



Work: **ISA8895 Implementation**
Section: **Function**
Chapter: **Physical Process Management**

Language: **English**

Version: **V3 - 05/2011**



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Research community www.controlchainmanagement.org



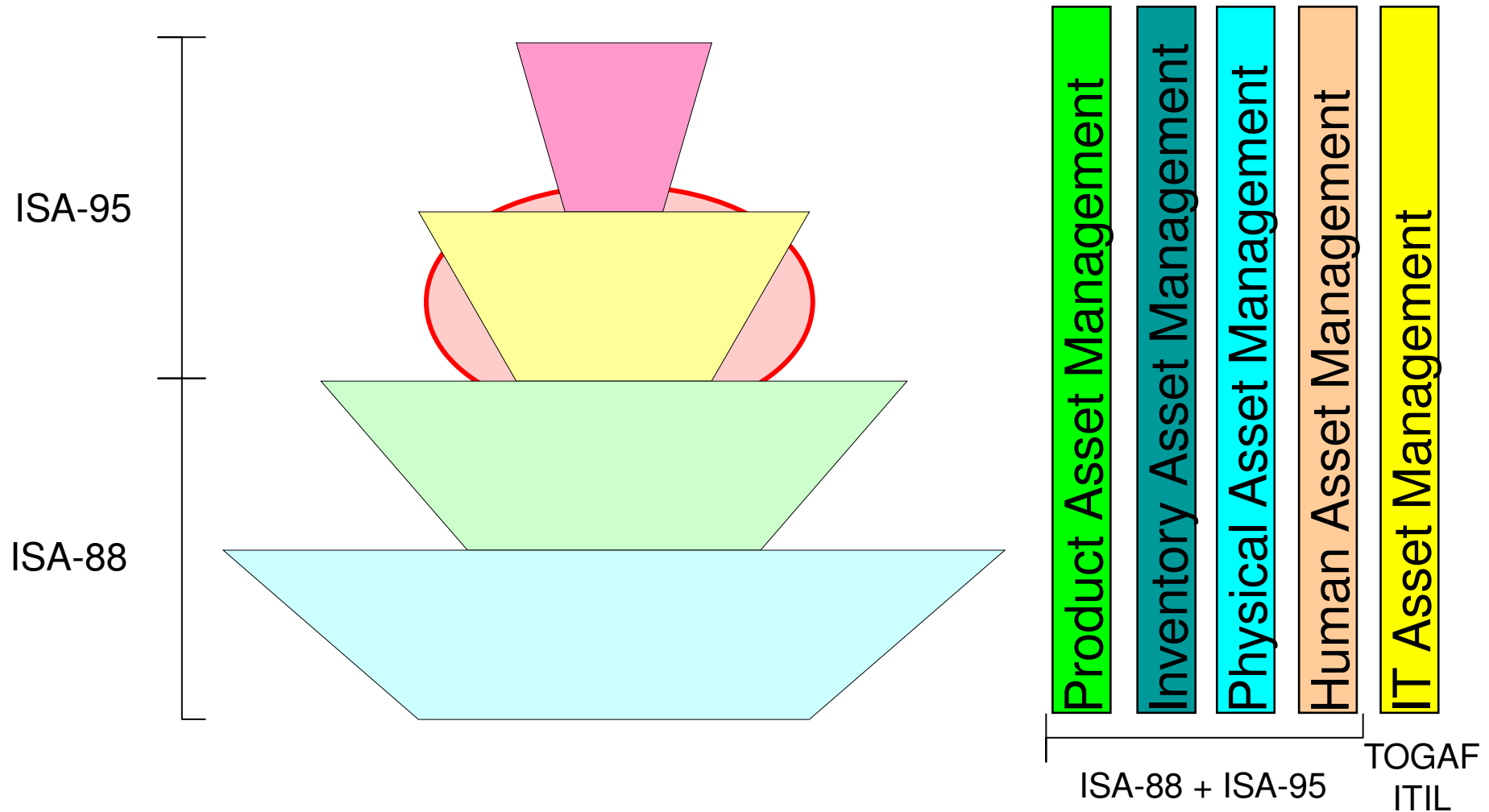
Consulting group www.controlchaingroup.com



Agenda

- Introduction
- **Segment (ISA95 Resource View)**
- **Segment (Extended)**
- **Exercise**

CC functional domains



Information Elements

| Domain sur l'icône | Model à ajouter | Standard | Information elements |
|--------------------------|--------------------|----------------|---|
| Product Asset | Product Product | ISA88 ISA95 | Product Hierarchy Product Definition |
| Inventory Asset | Material | ISA95 | Material Resources |
| Physical Asset | Physical Equipment | ISA88 ISA95 | Equipment Hierarchy Equipment Resources |
| Human Asset | Personnel | - ISA95 | Personnel Hierarchy Personnel Resources |
| Equipment Control | Procedural | ISA88 | Functional Hierarchy Equipment Procedural Elements |
| Physical Process Control | Procedural | ISA88 | Physical Processes / Procedural Elements Physical Process Transform Components |
| Physical Process Mngt | Segment | ISA95 | Segments |
| Operation Process Mngt | Operation Activity | ISA95 | Operation Processes Activities / Tasks |

Who's / What's concerned?

| PRM | Usr/Rsp | Usage | Typ.IT app |
|---|---------|---|------------|
| Cliquez sur l'icône pour ajouter un tableau | | | |
| Customer order processing | | | |
| Production planning & scheduling | X | | |
| Production control | R | | |
| Material and energy control | | | |
| Procurement | | | |
| Quality assurance | X | | |
| Product inventory control | | | |
| Product cost accounting | X | | |
| Product shipping administration | | | |
| Maintenance management | | | |
| Research & development | X | | |
| Engineering | X | 3_30_ISA8895_Function_PhysicalProcessManagement | 5 |



