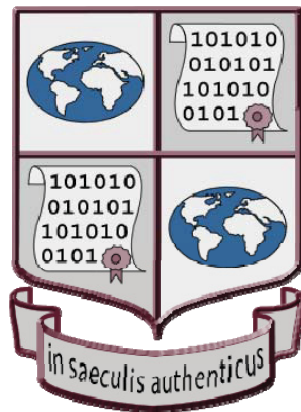


# InterPARES 2 Project

International Research on Permanent Authentic Records in Electronic Systems



## Integrated Definition Function Modeling (IDEFØ): A Primer

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InterPARES 2 Project

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# Integrated Definition Modeling (IDEFØ)

- “IDEFØ is a modeling technique based on combined graphics and text that are presented in an organized and systematic way to gain understanding, support analysis, provide logic for potential changes, specify requirements, or support systems level design and integration activities.”

Source: US Secretary of Commerce. *Draft Federal Information Processing Standards Publication 183*, 21 Dec 1993.



# General Characteristics

- IDEFØ modeling process creates a “functions” model composed of a hierarchical series of diagrams that gradually display increasing levels of detail describing functions/activities and their interfaces within the context of a system.
- Models the decisions, actions and activities of a system or an organisation.
- Provides a type of "blueprint" of activities and their interfaces.
- Reflects how system activities interrelate and operate just as the blueprint of a product reflects how the different pieces of a product fit together.



# IDEFØ Modeling Process

- Top-down, general-to specific modeling approach.
- The most general features come first in the hierarchy, as the whole top-level activity is decomposed into sub-activities that compose it, and those sub-activities, in turn, are further decomposed until all of the relevant detail of the model's whole viewpoint is adequately exposed or described.
- Representation of activities is non-temporal.



# IDEFØ Strengths

- Useful for establishing the overall scope on an analysis.
- Provides a graphic, structured representation of the activities in a system, supplemented with textual description.
- Provides a comprehensive and expressive analysis to any level of detail required.
- Helps isolate and describe what activities are performed and what is needed to perform them.



# IDEFØ Weaknesses

- IDEFØ models are often so concise that they are understandable only if the reader is a domain expert or has participated in the model development.
- Because of the box & arrow interface, activity sequencing can, without intent, be imbedded into the model.
- Tendency of IDEFØ models to be interpreted temporally as representing a sequence of activities.



# Top-Level Context Diagram

- Each IDEFØ model has a top-level context diagram (A-0), on which the subject of the model is represented by a single box with its bounding arrows (i.e., inputs, controls, outputs, and mechanisms = ICOMS).
- The arrows on the A-0 diagram interface with activities outside the subject area to establish the model's focus.



# Top-Level Context Diagram

- A-0 diagram establishes the overall context for the model's viewpoint and purpose, which in turn helps to guide and constrain the creation of the model.
- The viewpoint determines what can be "seen" within the model context, and from what perspective.
- The statement of purpose expresses the reason why the model is created and actually determines the structure of the model.





# Key Definitions

- **Activity:** A function, process, or transformation identified by a verb or verb phrase that describes what must be accomplished.
- **Box:** A rectangle, containing a name and number; used to represent an activity.
- **Parent diagram:** A diagram that contains 3-5 parent boxes.
- **Child diagram:** A diagram with 3-5 child boxes that provide additional detail about a parent box. Every parent diagram (except A-0) is also a child diagram, since by definition each details a parent box. Hence, the primary hierarchical relationship is between a parent box and the child diagram that details it.

