

Process Flowcharts

[Organizational chart](#) activity involves many separate tasks. These are often complex and they change over time in response to new customer demands, new product and service requirements, or new laws and regulations. These changes are often made in isolated, reactive and piecemeal ways, which are not necessarily best for the company or the people doing the work. In addition to external pressures for change, there is a constant need to search for new and better ways to do things in order to maintain a competitive edge, and to make life easier and more interesting for those who do the work.

The only way to control change, rather than have it control you, is to clarify what actually happens and to decide whether this is the way you want it or not. By grouping tasks into logical areas of activity (processes) and [drawing flowcharts](#) of the events which occur, it is possible to get a concise picture of the way particular processes are completed within the organization. This makes it easier for you to move on to the next logical step which is to make changes for the better. This is because the flowcharting exercise will point you in the right direction to collect and analyze relevant statistics, examine other processes which relate to the one flowcharted, and pursue critical policy or procedure problems.

[Flowcharting](#) is a tool for analyzing processes. It allows you to break any process down into individual events or activities and to display these in shorthand form showing the logical relationships between them. Constructing flowcharts promotes better understanding of processes, and better understanding of processes is a pre-requisite for improvement.

Examples of processes are "Receiving orders and entering them into the computer system" or "Converting dry-mix powder into tablet form" or "Following-up sales enquiries". The events which make up a process, and which appear in the flowchart, may be of any type. For example, they may be "taking a phone call", "completing an order form", "printing a report", "deciding between a number of alternatives", and so on. The symbols used to represent each event may take any form. They may be boxes, circles, diamonds or other shapes, or events may simply be described in words. Connections between events are always represented by lines; usually with arrowheads to show the direction or order in which they occur. These lines represent the flow of activity in the process being described; hence the name of the technique.

What's Process Flowchart?

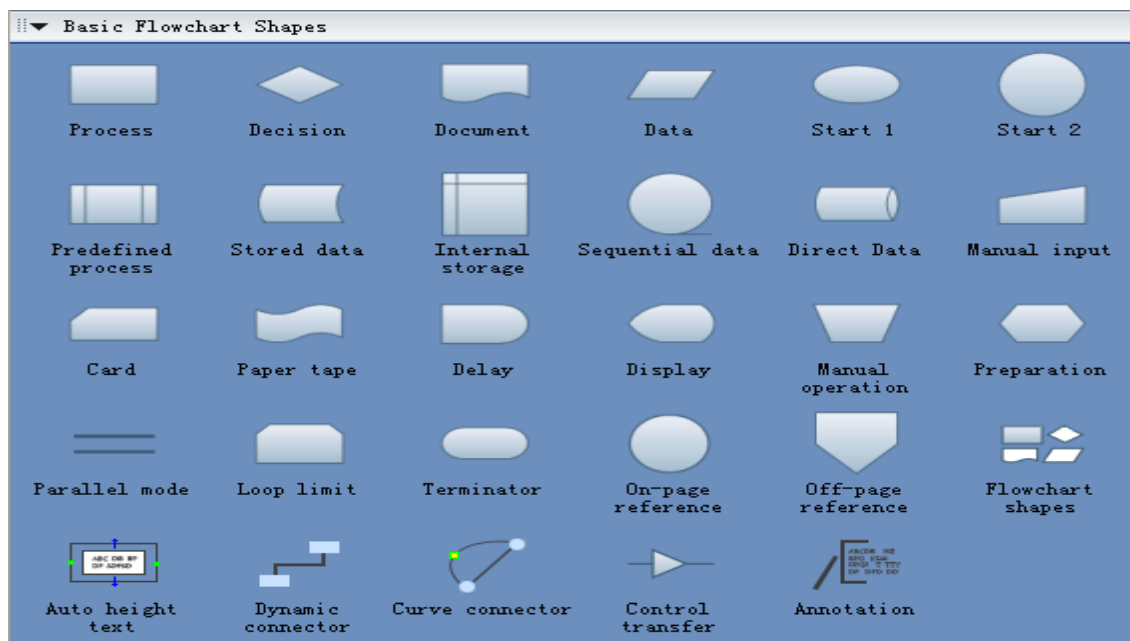
Process flow diagrams should include the information regarding the connection between various systems. It also consists of the process piping and major parts details.

Flowcharts are maps or graphical representations of a process. Steps in a process are shown with symbolic shapes, and the flow of the process is indicated with arrows connecting the symbols.