Agenda

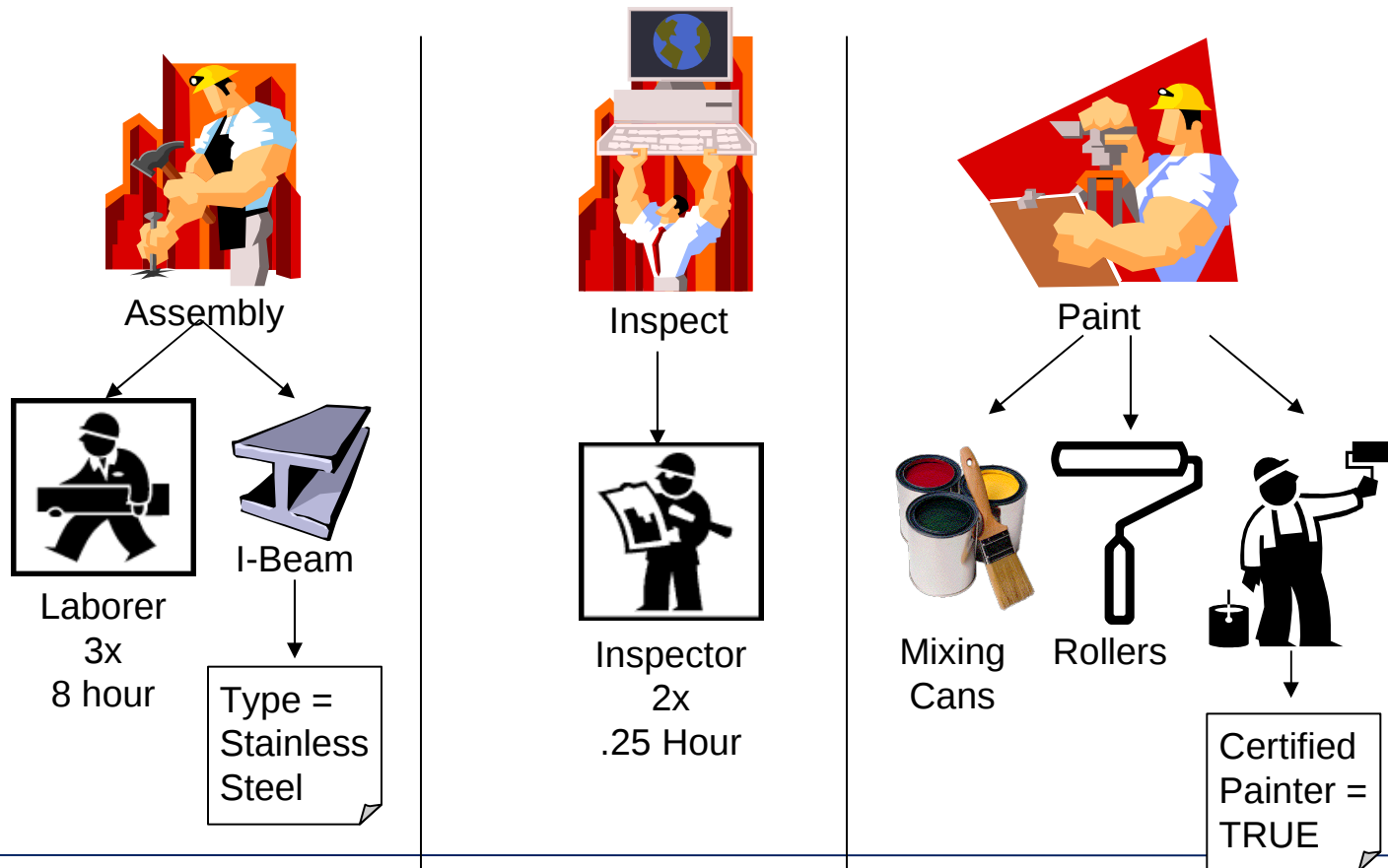
- Introduction
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ISA95 Segments

- **A segment describes a product related processing stage involved in**
 - Specification for the product definition
 - Description of the capability of the facility
 - Requirement for executing a specific production Request
- **In ISA-95, it currently**
 - Identifies the processing stage (its identifier)
 - describes the resources involved for its execution
- **Segment are logical views of the actual processing**
 - They can be defined hierarchically. A segment can
 - Correspond to the product itself (possibly involving the whole plant or even several plants)
 - Correspond to a single ISA88 phase

