

LOG 206

M₁₀: Analysis and design

Department of Logistics

Molde University College

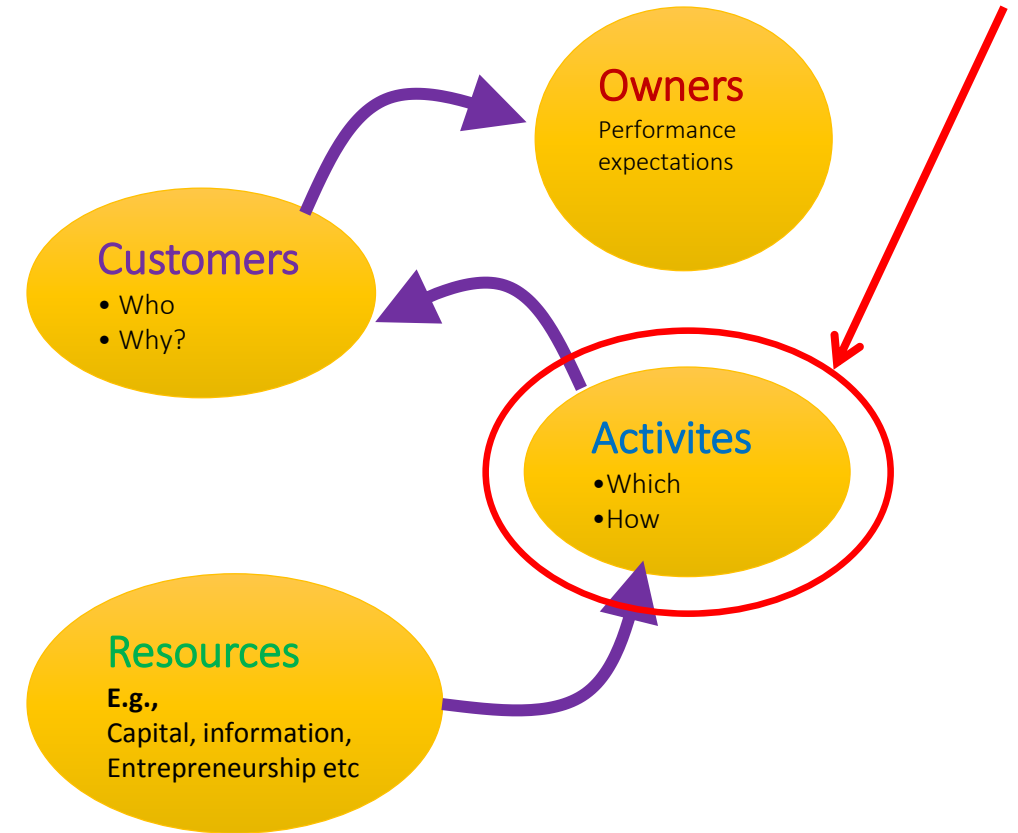
Spring 2018



Høgskolen i Molde
Vitenskapelig høyskole i logistikk

Cause and effect in value creation

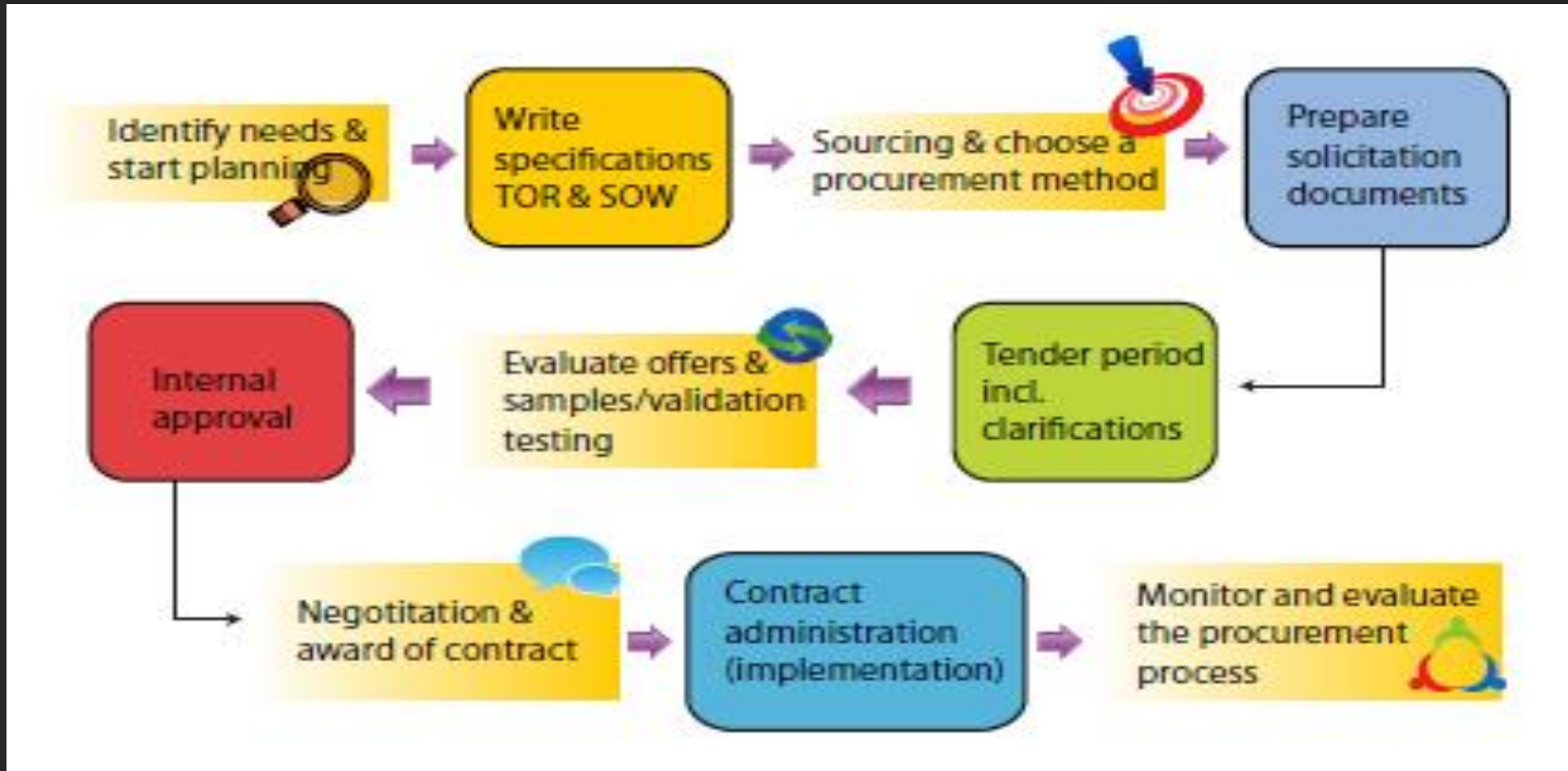
- **Owners**
 - What are the expectations of our owners?
- **Customers**
 - Which customers should we focus on to meet these expectations?
 - Why should these customers choose us?
- **Activities**
 - What do we have to do better than our competitors in order to win these customers?
- **Resources**
 - What resources do we need if we are to perform those activities better/differently than our competitors?



