

# Integration Definition (IDEF)

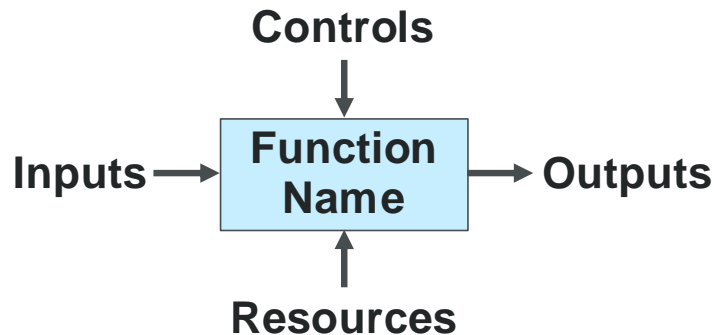
## Problem

How to graphically model a process?

## Difficulty

Some training required

- **Integration Definition (IDEF)** refers to a family of 16 modeling languages used in systems and software engineering; only some of them exist.
- **IDEF0** (for function modeling) is the most commonly used IDEF, it models the actions, activities, and decisions of a system.
- In IDEF diagrams each function (e.g., activity) is shown as a box. Box locations have specific roles: top (controls), left (inputs), right (outputs), and bottom (resources).



Existing process

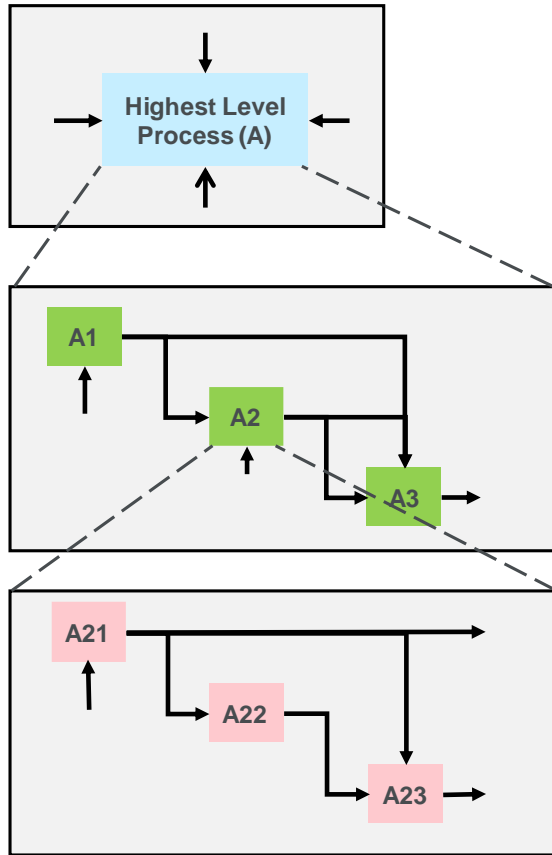
## IDEF Process

Graphical representation of the process

1. Select a process
2. Select a modeling language, one of:
  - IDEF0 Function modelling
  - IDEF1 Information modelling
    - IDEF1X Data modelling
  - IDEF2 Simulation model design
  - IDEF3 Process description capture
  - IDEF4 Object-oriented design
  - IDEF5 Ontology description capture
  - IDEF6 Design rationale capture
  - IDEF8 User interface modelling
  - IDEF9 Business constraint discovery
  - IDEF14 Network design
- Obtain a hierarchical collection of diagrams.
- Use the diagrams for analysis or simulation.