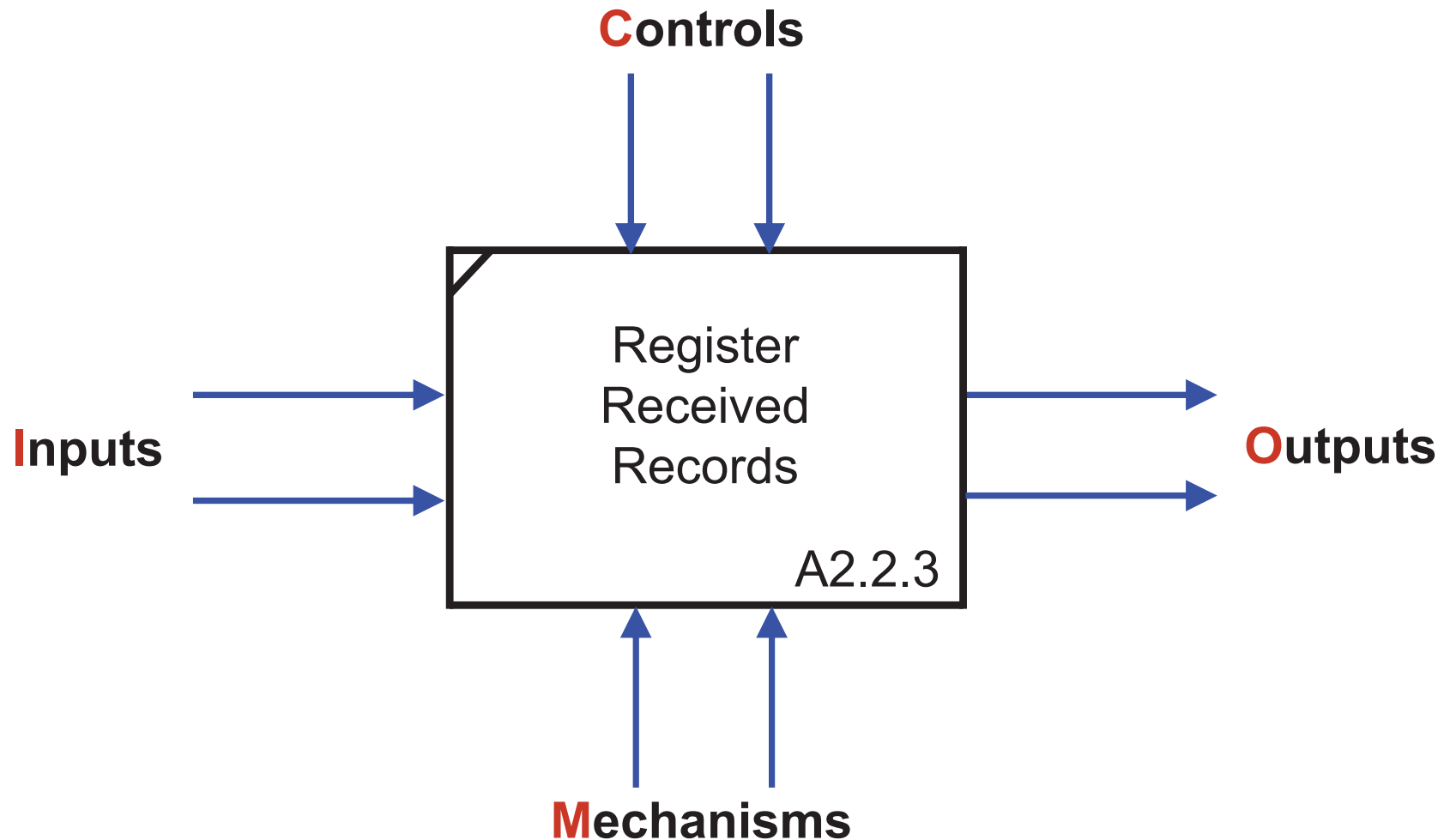


# Key Definitions (cont.)

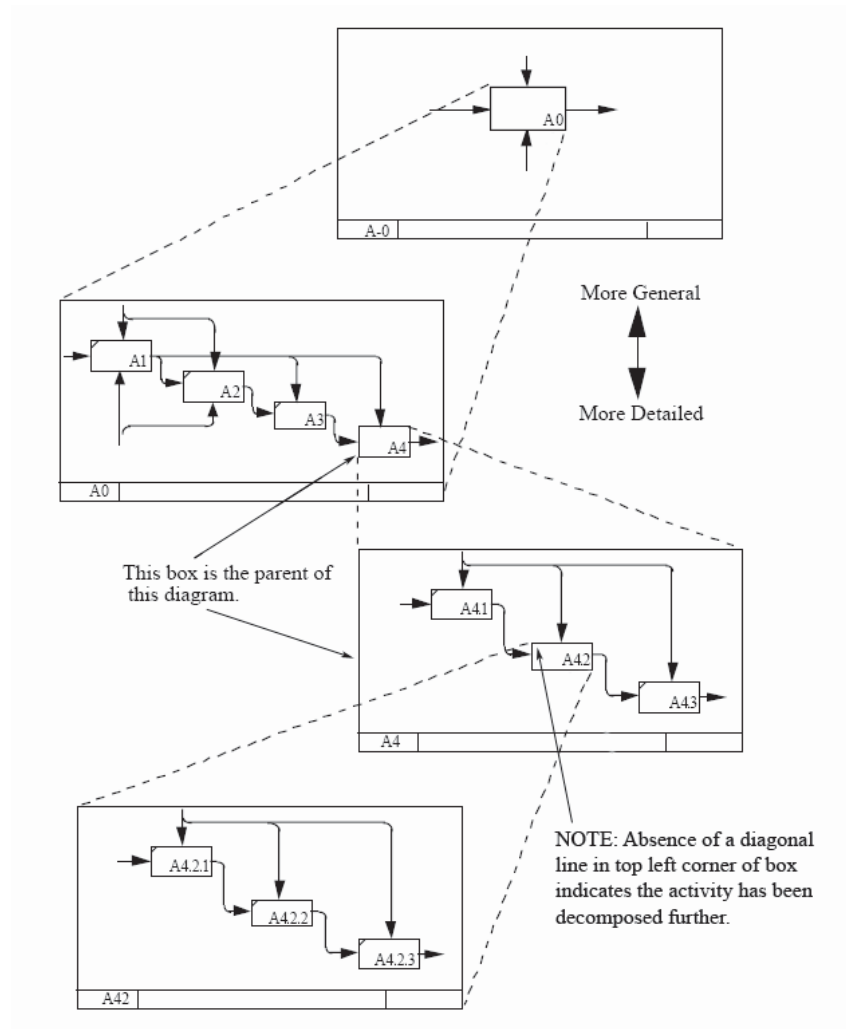
- **Arrows:** Directed lines, composed of one or more segments, that model conduits conveying data or objects from a source (no arrowhead) to a use (with arrowhead). There are 4 arrow classes: Inputs, Controls, Outputs, and Mechanisms.
- **Inputs:** Data or objects that are transformed by activities into outputs.
