Activity Modeling with IDEF0

Operated by:
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&
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What You Will Gain Today
Seminar Objectives

- You will understand the benefits of IDEF0 modeling
- You will know IDEF0 Syntax and Rules
- You will know how to develop an IDEF0 model
- You will understand how to apply IDEF0 models to your enterprise
SOME COMMON PROBLEMS

- Complex Systems
- Unclear how things happen
- Inefficient
- Redundant
- Obsolescent
RESULTS & BENEFITS

BETTER COMMUNICATION

COMPLETE DESCRIPTION

INFORMATION MANAGEMENT

PROCESS IMPROVEMENT

ANALYSIS
IDEF0 COMPONENTS

ACTIVITIES

Develop
Info System
A2

ARROWS

Test Data

DIAGRAMS

HIERARCHY
ACTIVITIES

Each box (activity) has a *VERB* or *VERB phrase* name

Manufacture
Widget
ARROWS

Arrows are graphic components showing items flowing among the activities

Graphic: A solid line with a terminating arrow
This *NOUN* or *NOUN phrase* label is attached with a "squiggly" line.

(Unless the relationship is obvious).
ACTIVITIES & ARROWS

An arrow terminating on the left side of an activity is an *INPUT*

![Diagram]

An *INPUT* is something that the ACTIVITY either *consumes* or *changes*.
ACTIVITIES & ARROWS

An arrow originating on the right side of an activity is an *OUTPUT*.

An OUTPUT is the result of the ACTIVITY'S work.
ACTIVITIES & ARROWS

The collection of *Inputs* for an activity are called its ICOMs.
*Controls*  
*Outputs*  
*Mechanisms*

```
       C
```
```
       I
```
```
Manufacture
Widget

       A0
```
```
       M
```
```
       O
```
BRANCH ARROWS

\[ \text{means} \]

\[ \text{means} \]
DIAGRAMS

• STANDARD FORMS
• FORM LAYOUT
  – Processes
  – Flows
• HIERARCHY
The Message Field contains the primary message to be conveyed, normally with an IDEF graphical language.

Can be used for any purpose: glossary, checklists, notes, sketches, etc.
EXAMPLE

1. Place Activity Boxes for designing, manufacturing, and inspecting a widget.
EXAMPLE

2. Place Arrows (ICOMs)
HIERARCHY

An IDEF0 model is a *Hierarchy* of diagrams:
SAMPLE A-0 DIAGRAM

The A-0 Diagram provides the context for the entire model:

- General
- One Activity Box
- Node Number: A0
HIERARCHY

The child is a more detailed exposition of what is described in its parent activity:

- A-0 Diagram
- One Activity Box
- General

- Child of A-0
- 3-6 Activity Boxes
- Some Detail
- Node Numbers: A1, A2, A3, A4, A5, A6
A-0 DIAGRAM DECOMPOSITION

The process of developing a new child diagram is called DECOMPOSITION. Decomposition involves EXPLODING an activity into more detail.

IEEE & Company Stds

Customer Orders
Raw Materials
Electrical Components

Activity Boxes Have Not Been Placed Yet.

Electric Motors
Documentation

The Boundary ICOMs of the parent activity will appear on the child diagram
A-0 DIAGRAM DECOMPOSITION

Next, place the activity boxes (minimum of 3, maximum of 6).

IEEE & Company Std.

Design Electric Motor A1

Customer Orders → Raw Materials → Electrical Components →

Fabricate Electric Motor A2 →

Electric Motors → Documentation

Test Electric Motor A3

Engrg & Mfg Staff → CAD Tools → Mfg Facility
A-0 DIAGRAM DECOMPOSITION

Finally, add INTERNAL ICOMs.

IEEE & Company Stds

Design Stds

Customer Orders

Design Engineers

Raw Materials

Electrical Components

Blueprints

CAD Tools

Mfg Stds

New Motor

Test Stds

Documentation

Electric Motors

Motor Needing Rework

Mfg. Facility

Mfg Engineers & Staff

Test Engineers & Staff

Test Equipment

A1

Design Electric Motor

A2

Fabricate Electric Motor

A3

Test Electric Motor
A1 BOX DECOMPOSITION

The ICOMS terminating on the A1 Box become the boundary ICOMS for its decomposition.

Customer Orders → Design Stds → Test Requirements → Blueprints

Design Engineers → CAD Tools
ICOMs also can be decomposed, via bundling.

Boundary ICOM is split into more detail.
USING IDEF0 MODELS

Developing a Complete Activity Description

Use to Document Organization’s Activities.

Use for Communicating Among Groups.
A Graphical Language
USING IDEF0 MODELS

Information Systems

- Requirements Definition
- Analysis
- Design
- Implementation
- Test & Evaluation

- Use as Part of System Analysis
- Identify Data Flows within System
- Next Step--Develop Data Model (IDEF1x)
SUMMARY

- Identified Problems
- Described Approach
- Identified Benefits of Activity Modeling
- Learned IDEF0 Modeling