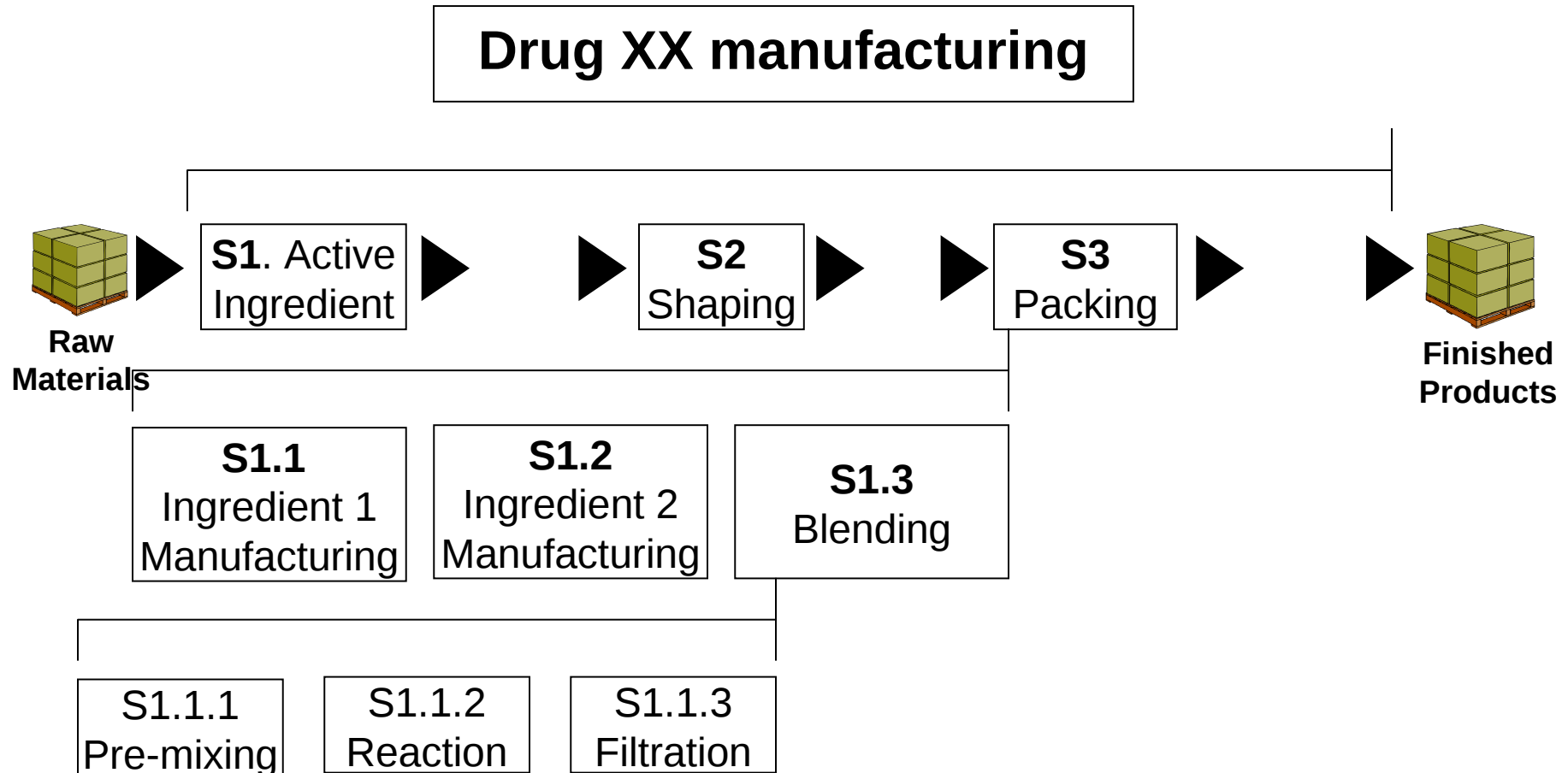
ISA95 Segments

- The picture below represents the process segment information



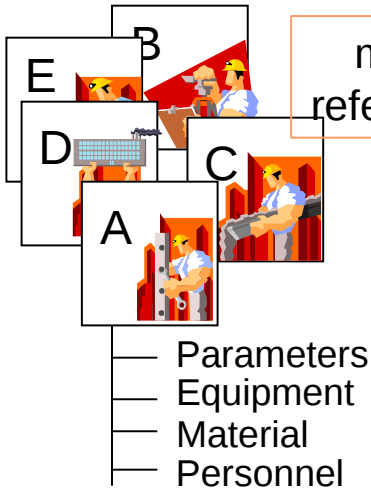
ISA95 Segments

- A logical Telescopic View of the Production System

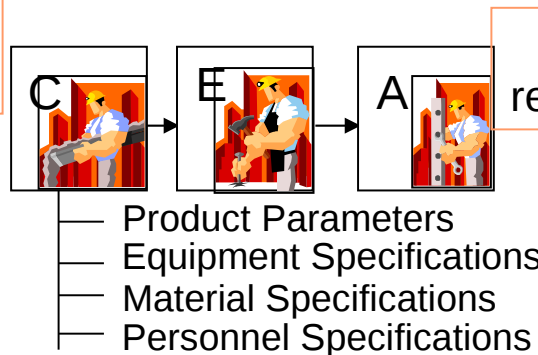


Use of Segments for planning purpose

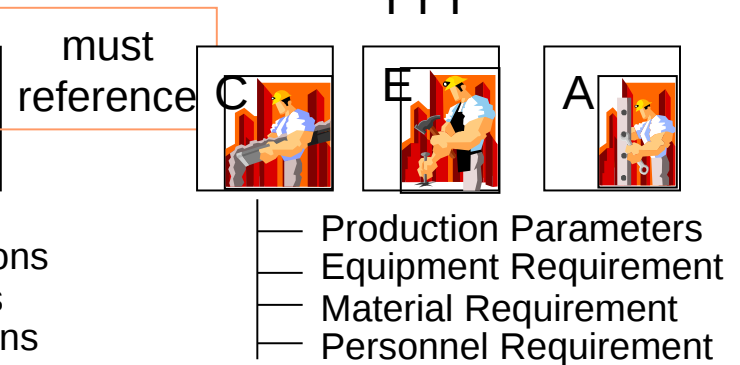
Collection of
Process Segments



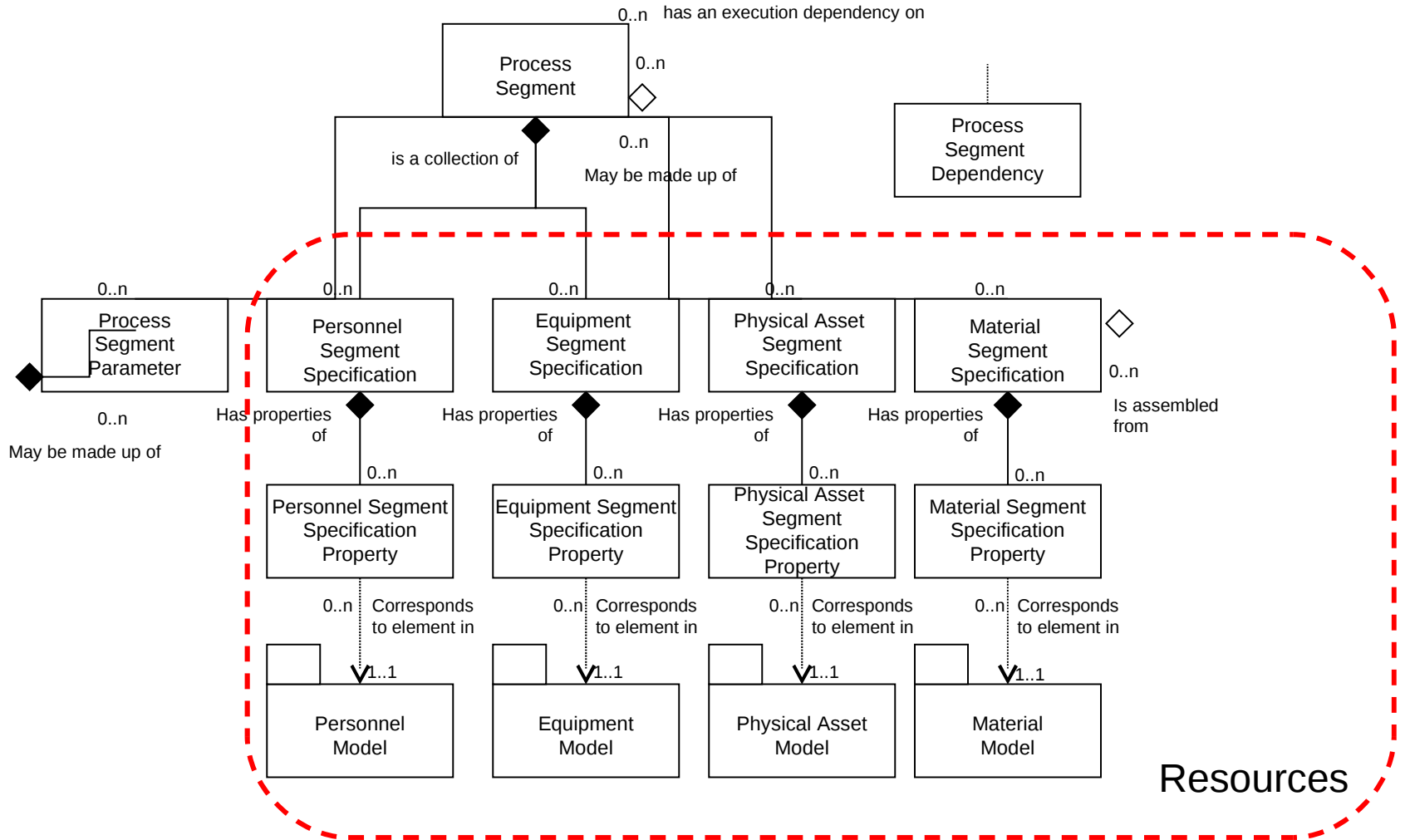
Product Segments
for a single product
definition, with routing
(e.g. Product YYY)