- **Controls:** The conditions required to produce correct outputs.
- **Outputs:** Data or objects produced by activities.
- **Mechanisms:** The means used to perform activities.



# ICOM Arrow Positions and Roles

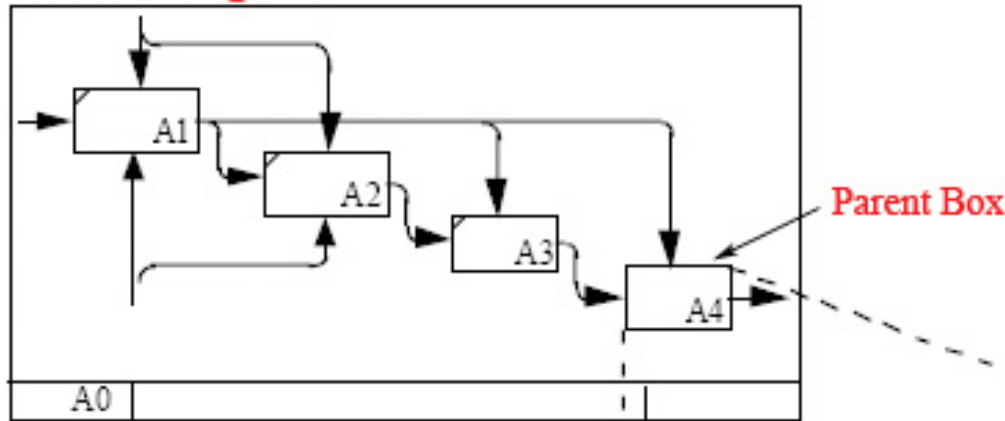


# Decomposition Structure



# Boundary Arrow Correspondence

Parent Diagram



Child Diagram