Activity: A description of a piece of work that forms one logical step within a process. An Activity may be a manual activity or (automated) activity.



Procurement process in a typical public agency



Business process: A set of one or more linked procedures or activities which collectively realize a business objective or policy goal, normally within the context of an organizational structure defining functional roles and relationships.



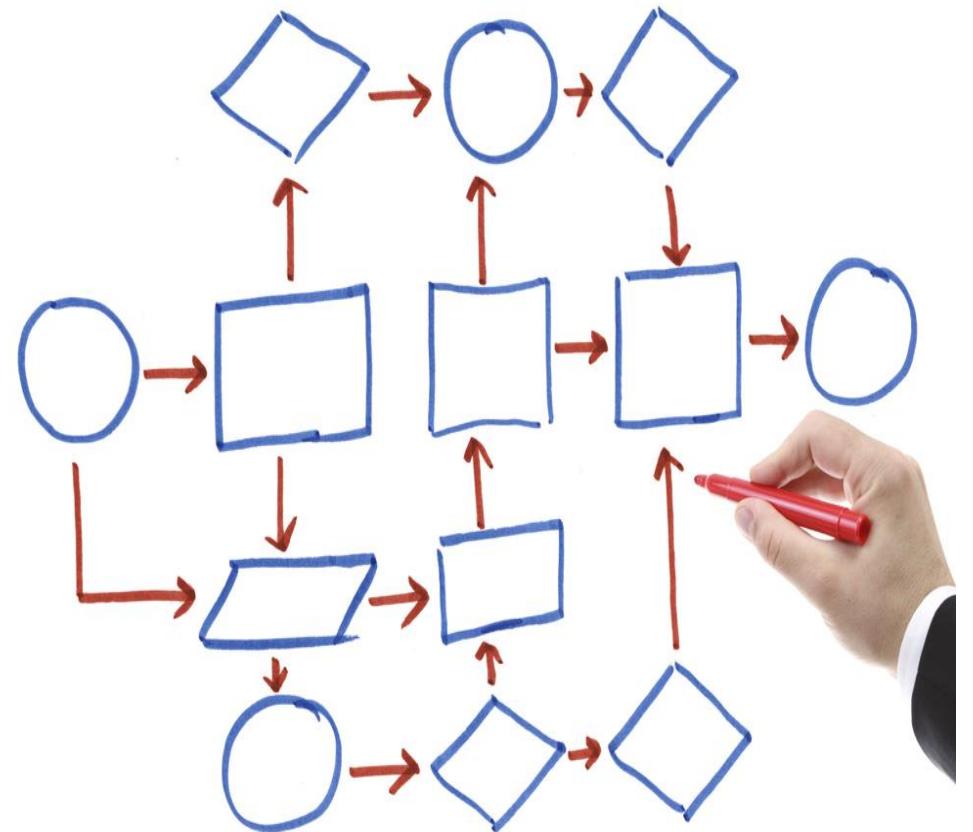
Analysis for digital business

- Analysis for digital business is concerned with understanding the business and user requirements
- It involves use of analytical techniques to capture and summarize business and user requirements.
- Typical analysis activity can be broken down into:
 - ✓ Understanding the current process
 - ✓ Review of possible alternatives for implementing the digital business solution.



