What Is a Flowchart?

A diagram that uses graphic symbols to depict the nature and flow of the steps in a process.
Benefits of Using Flowcharts

• Promote process understanding
• Provide tool for training
• Identify problem areas and improvement opportunities
• Depict customer-supplier relationships
Symbols Used in Flowcharts

Start / End

Process Step

Decision

Connector

Measurement

No

Yes

M
Levels of Flowcharts

**MACRO**

- Start
  - Draft POD
  - Type POD
  - Distribute POD
  - End

**MINI**

- Start
  - Get rough draft of POD
  - Is it approved?
    - Yes: Type smooth
      - End
    - No: Get approval

**MICRO**

- Turn on computer
  - Start word proc. applic.
    - Is rough in word proc. applic.?
      - Yes: Edit POD
        - Are there any corrections?
          - Yes: Make corrections
          - No: Print POD
      - No: Type rough POD

Keys to Success

• Start with the big picture
• Observe the current process
• Record process steps
• Arrange the sequence of steps
• Draw the Flowchart
Linear Flowchart Example
Producing the POD

Start

Collect inputs

Draft POD

Type rough

Submit to XO

OK ?

Yes

A

Retype POD

No

Type smooth

Sign POD

Make copies

Distribute

End
Deployment Flowchart Example
Producing the POD

<table>
<thead>
<tr>
<th>CMC</th>
<th>YN</th>
<th>XO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collect input</td>
<td>Type rough</td>
<td>Accept rough?</td>
</tr>
<tr>
<td>Draft POD</td>
<td>Submit to XO</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Retype POD</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Type smooth</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Make copies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Distribute</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sign POD</td>
<td></td>
</tr>
</tbody>
</table>
Opportunity Flowchart Example
Producing the POD

Value Added

- CMC collect input
- CMC draft input
- YN type rough
- YN submit rough to XO
- A

Cost Added Only

- A
- POD need retyped?
- YN type smooth
- XO sign POD
- YN copy and distribute POD
- YN retype

YN submit rough to XO

YN type rough

YN type smooth

YN copy and distribute POD
Constructing a Linear Flowchart

1. Define the process and the purpose
2. Assemble the right people
3. Establish process boundaries
4. List steps, activities, and decisions
5. Are steps in sequence? (Decision)
   - No: Put steps in sequence
   - Yes: Assign Flowchart symbols
6. Review and label Flowchart
Constructing a Deployment Flowchart

Changing Oil

<table>
<thead>
<tr>
<th>CHUCK</th>
<th>NANCY</th>
<th>BOB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decide to change oil</td>
<td>Warm up engine</td>
<td>Get rags &amp; tools</td>
</tr>
<tr>
<td>Buy oil &amp; filter</td>
<td>Shut off engine</td>
<td>Oil &amp; filter on hand ?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change oil &amp; filter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clean up &amp; put tools away</td>
</tr>
</tbody>
</table>
Constructing an Opportunity Flowchart

Changing Oil

VALUE ADDED

- Decide to change oil
  - Warm up engine
  - Shut off engine
  - Get rags and tools
  - Oil & filter on hand?
    - No
      - Buy oil & filter
    - Yes
      - Change oil & filter
      - Clean up & put tools away

COST ADDED ONLY

- Buy oil & filter
Interpreting Your Flowchart

- Determine who is involved
- Form theories about root causes
- Identify ways to simplify and refine
- Determine how to implement changes
- Locate cost-added-only steps
- Provide training
Interpretation Steps

Step 1  -  Examine each process step
   Bottlenecks? Weak links? Poorly defined steps? Cost-added-only steps?

Step 2  -  Examine each decision symbol
   Can this step be eliminated?

Step 3  -  Examine each rework loop
   Can it be shortened or eliminated?

Step 4  -  Examine each activity symbol
   Does the step add value for the end-user?
EXERCISE 1
Flowchart for Cut Grass Process

Spouse says “Cut the grass.”

Prepare to cut the grass

Cut the grass

Put mower away

Spouse says “Cut grass”

Open garage door

Pull lawnmower to driveway

Check gas and oil

Need gas or oil?

Yes

Get gas & oil from garage

Put in gas and oil as needed

Start lawnmower

Mow the yard

Turn lawnmower off

Get gas & oil from garage

Put in gas and oil as needed

Return mower to garage

Close garage door

Does lawnmower need to be washed?

Yes

Get hose

Wash mower

No

Mow the yard

Turn lawnmower off

Put in gas and oil as needed