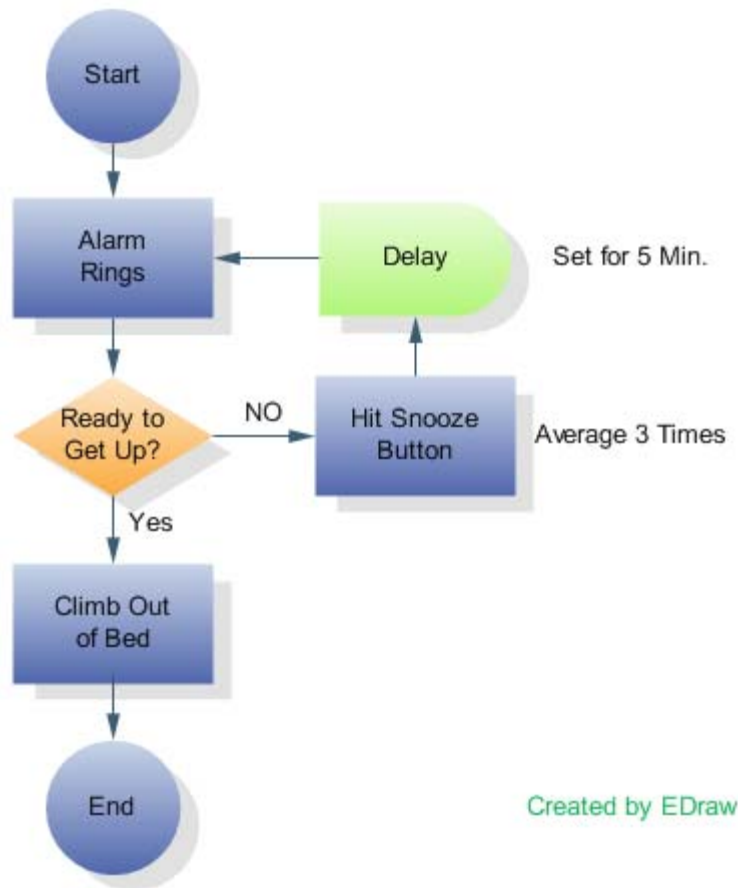
In quality improvement work, flowcharts are particularly useful for displaying how a process currently functions or could ideally function. Flowcharts can help you see whether the steps of a process are logical, uncover problems or miscommunications, define the boundaries of a process, and develop a common base of knowledge about a process. Flowcharting a process often brings to light redundancies, delays, dead ends, and indirect paths that would otherwise remain unnoticed or ignored. But flowcharts don't work if they aren't accurate, if team members are afraid to describe what actually happens, or if the team is too far removed from the actual workings of the process.

Standard symbols for drawing process flowchart

Flowcharts use special shapes to represent different types of actions or steps in a process. Lines and arrows show the sequence of the steps, and the relationships among them. There are many symbols used to construct a flow chart; the more common symbols are shown below:



Following is an example of a very simple flow chart for the process of getting out of bed in the morning:



You can make a flowchart more useful by adding information beside the boxes. This flowchart gives a better description of the process when you know that the snooze bar gets hit three times, postponing the inevitable by five minutes each time.

The Benefits for Process Flowchart

The process flow chart provides a visual representation of the steps in a process. Flow charts are also referred to as process mapping or flow diagrams. Constructing a flow chart is often one of the first activities of a process improvement effort, because of the following benefits:

- gives everyone a clear understanding of the process
- helps to identify non-value-added operations
- facilitates teamwork and communication
- keeps everyone on the same page
- design a flow charts

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- flowchart construction etc.