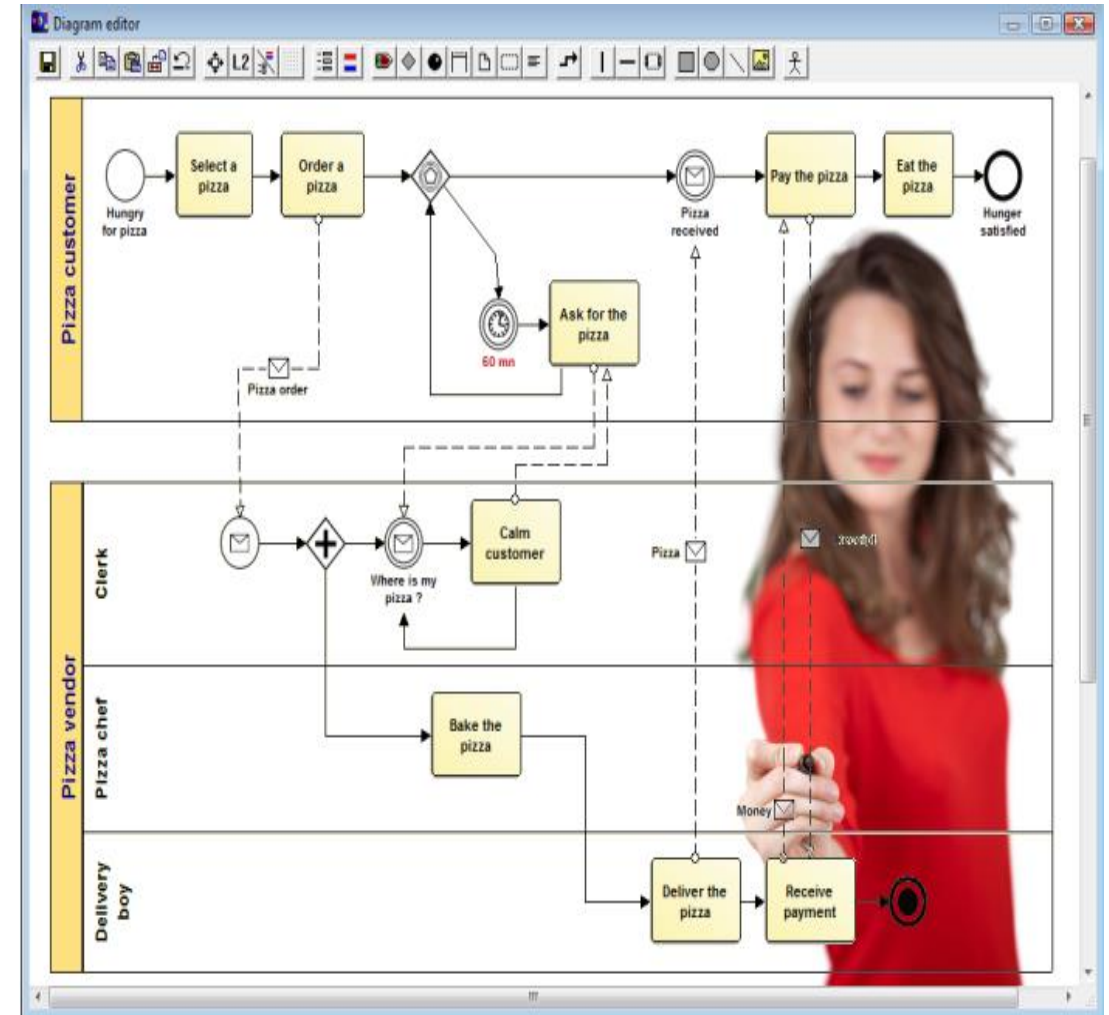
Process modelling

- Process modelling is the activity of representing processes of an enterprise, so that the current process may be analyzed or improved.
- This involves establishing:
 - The processes and their constituent sub-processes
 - The dependencies between processes
 - The inputs (resources) needed and the output
- Significant business processes are elements of the value chain