Segment Requirements
for a specific
production request
(e.g. Lot 123 of Product
YYY)



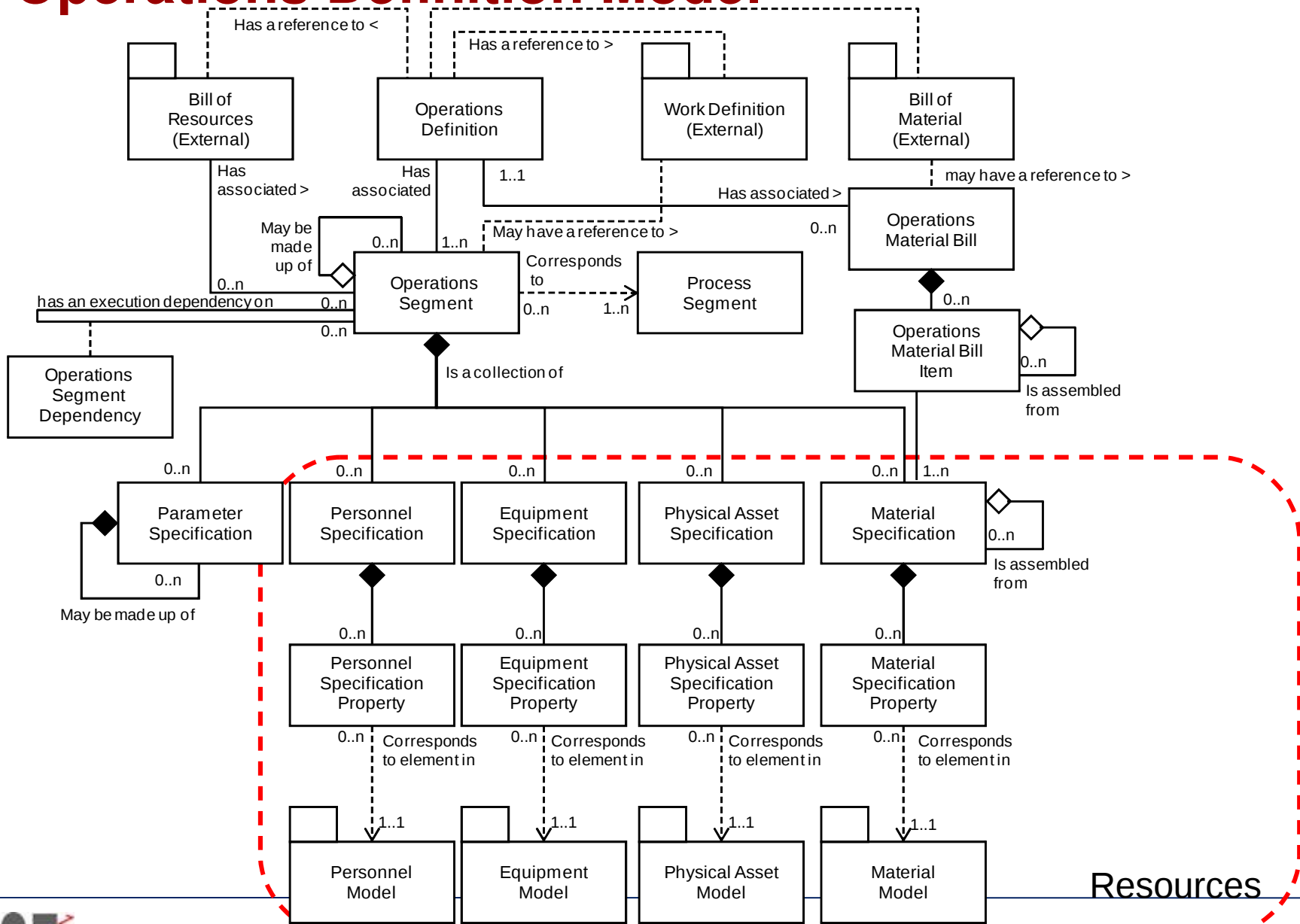
ISA-95 Process Segment Model



From ISA-88 Process Model to ISA95 ProductDefinition

- **ISA95 defines Segment as the breakdown of Operation physical activities**
 - Product Segment
 - Process Segment
 - Operation/Work Segment (futur)
- **The ISA-95 Segment model can address all stages of Product Lifecycle**
 - Equipment independent processing requirement (the current topic)
 - Process operation description
 - Facility's processing capabilities
- **It can implement ISA88 Process Elements defined in Product hierarchy model and described in EIR model**

