individually, you will again consider each question as a member of a small group. Your group will have the task of deciding, by consensus, the best alternative for each question. Do not change your individual answers, even if you change your mind in the group discussion. Both the individual and group solutions will later be compared with the 'correct' answers provided by a group of survival experts.

	Individual	Group
1. You have strayed from your party in trackless woods. The best way to attempt to contact your friends is to		
a. call 'help' loudly but in a low register	a	a
b. yell or scream as loud as you can	b	b
c. whistle loudly and shrilly	c	c
2. You are in 'snake country'. Your best action to avoid snakes is to		
a. make a lot of noise with your feet	a	a
b. walk softly and quietly	b	b
c. travel at night	c	c
3. You are hungry and lost in wild country. The best rule for determining which plants are safe to eat (those you do not recognise) is to		
a. try anything you see the birds eat	a	a
b. eat anything except plants with bright red berries	b	b
c. put a bit of the plant on your lower lip for five minutes; if it seems alright, try a little	c	c
4. The day becomes hot and dry. You have a full bottle of water (about one litre) with you. You should		
a. ration it - about a cupful a day	a	a
b. not drink until you stop for the night, then drink what you need	b	b
c. drink as much as you think you need when you need it	c	c
5. Your water is gone; you become very thirsty. You finally come to a dried-up watercourse. Your best chance of finding water is to		
a. dig anywhere in the stream bed	a	a
b. dig up plant and tree roots near the bank	b	b
c. dig in the stream bed at the outside of a bend	c	c

6. You decide to walk out of the wild country by following a series of ravines where a water supply is available. Night is coming on. The best place to make camp is
- |    |  |   |   |
|----|--|---|---|
| a. | next to the water supply in the ravine | a | a |
| b. | high on a ridge                        | b | b |
| c. | midway up the slope                    | c | c |
7. Your torch grows dim as you are about to return to your campsite after a brief foraging trip. It is dark and the surroundings seem unfamiliar. You should
- |    |  |   |   |
|----|--|---|---|
| a. | head back at once, keeping the light on  | a | a |
| b. | warm the batteries under your armpits, and then replace them   | b | b |
| c. | shine your light for a few seconds, try to get the scene in mind, move out in the darkness, and repeat the process | c | c |
8. An early snow confines you to your small tent. You doze with your small stove going. There is danger if the flame is
- |    |        |   |   |
|----|--------|---|---|
| a. | yellow | a | a |
| b. | blue   | b | b |
| c. | red    | c | c |
9. You must ford a river that has a strong current, large rocks and some white water. After carefully selecting your crossing spot, you should
- |    |   |   |   |
|----|---|---|---|
| a. | leave your boots and pack on                | a | a |
| b. | take your boots and pack off                | b | b |
| c. | take off your pack, but leave your boots on | c | c |
10. In waist-deep water with a strong current, when crossing the stream you should
- |    |                        |   |   |
|----|------------------------|---|---|
| a. | face upstream          | a | a |
| b. | face across the stream | b | b |
| c. | face downstream        | c | c |
11. Your way ahead is blocked, the only route is up. The rock is slippery and moss covered. You should try it
- |    |               |   |   |
|----|---------------|---|---|
| a. | barefoot      | a | a |
| b. | with boots on | b | b |
| c. | with socks on | c | c |
12. Unarmed and unsuspecting, you surprise a large bear prowling around your campsite. As the bear rears up about ten metres from you, you should
- |    |  |   |   |
|----|--|---|---|
| a. | run                                      | a | a |
| b. | climb the nearest tree                   | b | b |
| c. | freeze, but be ready to back away slowly | c | c |

Here are the recommended courses of action for each of the situations on the wilderness survival question sheet. These answers come from the comprehensive course on woodland survival taught by the Interpretative Service, Monroe County (New York) Parks Department. These responses are considered to be the best rules of thumb for most situations; specific situations, however might require other courses of action.

1. (a) Call 'help' loudly but in a low register.

Low tones carry further, especially in a dense woodland. There is a much better chance of being heard if you call loudly but in a low key. 'Help' is a good word to use because it alerts your companions to your plight. Yelling or screaming would not only be less effective, but might be passed off as a bird call by your friends far away.