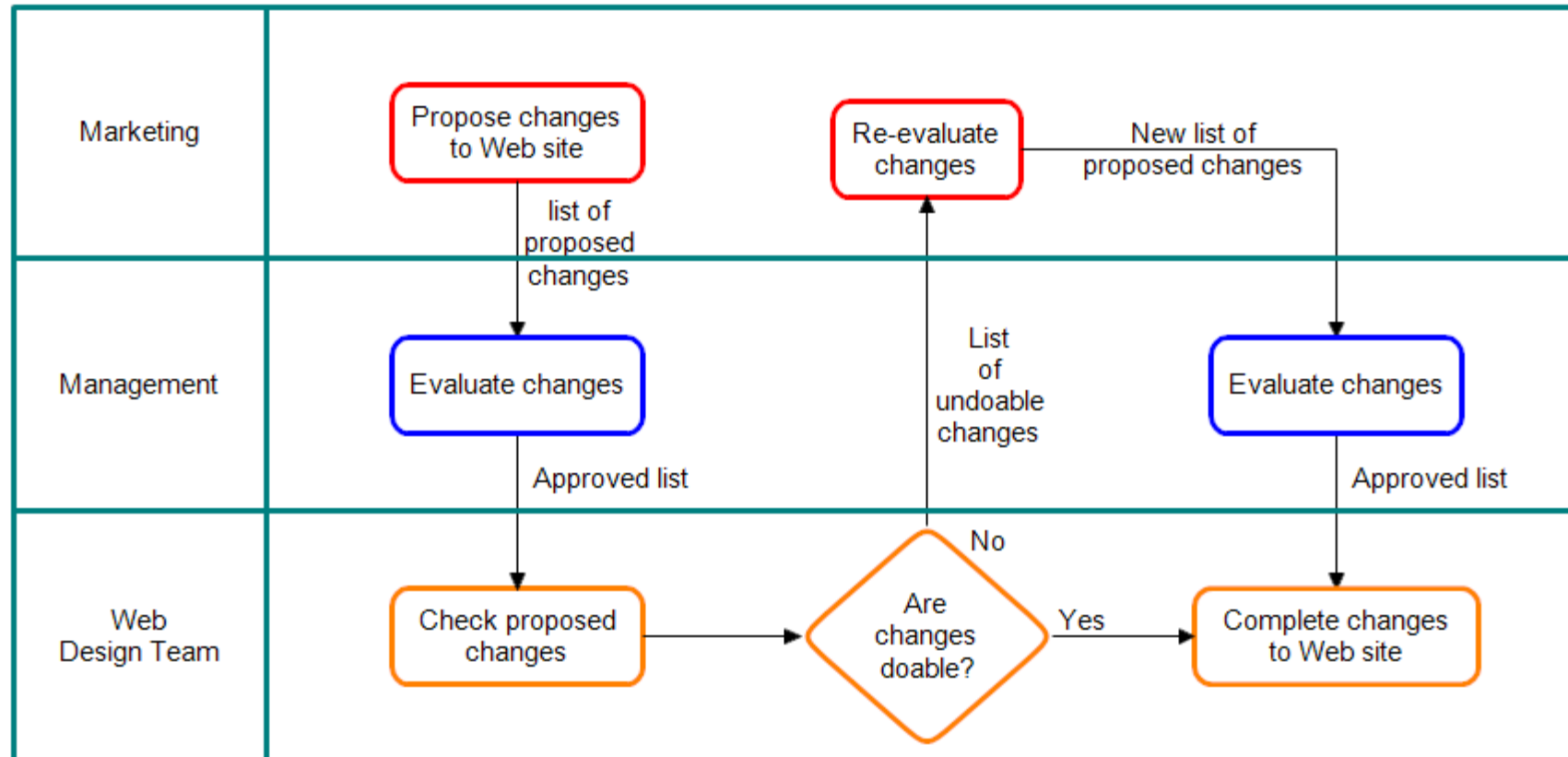


Process mapping

- Existing business processes often overlap between different functional areas of a business.
- So, before detailed activities are identified the analyst needs to identify where in the organization processes occur and who is responsible for them.
- Process mapping is the identification of location and responsibilities for processes within an organization.
- Process mapping is important for identifying potential users of a digital business system.



Example of cross-functional process map for implementing web site changes



Task analysis and task decomposition

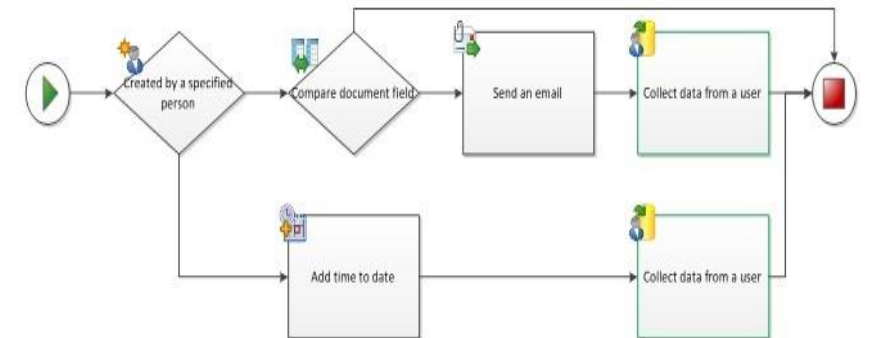
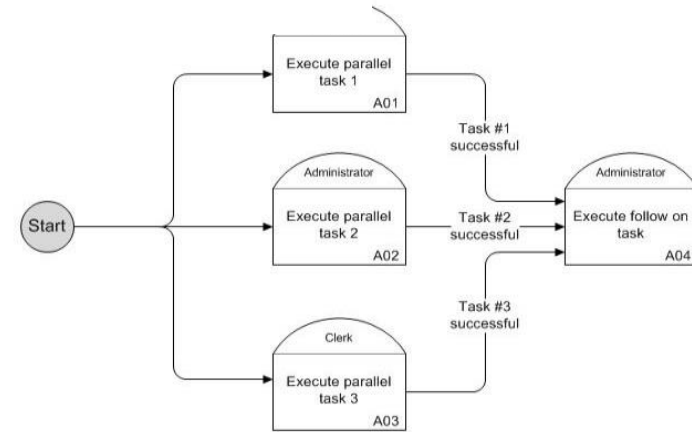
- Before designing and implementing a process, a more detailed breakdown is required.
- Task analysis is the identification of different tasks, their sequence and how they are broken down.
- Curtis et al. (1992) provide a useful framework as follows:
 - ✓ Business process are decomposed into activities
 - ✓ Activities are further divided into tasks
 - ✓ Tasks are finally divided into sub-tasks



Process dependencies

- Process dependencies summarize the order in which activities occur according to the business rules that govern the processes.
- Normally, activities occur in a sequence and are serial; sometimes activities can occur simultaneously, and they are known as parallel