Operations Definition Model

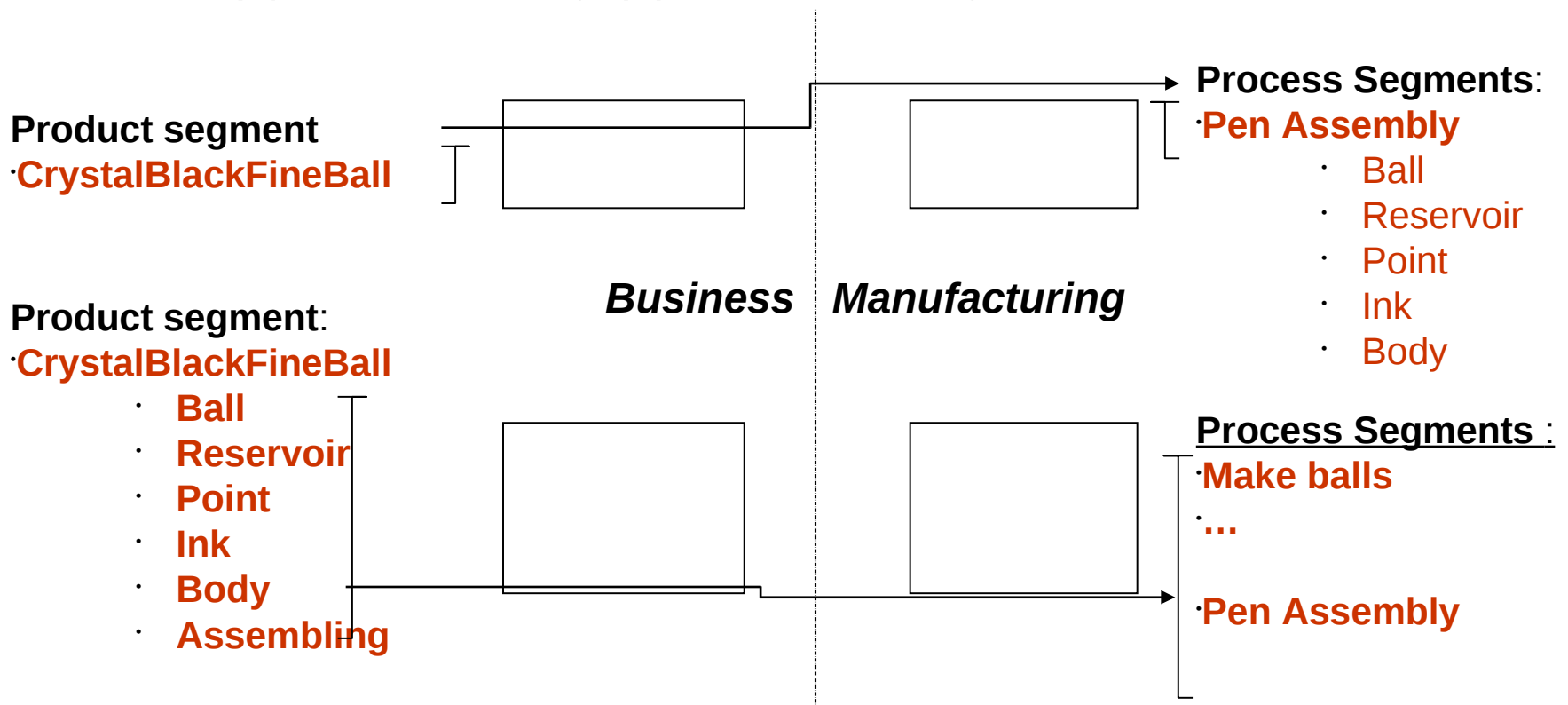


Process and Product Segments

- **Process segment: manufacturing capability**
 - Defines the manufacturing process available per segment
 - Gather the required resources to execute the defined production segments
- **Product Segment: manufacturing requirements**
 - Defines the product specifications per production segment
 - Details the required resources for this production segment
 - Personnel (ex:3 operators)
 - Equipment (ex:1 packing machine)
 - Materials (ex: 1500 bottles)
 - Parameters (ex: shape, size)
- **May correspond to ISA88.01 definitions: (exemples)**
 - Product segment --> Process stage (General/Site recipe)
 - Process Segment --> Unit Procedure (Master Recipe)

Product Segment vs Process Segment

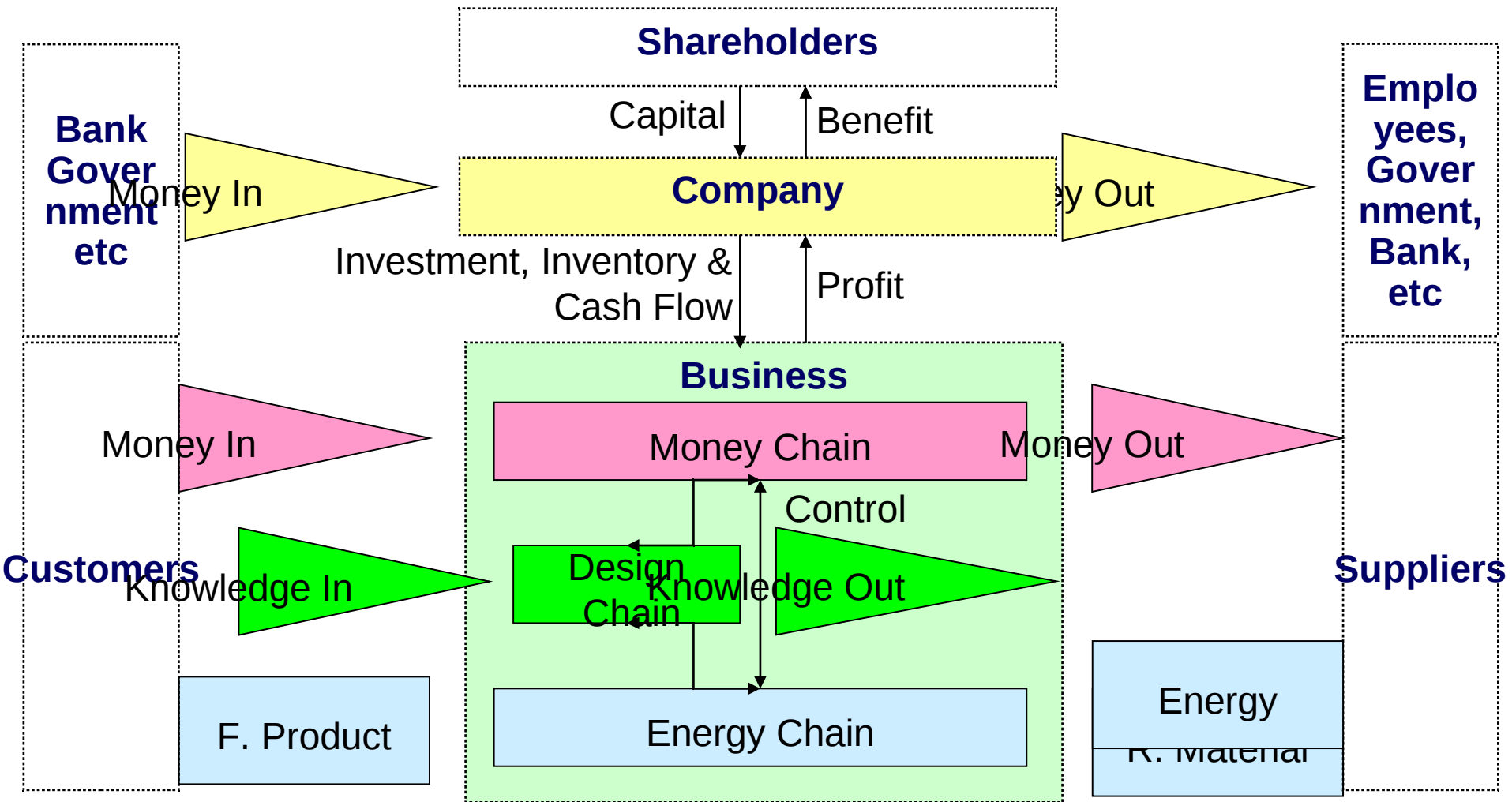
- More information at the Product Segment level =
 - (-) less information at the Process segment level,
 - (+) more flexibility (+) More exchanged information