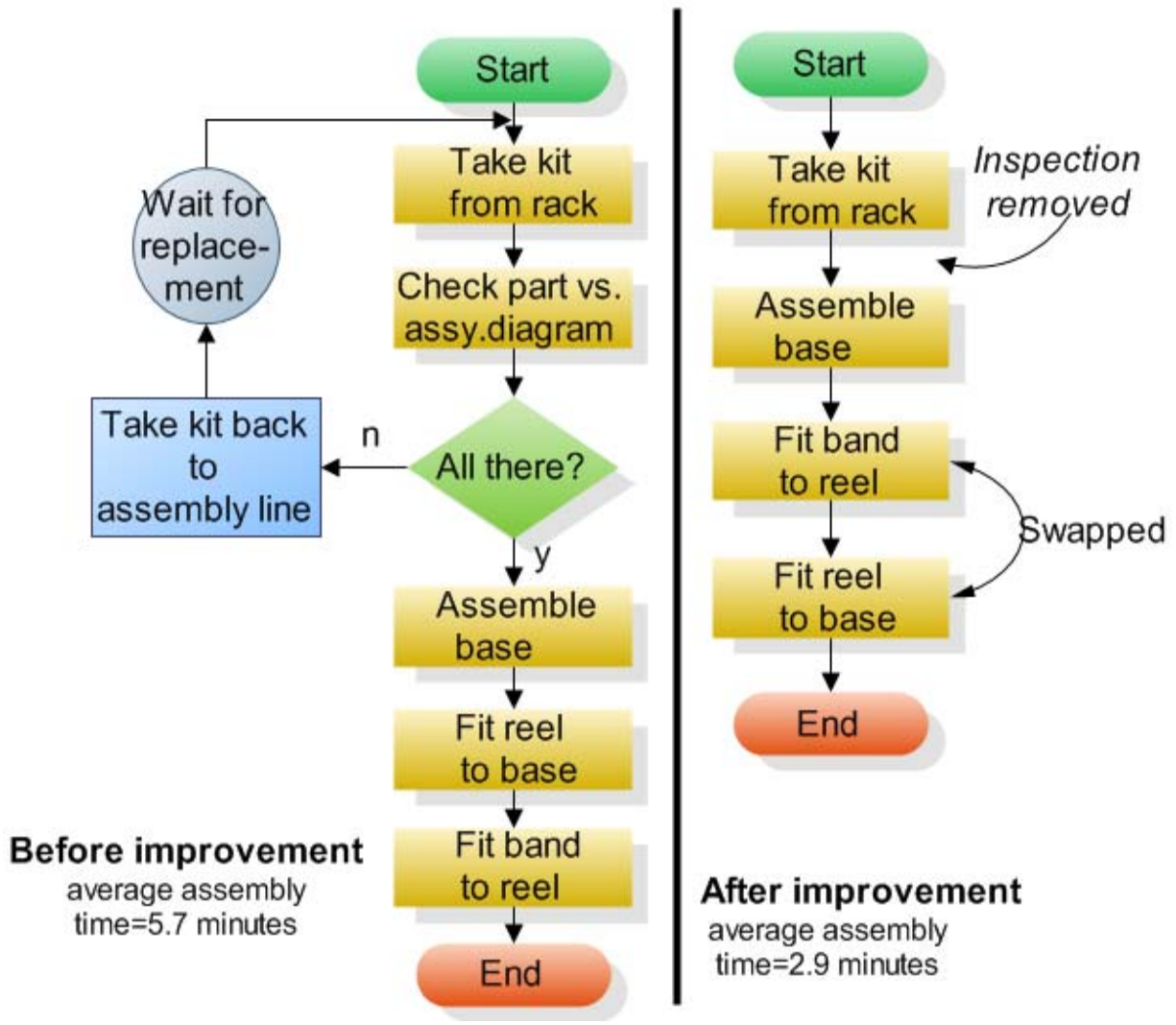
<http://www.edrawsoft.com/Process-Flowcharts.php>

Flowchart Example 4

A product assembly team in a gaming machine manufacturer were looking for ways of building the product more efficiently. They broke down the assembly process into a set of Flowcharts, showing how sub-assemblies were made and then built into the final product. Analysis of the reel assembly process revealed two improvements:

1. The kit of parts was already checked by the kit assembly line, who were sometimes careless, as they knew the kit would be rechecked. The assembly line process was improved so the check here could be removed. This saved over two minutes per reel in checking, and up to fifteen minutes when the kit was faulty.
2. Fitting the reel band after the reel had been attached to the base was awkward. Fitting the band before the reel was attached to the base was more comfortable and saved about a minute per reel.

The process Flowcharts, before and after improvement, are shown in Fig. 4.



How to understand Flowchart

In order to improve a process, it is first necessary to understand its operation in detail. Describing this in text lacks the clarity of a pictorial diagram, where individual steps are more easily seen.

The [Flowchart](#) is a simple mapping tool that shows the sequence of actions within a process, in a form that is easy to read and communicate.

The basic element of a process is a simple action, which can be anything from striking an anvil to making a cash payment, and is represented as a box containing a description of the action. The mapping of 'what follows what' is shown with arrows between sequential action boxes, as in the illustration. This also shows the boxes for process start and end points of which there are normally one each.