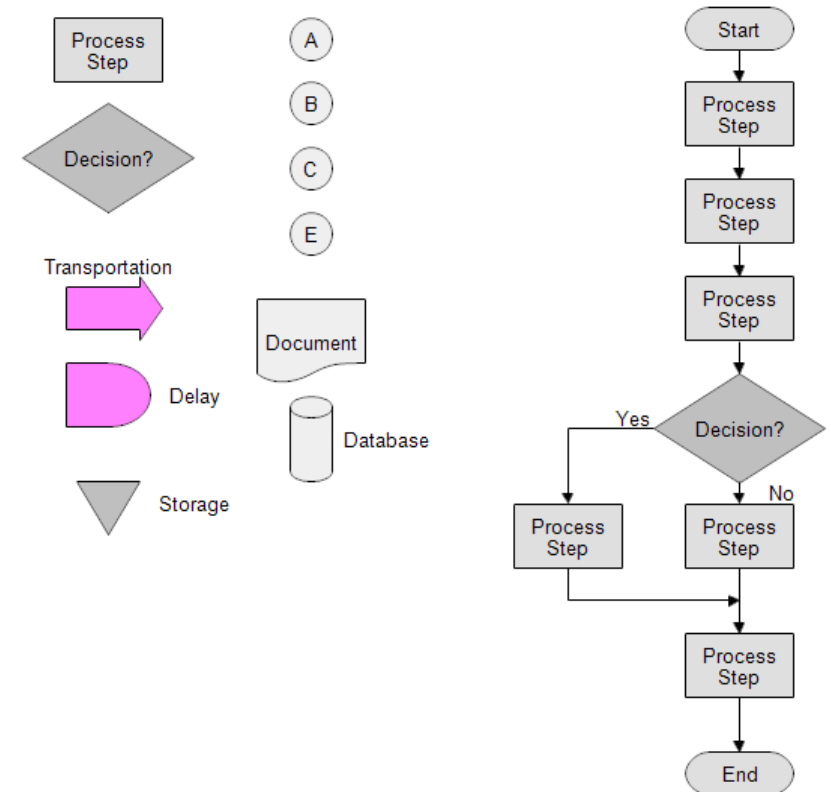
Parallel Processes



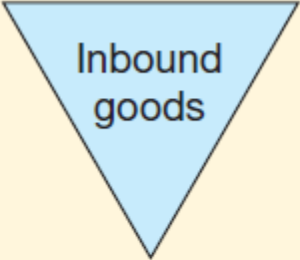
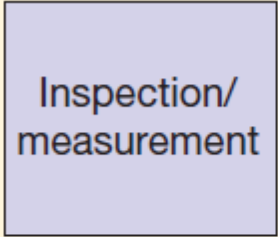
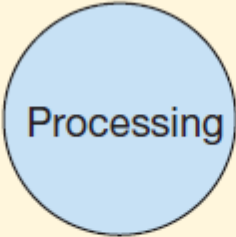
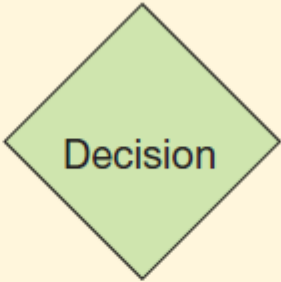
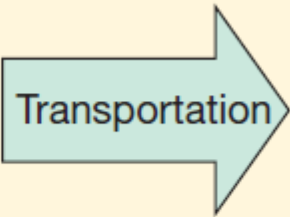
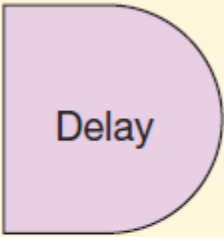
Flow process charts

- A simple flow chart is a good starting point for describing the sequence of activities of a workflow.
- Flow charts are simple such that they can easily be understood by non-technical staff.
- They are effective in highlighting bottlenecks and inefficiencies.
- Each symbol in the chart refers to a particular operation within the overall process.