2. (a) Make a lot of noise with your feet.

Snakes do not like people and will usually do everything they may to get out of your way. Unless you surprise or corner a snake there is a good chance that you will not even see one, let alone come into contact with it. Some snakes do feed at night, and walking softly may bring you right on top of a snake.

3. (c) Put a bit of the plant on your lower lip for five minutes; if it seems all right, try a little.

The best approach, of course, is to eat only those plants that you recognise as safe. But when you are in doubt and very hungry, you may use the lip test. If the plant is poisonous, you will get a very unpleasant sensation on your lip. Red berries alone do not tell you much about the plant's edibility (unless, of course, you recognise the plant by the berries) and birds just do not have the same digestive systems we do.

4. (c) Drink as much as you think you need when you need it.

The danger here is dehydration, and once the process starts your litre of water will not do much to reverse it. Saving or rationing will not help, especially if you are lying unconscious somewhere from sunstroke or dehydration. So use the water as you need it, and be aware of your need to find a water source as soon as possible.

5. (c) Dig in the stream bed at the outside of a bend.

This is the part of the river or stream that flows the fastest, is less stilted, deepest, and the last part to go dry.

6. (c) Midway up the slope.

A sudden rain storm might turn the ravine into a raging torrent. This has happened to many campers and hikers before they had a chance to escape. The ridge line, on the other hand, increases your exposure to rain, wind and lightning, should a storm break. The best location is on the slope.

7. (b) Put the batteries under your armpits to warm them and then replace them in the torch.

Torch batteries lose much of their power, and weak batteries run down faster, in the cold. Warming the batteries, especially if they are already weak, will restore them for a while. You would normally avoid night travel, of course, unless you were in the open where you could use the stars for navigation. There are just too many obstacles (logs, branches, uneven ground, and so on) that might injure you - and a broken leg, injured eye or twisted ankle would not help your plight. Once the sun sets, darkness falls quickly in wooded areas; it would usually be best to stay at your campsite.

8. (a) Yellow.

A yellow flame indicates incomplete combustion and a strong possibility of carbon monoxide build up. Each year many campers are killed by carbon monoxide poisoning as they sleep or doze in tents, cabins or other enclosed spaces.

9. (a) Leave your boots and pack on.

Errors in fording rivers are a major cause of fatal accidents. Sharp rocks or uneven footing demand that you keep your boots on. If your pack is fairly well balanced, wearing it will provide you the most stability in the swift current. A waterproof, closed backpack will usually float, even when loaded with normal camping equipment; if you step off into a hole or deep spot, the pack could become a lifesaver.

10. (b) Across the stream.

Errors in facing the wrong way in fording a stream are the cause of many drownings. Facing upstream is the worst alternative; the current could push you back and your pack would provide the unbalance to pull you over. You have the best stability facing across the stream, keeping your eye on the exit point on the opposite bank.

11. (c) With socks on.

Here you may pick your route to some degree and you may feel where you are stepping. Normal walking boots become slippery, and going barefooted offers your feet no protection at all.

12. (c) Freeze, but be ready to back away slowly.

Sudden movement will probably startle the bear a lot more than your presence. If the bear is seeking some of your food, do not argue with it; let it forage and be on its way. Otherwise, back very slowly toward some refuge (trees, rock outcrop, etc.)



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# GROW YOUR OWN *Quality Improvement Team*

This workbook is intended to be used by team leader and facilitator as a practical, structured guide to forming and running a new Quality Improvement Team. It contains a balance of guidelines, background information, reminders, exercises, sample forms, checklists and examples. The emphasis is on doing, not just reading.

It is written specifically for the construction industry so all the examples are relevant.

As a work book, the aim is that teams complete the exercises and forms as they progress through the book. Many well known tools and techniques are employed, with an accompanying outline explanation. It is hoped that teams will use the abilities of a trained facilitator, who will be able to give more detailed coaching.

Quality improvement teams should be beneficial to both the company and those individuals involved. The process, tools and techniques introduced are widely applicable and should be useful to the individual beyond the bounds of the QIT - analysing and tackling complex problems, planning and running efficient meetings, presentation preparation and tips, team building and working.



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