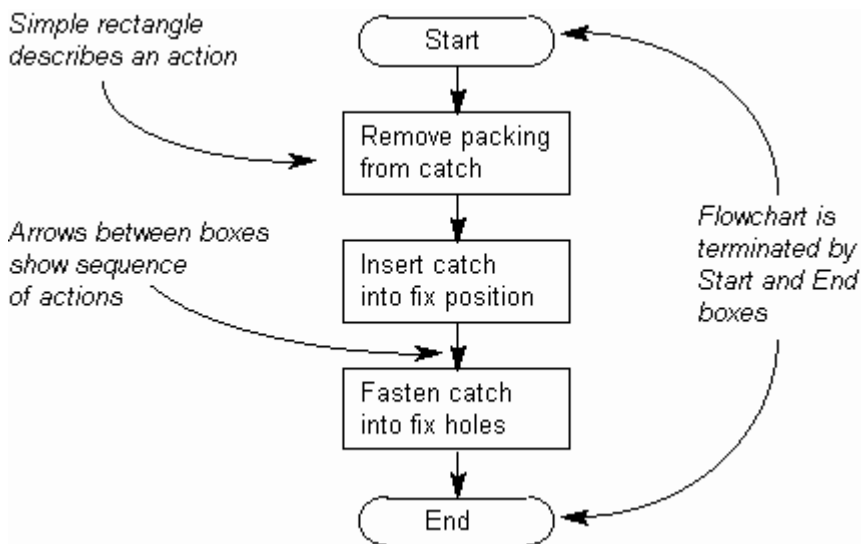


Fig. 1. Basic Flowchart elements

Processes become more complex when decisions must be made on which, out of an alternative set of actions, must be taken. The decision is shown in a Flowchart as a diamond-shaped box containing a simple question to which the answer is 'yes' or 'no' as in Fig. 2. More complex decisions are made up of combinations of simple decision boxes.

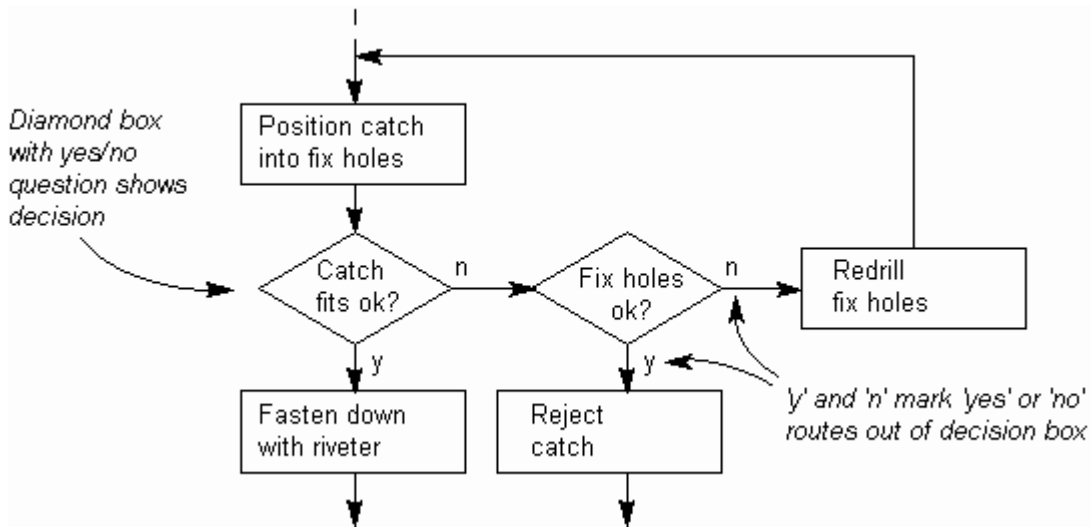


Fig. 2. Decisions in Flowcharts

Processes often go wrong around decisions, as either the wrong question is being asked or the wrong answer is being given.

Where boxes cannot be directly connected with lines, the separated lines are coordinated with connector boxes containing matching names. This typically occurs where lines cross onto another page, as in the illustration.