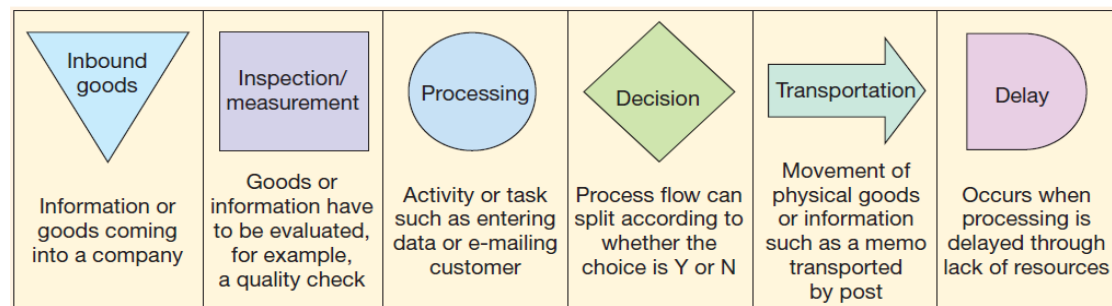
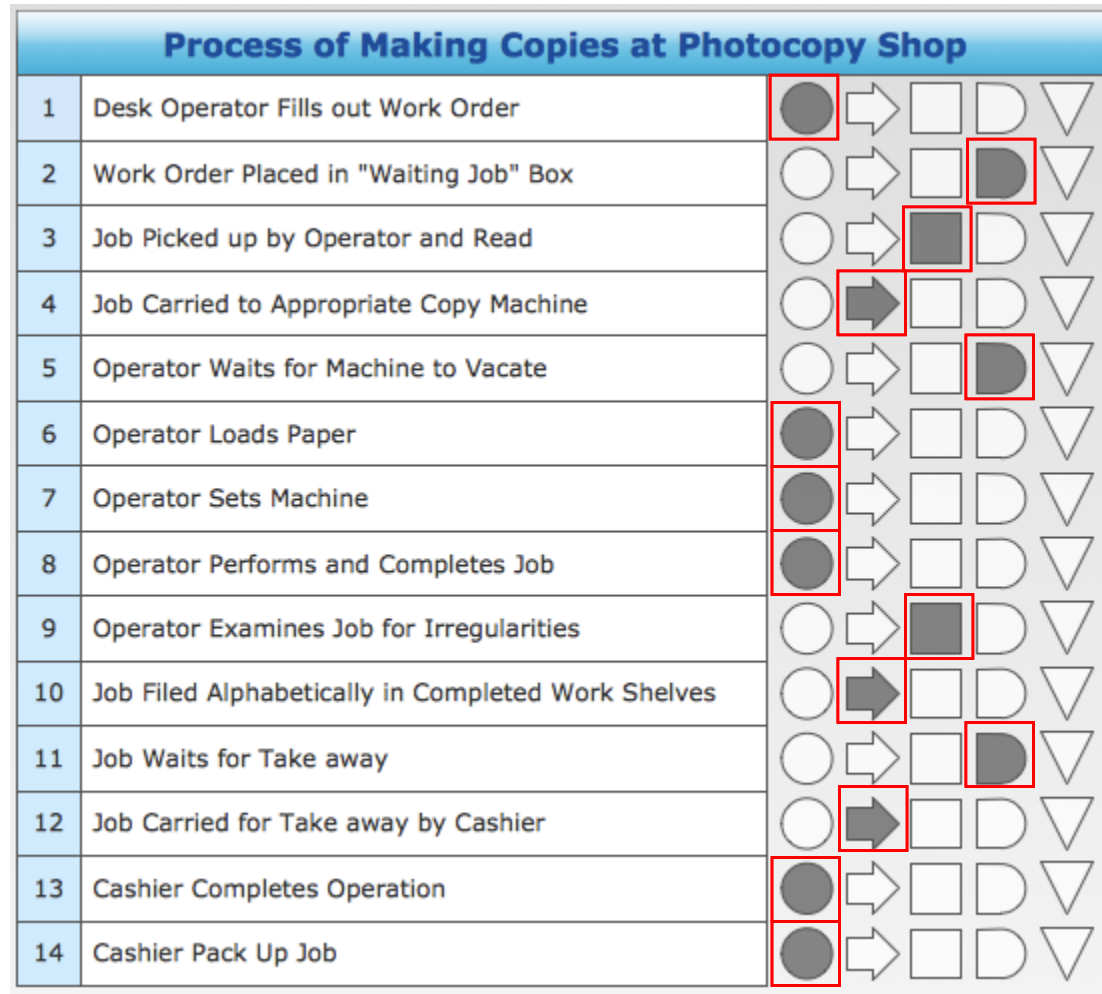
Process Flow Diagram Template



Symbols used for flow process charts

 <p>Inbound goods</p> <p>Information or goods coming into a company</p>	 <p>Inspection/ measurement</p> <p>Goods or information have to be evaluated, for example, a quality check</p>	 <p>Processing</p> <p>Activity or task such as entering data or e-mailing customer</p>	 <p>Decision</p> <p>Process flow can split according to whether the choice is Y or N</p>	 <p>Transportation</p> <p>Movement of physical goods or information such as a memo transported by post</p>	 <p>Delay</p> <p>Occurs when processing is delayed through lack of resources</p>
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Each symbol in the chart refers to a particular operation within the overall process.



Effort duration analysis

- Effort duration analysis is an approach that can be used to calculate the overall efficiency of a process when we have performed a detailed analysis
- It is given by:

$$\text{Efficiency} = \frac{\Sigma(T(\text{effortontasks}))}{T(\text{totalprocesstime})}$$

- This measure can be used to mark activities that add value to the customer rather than simply being administrative.

Effort duration



Effort duration analysis

No.	Task description	Chart symbols	Distance (m)	Average time (hours)
1	Receive invoice, stamp date	●⇒□D▼	–	0.1
2	To first payable clerk	○➡□D▽	50	5
3	On first payable clerk's desk	○⇒□■▽	–	1
4	Write and attach purchase order	●⇒□D▽	–	0.1
5	To cost accountant	○➡□D▽	20	5
6	On cost accountant's desk	○⇒□■▽	–	5
7	Code to appropriate job number	●⇒□D▽	–	0.1
8	Return to first payable clerk	○➡□D▽	20	5
9	On first payable clerk's desk	○⇒□■▽	–	1
10	Make copies	●⇒□D▽	–	0.1
11	To Managing Director	○➡□D▽	200	5
12	On Managing Director's desk	○⇒□■▽	–	48
13	Reviewed and approved by MD	●⇒□D▽	–	0.1
14	To second payable clerk	○➡□D▽	200	5
15	On second payable clerk's desk	○⇒□■▽	–	1
16	Add vendor number and due date	●⇒□D▽	–	0.1
17	Write to accounts payable ledger in accounting systems	●⇒□D▽	–	0.5
18	Pay invoice – write cheque	●⇒□D▽	–	0.1
19	To file clerk	○➡□D▽	20	5
20	On file clerk's desk	○⇒□■▽	–	1
21	File invoice	●⇒□D▽	–	0.1