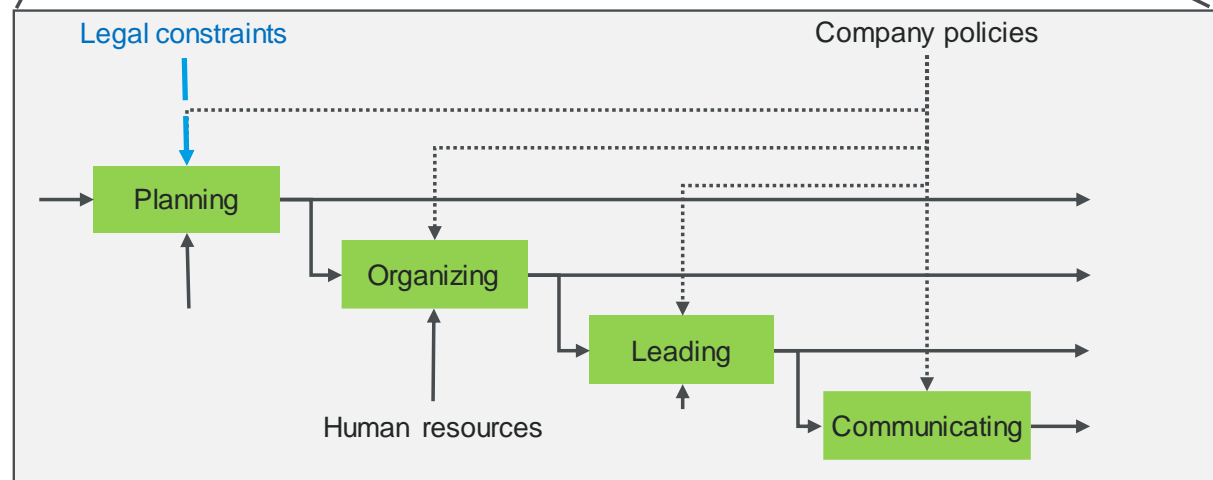
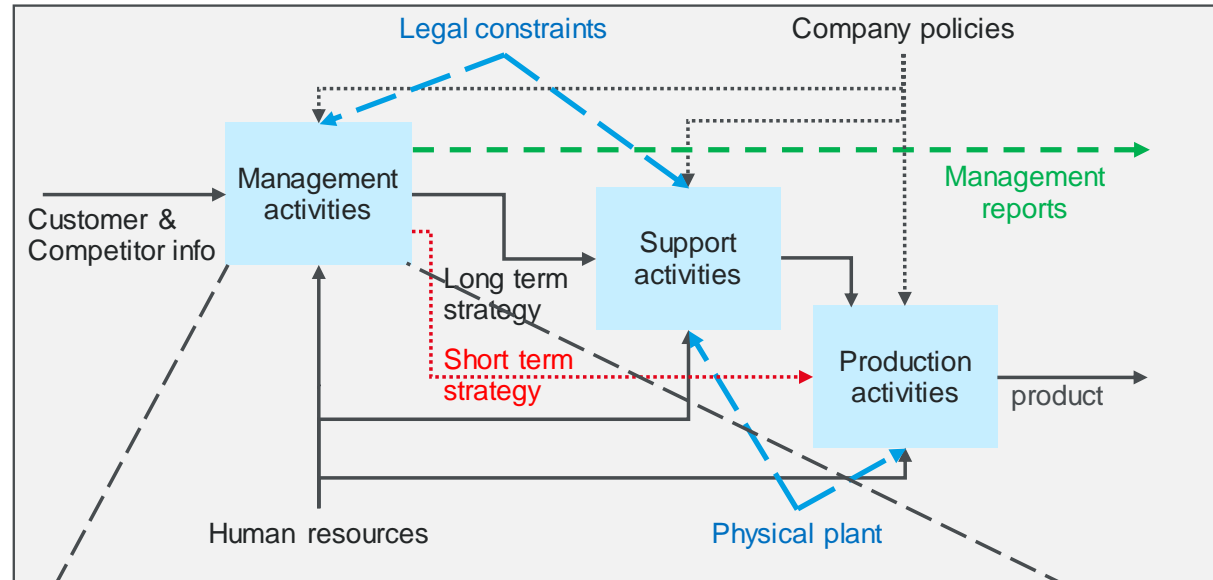
# IDEF – Example – Manufacturing Company Process

## Hierarchical decomposition



Lower level processes

## Notational IDEF0 (many details missing)



# IDEF – Notes

## Slide 1

1. IDEF was developed by the United States Air Force in the 1970s.
2. “Pure” IDEF0 isn't used much today, but there are many popular derivatives and variants.
3. “Ordinary” business process flow charts often miss the vertical inputs: business policies and rules, management constraints, equipment, facilities, and supporting groups (e.g., HR, IT)
4. An IDEF0 model, at every level of detail, ignores details within a process and focuses on the process interfaces.
5. IDEF0 has been proven effective via years of government and private industry use.
6. IDEF0 diagrams have many components: Arrow, Box, Context, Decomposition, Fork, Function, Join, and Node.
7. There are many computer packages that can create IDEF0 diagrams.
8. Integration Definition for Information Modeling (IDEF1x), supplements IDEF0 for data-intensive systems

## Slide 2

1. Left figure:
  - A. This shows what a hierarchical decomposition looks like.
  - B. All processes do not need to be expanded to the same level of detail.
2. Right figure
  1. Only a few of the many links for a Manufacturing Company are shown. For many companies, there may be a dozen links for the boxes shown.