

Component 10 – Fundamentals of Health Workflow Process Analysis and Redesign

Unit 2-2 – Process Mapping Diagramming Tools

This material was developed by Duke University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number H240C000024.

Process Mapping Concepts

Model: a representation of reality

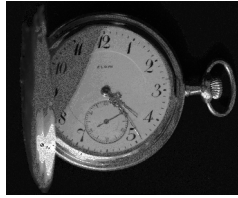
“Essentially, all models are wrong, but some
are useful.”

—George Box, industrial statistician



Public domain photograph
obtained from <http://en.wikipedia.org>

Different Models



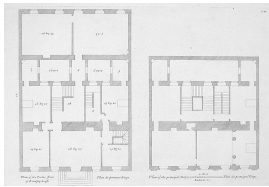
(Left) Public domain photograph by Hannes Grobe, (Right) Public domain photograph by [Bananenfalter](#) obtained from <http://commons.wikimedia.org/wiki>

Models represent different aspects and features of reality. Models can have differing levels of detail, and represent different perspectives. The best model is the one that communicates the needed information accurately.

Different Purposes

Representation of reality

Blueprint



Public domain images (left) photograph of a house by Igor Kravtchenko, (right) blueprint, obtained from <http://commons.wikimedia.org/wiki/>

Models have different purposes. The features included, the level of detail, and the perspective reflect the purpose for which the model was created. The best model is the one that communicates the needed information accurately.

Process Diagrams as Abstracts and Templates

- Some process diagrams are used to visualize the sequence of tasks and to identify tasks that are inefficient
 - Process diagram used as an abstraction
- Some process maps are used as templates, for example
 - As part of software development
 - As part of process redesign
- Process maps as abstracts and templates document and model the requirements
 - Serve as “the holder of the knowledge”

Physical and Mental Process Steps

	Physical Steps	Mental Steps	Information Processing
Human	X	X	Physical Mental
Machine	X		Physical

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Aspects of Work and Information Processes that we Diagram

- Context
- Process steps
- Information flow
- Information content
- Information transformation
- Step sequence, control, and status
- Who or what performs the process steps

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Diagramming a Process

First: Identify the purpose for which the diagram will be used

Second:

- Get clear about which process aspects need to be visualized, choose diagram type
- Decide the required detail level

Third: Pick appropriate notation

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Process Diagramming Methods

So Many to Choose From

- Several methods and notations for diagramming processes exist
 - Main ones include:
 - ISO 5807 Flow Charting
 - Yourdon including
 - Yourdon-code
 - Yourdon-DeMarco)
 - Gane-Sarson
 - Unified Modeling Language (UML)
 - E-R diagram
- They differ in notation and in the process aspects covered

Process Features

- Context
- Process steps
- Information flow
- Information content
- Information transformation
- Step sequence, control, and status
- Who or what performs the process steps

Methods for Diagramming Processes

Process Aspects	ISO 5807	Yourdon	Gane-Sarson	UML	E-R diagram
Context		X	X		
Process steps	X	X		X	
Data flow steps	X	X	X	X	
Information content		text	text	X	X
Data transformation	X	X	X	X	
Flow control and state	X		text	X	
Roles involved	X			X	

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Exercise

List the steps required to contact a health care facility and set up an appointment to meet with a specified team at the facility. Use those steps to create a flowchart.

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Recommended diagrams for healthcare facility workflow process and redesign

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Process Features

- **Context** → Yourdon Data Flow Diagram
- **Data Flow** → Yourdon Data Flow Diagram
- **Process steps** → ISO 5807 Flowchart
- Information content
- Information transformation
- **Step sequence, control and status**
- **Roles (who or what) performs the steps**

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Typical Workflow Diagramming Scenario

Need to diagram the process as it is

Context diagram to capture:

- The whole
- High-level data flow so that necessary data exchange is documented

ISO 5807 Flowchart to capture:

- Process steps
- Sequence and control of steps
- Roles performing steps

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Cabarrus Health Alliance

- Robert Woods Johnson Foundation grant
- Public Health Informatics Institute
- Cabarrus Health Alliance (CBA) process analysis and improvement through information technology introduction.
- Excellent case study of using the methods⁷ described above to analyze and evaluate improvements in process and informatics for their Public Health Department.
- <http://www.cabarrushealth.org/CommonGround/>

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Summary

At this point you should be able to

- Explain two ways process diagrams are used as models
- Distinguish the physical steps from information flow in a healthcare process involving an EHR
- Choose an appropriate process diagram to model given aspects of a process

References

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