$\Sigma (T(\text{total process time}))=88.3 \text{ hrs}$

Effort duration analysis

No.	Task description	Chart symbols	Distance (m)	Average time (hours)
1	Receive invoice, stamp date	●⇒□D▼	–	0.1
2	To first payable clerk	○➡□D▼	50	5
3	On first payable clerk's desk	○⇒□■▼	–	1
4	Write and attach purchase order	●⇒□D▼	–	0.1
5	To cost accountant	○➡□D▼	20	5
6	On cost accountant's desk	○⇒□■▼	–	5
7	Code to appropriate job number	●⇒□D▼	–	0.1
8	Return to first payable clerk	○➡□D▼	20	5
9	On first payable clerk's desk	○⇒□■▼	–	1
10	Make copies	●⇒□D▼	–	0.1
11	To Managing Director	○➡□D▼	200	5
12	On Managing Director's desk	○⇒□■▼	–	48
13	Reviewed and approved by MD	●⇒□D▼	–	0.1
14	To second payable clerk	○➡□D▼	200	5
15	On second payable clerk's desk	○⇒□■▼	–	1
16	Add vendor number and due date	●⇒□D▼	–	0.1
17	Write to accounts payable ledger in accounting systems	●⇒□D▼	–	0.5
18	Pay invoice – write cheque	●⇒□D▼	–	0.1
19	To file clerk	○➡□D▼	20	5
20	On file clerk's desk	○⇒□■▼	–	1
21	File invoice	●⇒□D▼	–	0.1

$$\Sigma (T(\text{effort on tasks})) = 1.3 \text{ hrs}$$

Effort duration analysis (example)

$$\sum (T(\text{effortontasks})) = 1.3 \text{ hrs}$$

$$\sum (T(\text{totalprocesstime})) = 88.3 \text{ hrs}$$

$$\text{Efficiency} = 1.47\%$$

Effort duration



Effort duration analysis

No.	Task description	Chart symbols	Distance (m)	Average time (hours)
1	Receive invoice, stamp date	●⇒□D▼	–	0.1
2	To first payable clerk	○⇒□D▼	50	5 X
3	On first payable clerk's desk	○⇒□■▼	–	1
4	Write and attach purchase order	●⇒□D▼	–	0.1
5	To cost accountant	○⇒□D▼	20	5 X
6	On cost accountant's desk	○⇒□■▼	–	5
7	Code to appropriate job number	●⇒□D▼	–	0.1
8	Return to first payable clerk	○⇒□D▼	20	5 X
9	On first payable clerk's desk	○⇒□■▼	–	1
10	Make copies	●⇒□D▼	–	0.1
11	To Managing Director	○⇒□D▼	200	5 X
12	On Managing Director's desk	○⇒□■▼	–	48
13	Reviewed and approved by MD	●⇒□D▼	–	0.1
14	To second payable clerk	○⇒□D▼	200	5 X
15	On second payable clerk's desk	○⇒□■▼	–	1
16	Add vendor number and due date	●⇒□D▼	–	0.1
17	Write to accounts payable ledger in accounting systems	●⇒□D▼	–	0.5
18	Pay invoice – write cheque	●⇒□D▼	–	0.1
19	To file clerk	○⇒□D▼	20	5 X
20	On file clerk's desk	○⇒□■▼	–	1
21	File invoice	●⇒□D▼	–	0.1

$\Sigma (T(\text{totalprocesstime}))=58.3 \text{ hrs}$

Effort duration analysis (example)

$$\underline{\sum (T(\text{effort on tasks})) = 1.3 \text{ hrs}}$$

$$\sum (T(\text{total process time})) = 58.3 \text{ hrs}$$

$$\text{Efficiency} = 2.22\%$$

Effort duration



Effort duration analysis

No.	Task description	Chart symbols	Distance (m)	Average time (hours)
1	Receive invoice, stamp date	●⇒□D▽	–	0.1
2	To first payable clerk	○⇒□D▽	50	5 X
3	On first payable clerk's desk	○⇒□■▽	–	1
4	Write and attach purchase order	●⇒□D▽	–	0.1
5	To cost accountant	○⇒□D▽	20	5 X
6	On cost accountant's desk	○⇒□■▽	–	5 X
7	Code to appropriate job number	●⇒□D▽	–	0.1
8	Return to first payable clerk	○⇒□D▽	20	5 X
9	On first payable clerk's desk	○⇒□■▽	–	1
10	Make copies	●⇒□D▽	–	0.1
11	To Managing Director	○⇒□D▽	200	5 X
12	On Managing Director's desk	○⇒□■▽	–	48 X
13	Reviewed and approved by MD	●⇒□D▽	–	0.1
14	To second payable clerk	○⇒□D▽	200	5 X
15	On second payable clerk's desk	○⇒□■▽	–	1
16	Add vendor number and due date	●⇒□D▽	–	0.1
17	Write to accounts payable ledger in accounting systems	●⇒□D▽	–	0.5
18	Pay invoice – write cheque	●⇒□D▽	–	0.1
19	To file clerk	○⇒□D▽	20	5 X
20	On file clerk's desk	○⇒□■▽	–	1
21	File invoice	●⇒□D▽	–	0.1