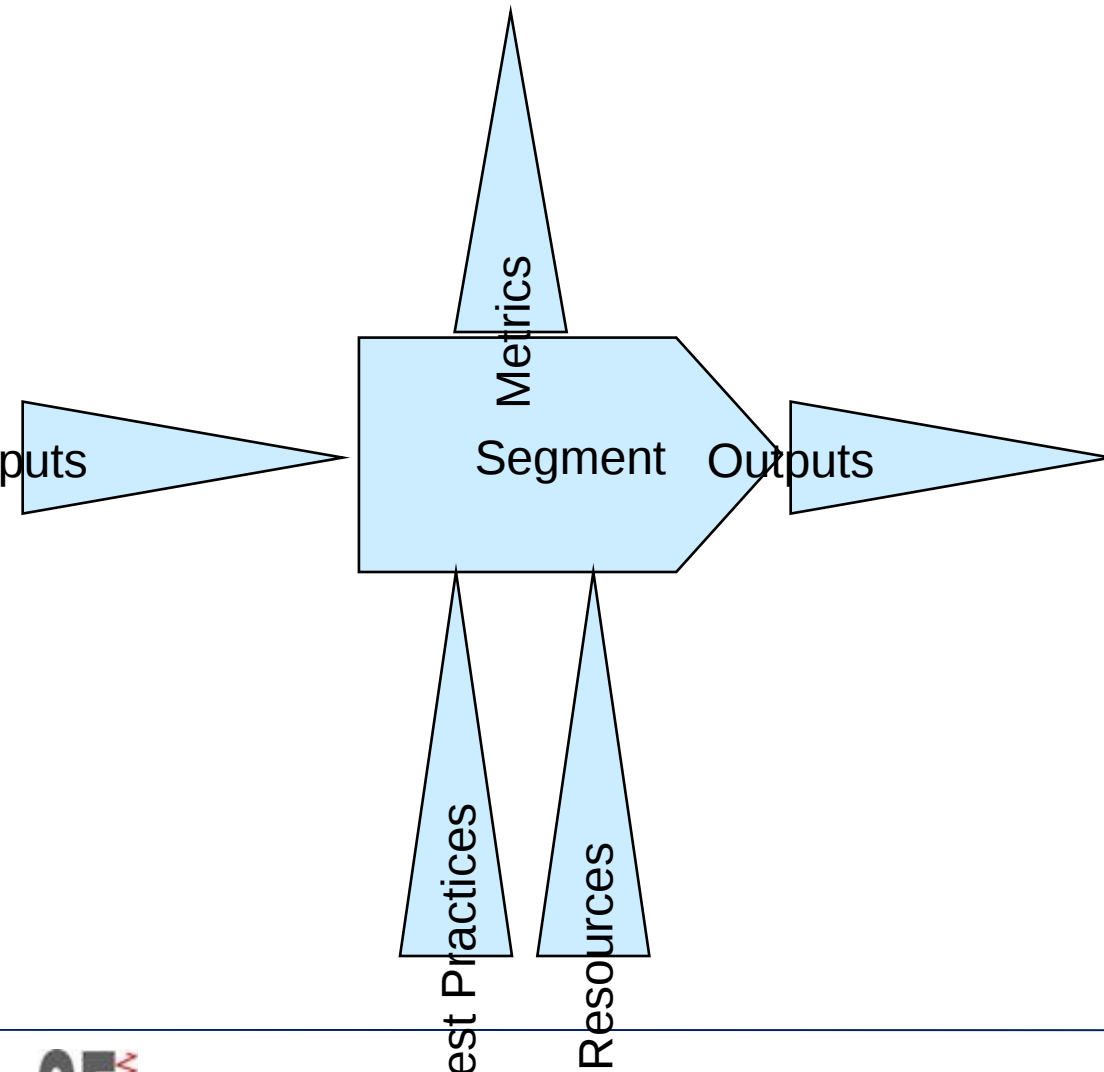
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Enterprise global model



Segment as a Process



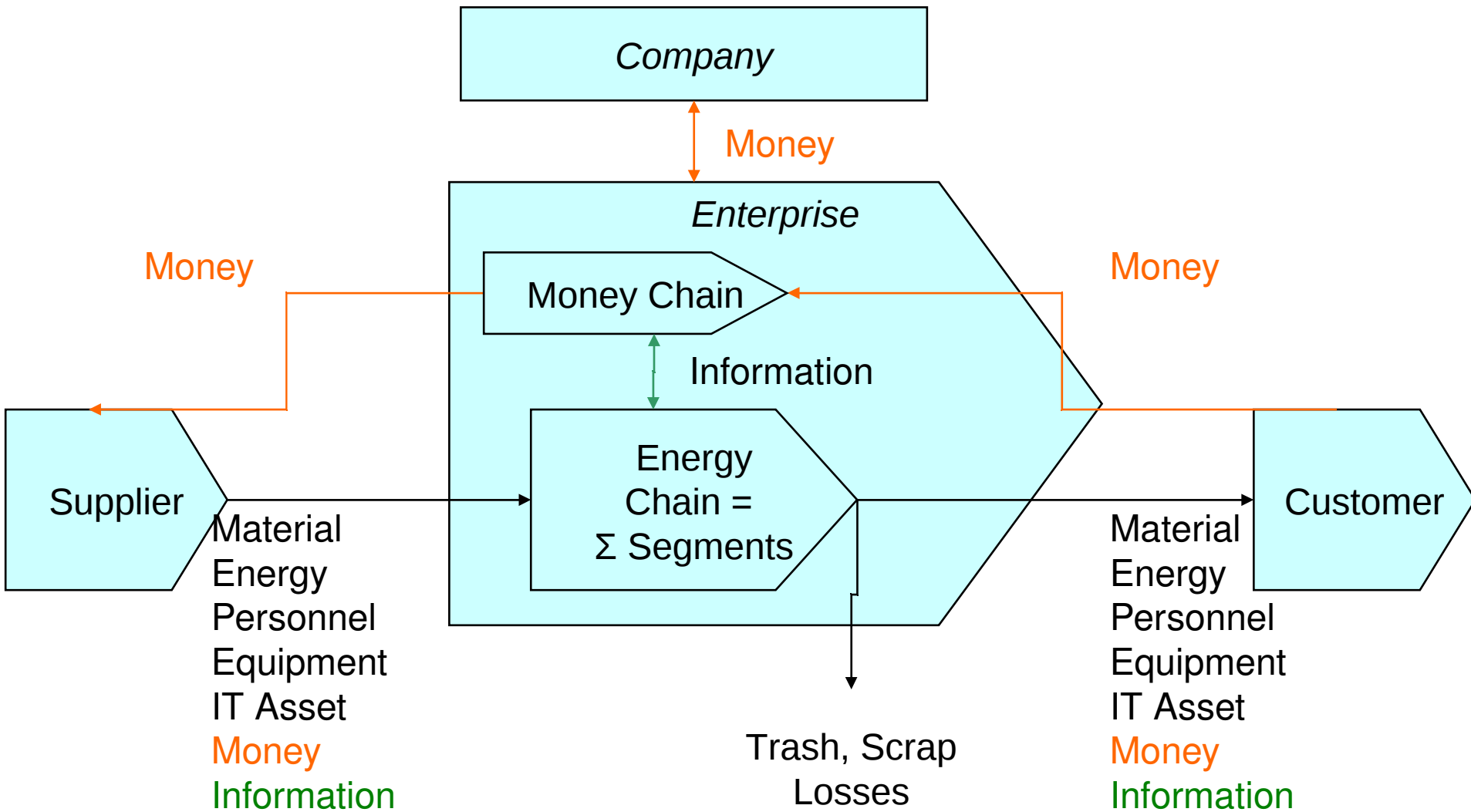
The Segment concept in ISA95 is one of the most powerful feature in ISA95.