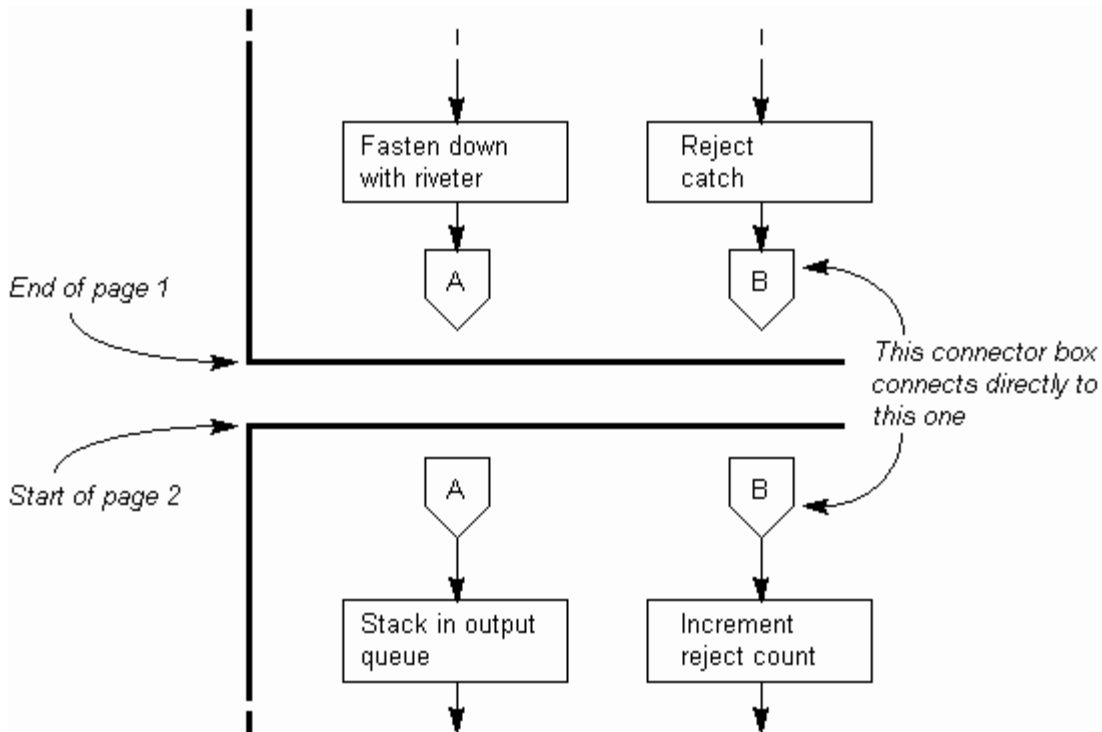


Fig. 3. Continuing Flowcharts across pages

By using multiple connector boxes, it is very easy for Flowcharts to become very large, although this is usually self-defeating, as the Flowchart then becomes difficult to understand. The ideal size for a Flowchart is one page, as this gives a single visual 'chunk' that is reasonably easy to understand as a single item.

Large processes can be broken down into a hierarchical set of smaller Flowcharts by representing a lower level process as a single sub-process box. This behaves like a normal action box at the higher level, but can be 'zoomed into' to expose another Flowchart, as in Fig. 4.

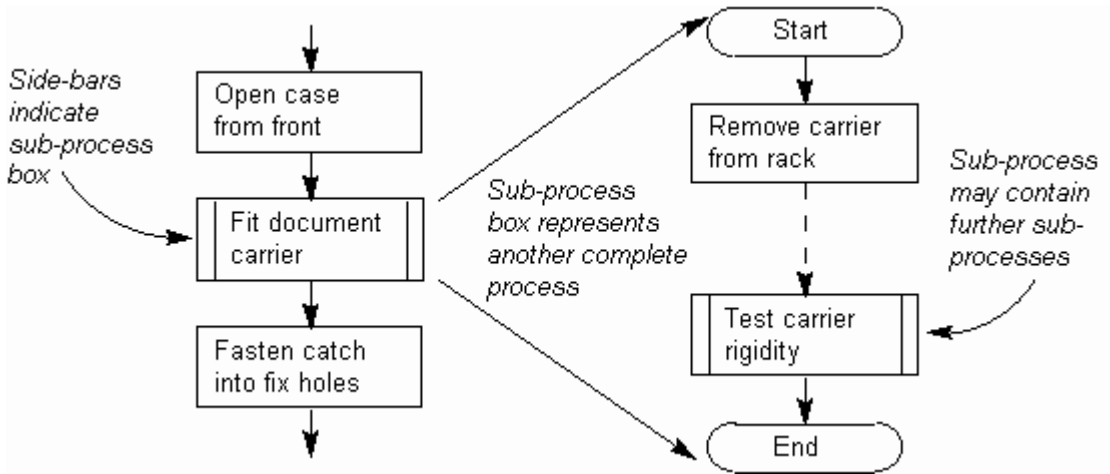


Fig. 4. Sub processes

An additional 'action' box that can be useful when analyzing processes is the wait box, which highlights a delay (i.e. *no* action), as in the illustration. This is a typical point where the overall cost of a process may be improved by acting, possibly on other processes, to reduce the delay.