2.5

$\Sigma (T(\text{total process time})) = 58.3 \text{ hrs}$

24

Effort duration analysis (example)

$$\underline{\sum (T(\text{effort on tasks})) = 1.3 \text{ hrs}}$$

$$\sum (T(\text{total process time})) = 31.8 \text{ hrs}$$

$$\text{Efficiency} = 4.00\%$$

Effort duration

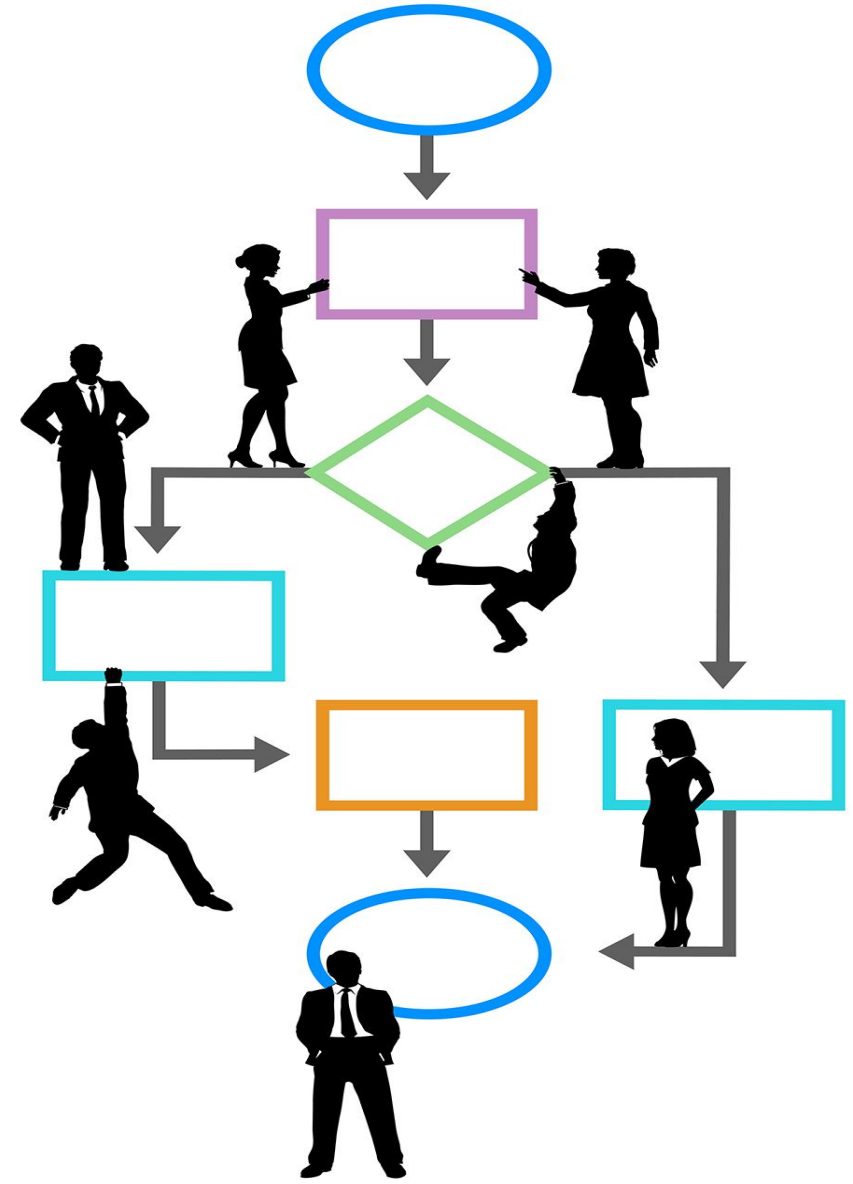


Important

The ultimate goal when modelling and improving your processes is to make them better and more effective

Business process improvement (BPI)

- This refers to optimizing existing processes, typically coupled with enhancements in information technology.
- It is less radical approach to organizational transformation which are also referred to as 'business process innovation'.
- Care should be taken not to fall into the trap of simply using technology to automate existing processes which are sub-optimal



Business process re-engineering' (BPR)

- The fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, measures of performance, such as cost, quality, service, and speed.
- The goal is to optimize end-to-end processes and eliminate tasks that do not provide the customer with value.



Validating a new process model

- Whichever method has been used to arrive at the process definition, we need to check that the process definition is realistic.
- Once new processes have been established they are sanity checked by performing a 'talk-through, walk-through and run-through'



Talk-through

Here, the design team will describe the proposed business process as a model in which different business objects interact.



Walk-through

- Once the model has been adjusted, the walk-through stage involves more detail in the scenario and the design team will role-play the services the objects provide.
- In general, a walkthrough has one or two broad objectives: to gain feedback about the objects; and/or to familiarize the audience with the objects



Run-through

- Finally, run-through stage is a quality check in which no on-the-spot debugging occurs – just the interactions between the objects as described.