Pragmatically defined as a grouping of resources, it in fact model the physical processes.

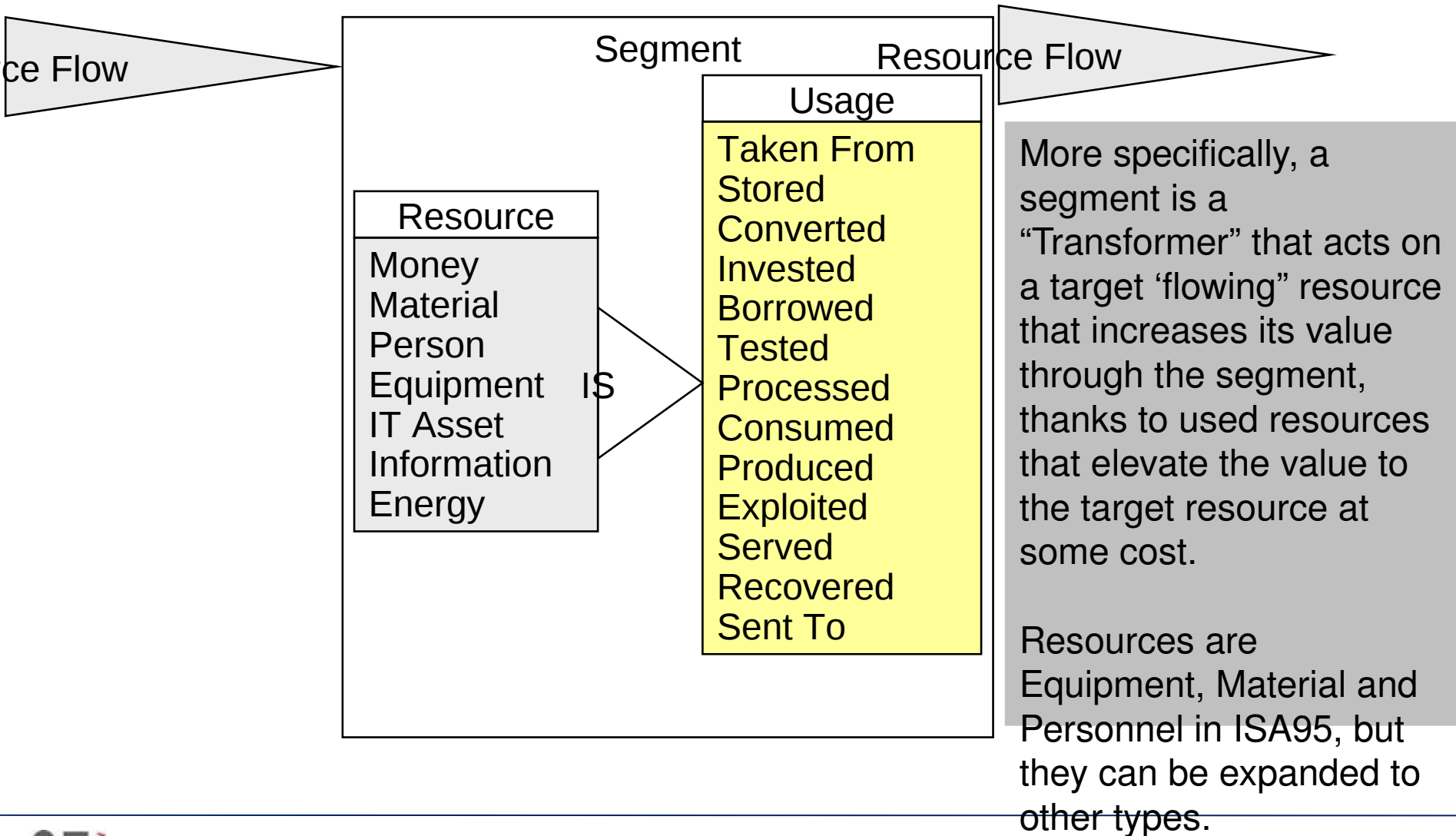
As any process, they can be characterized by:

- Owner
- I/Os
- Metrics
- Best Practices
- Resources
- Workflow involving Activities, roles, resources...