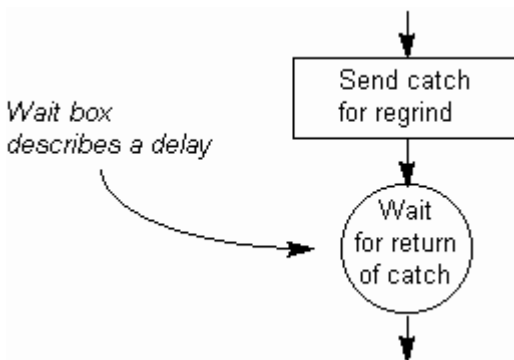


Fig. 5. Delay symbol

When to use Flowchart

- Use it when analyzing or defining a process, to detail the actions and decisions within it.
- Use it when looking for potential problem points in a [process flowchart](#).
- Use it when investigating the performance of a process, to help identify where and how it is best measured.
- Use it as a communication or training aid, to explain or agree the detail of the process.

How to Create Flowchart

Are you confused on how to create a flow chart? Most of us don't know how to deal with flow charts when we are novice users but with the passage of time and experience we gain expertise. A good flow chart helps to understand the systematic flow of information in the system. If a flow chart is not created properly then it may mislead the designer of the system or may result in fatigue consequences. Therefore, it is very important that you create flow chart with caution and expertise. I would always suggest you to use flow chart to ease the process of understanding the system and its flow.

1. Identify the process which is to be mapped. There are several ways this may be discovered:
 - It has an identifiable purpose. A good test of this is to find a realistic name for the process.
 - It has an overall owner, often the lowest level person who has responsibility for the complete process. For cross-functional processes, this is likely to be a senior manager.
 - It has identifiable customers and suppliers (these may be people or just other processes).
2. Gather the team who are to work on describing the process. These should include people who are intimately involved in all parts of the process, to ensure that it gets described as it actually happens, rather than an idealized view.
3. Agree on a standard symbol set to use, for example as in Table @@. Alternatively, a company standard may be available. It is important to agree a standard as there are several conflicting common uses (for example, a circle can be a delay, an operation, assistance, an on-page connector or a terminator).
4. Draw a 'start' terminator box at the top of the work area.
5. Add the first box below the start box, identifying the first action simply by asking, 'What happens first?'. Add an appropriate box around it. Add subsequent boxes below the previous box, identifying each action by asking, 'What happens next?'. Draw an arrow from the previous box to this one.

Points to note when building the Flowchart include:

- Keep the descriptions short and simple. Use a brief phrase rather than a complete sentence. A verb-noun phrase is often useful, saying what is being done to what. For example, 'Check customer

- satisfaction,' rather than, 'Investigate the level of customer satisfaction using the F3 survey system'.
- Maintain a consistent level of detail. For example, do not go from, 'Fix television' to 'Replace line output transformer' in the same Flowchart.
 - Aim to keep the Flowchart within one page. This can be useful in helping to restrain the level of detail. Typically this will result in around three to twelve boxes.
 - Identify and include the key decisions in the process.
 - Try to use consistent directions out of decision boxes for the 'yes' and 'no' lines. This can help prevent misinterpretation by people reading the Flowchart later.
 - Aim to make the main flow of the diagram flow from top to bottom, with digressions going off to the right. Branch left only for loops back up and when the right is already occupied. Generally aim for a clockwise flow, but not at the cost of clarity.
 - Have only one 'end' box.
6. If the final diagram is to be used as a part of a formal system, make sure that it is uniquely identified. This may include:
- The name of this process, plus any other unique identification, such as a number from a hierarchical numbering system.
 - An identification of the parent process (if it exists), for example by name or number.
 - The name of the person or group who drew the chart.
 - The owner of chart plus their job title.
 - The version number of the chart.
 - The date the chart was last changed.
7. Use the consequent diagram as planned. This might be one or more of:
- Identification of measurement points. Typically this will be around critical actions such as input/output or expensive actions.
 - Identification of potential problems. Common places for these to occur are around decisions or any form of communication between people.
 - Looking for actions that are missing, wrong or unnecessary.
 - Inclusion in a quality management system as a formal description of the process.