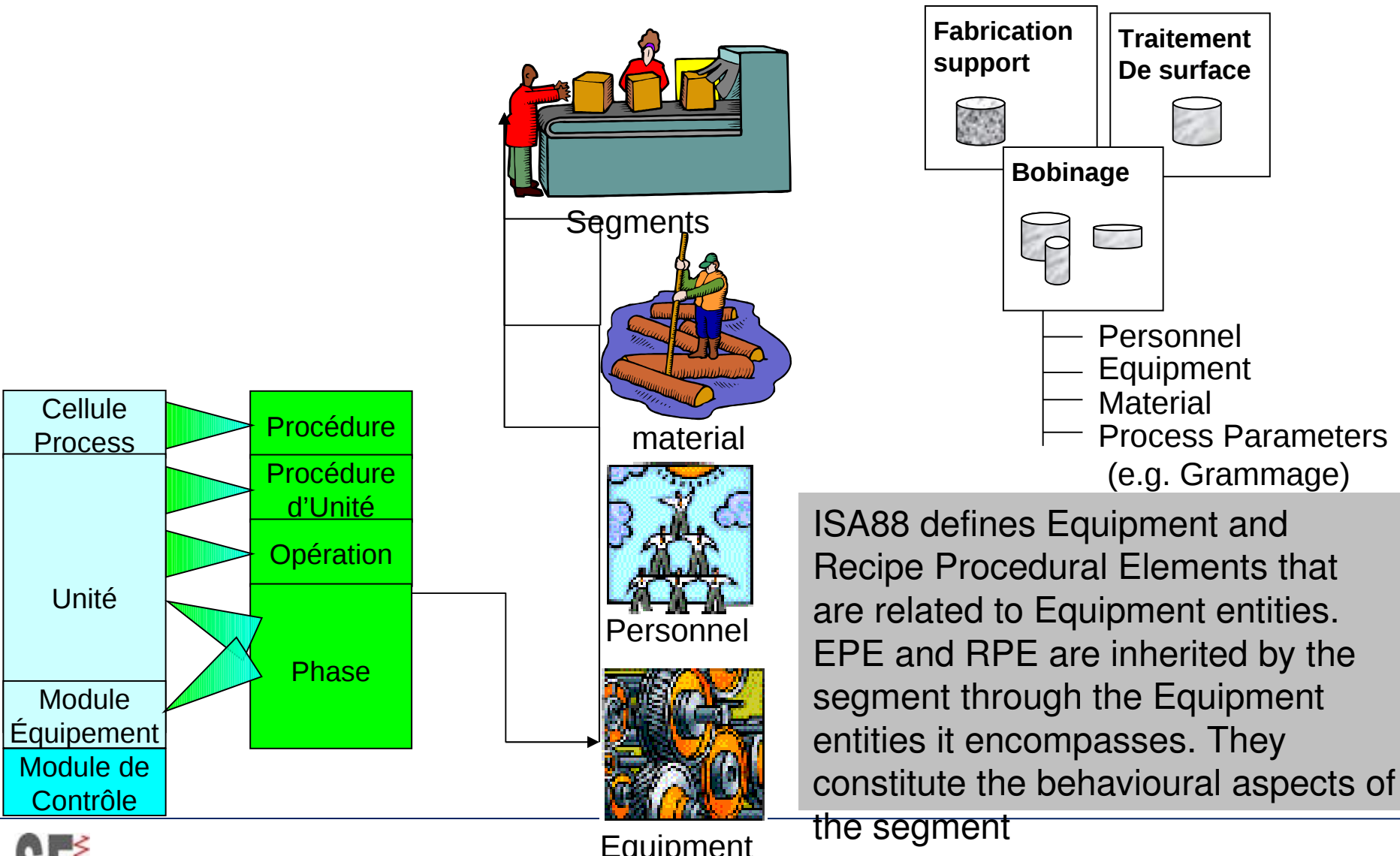
Energy Chain = Σ Segments



A Segment is a Transformer

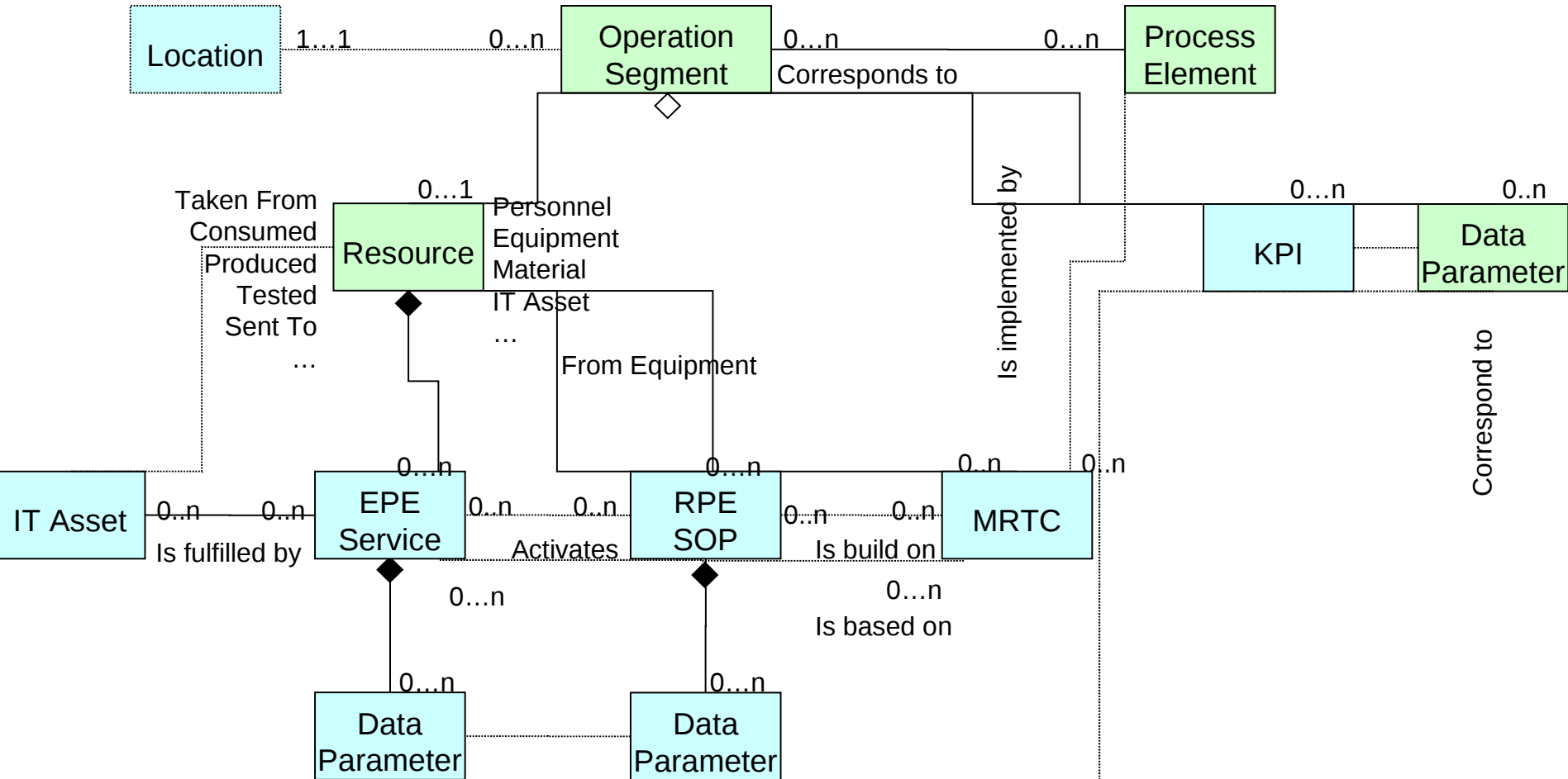


Process Segment ISA95 + EPE ISA88



ISA88 defines Equipment and Recipe Procedural Elements that are related to Equipment entities. EPE and RPE are inherited by the segment through the Equipment entities it encompasses. They constitute the behavioural aspects of the segment

Operation segment



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Exercise 1

- **Identify a set of segments classes of a facility of your choice**
- **Associate Personnel Classes, Equipment Classes and Material Classes to these segments**
- **Create instances of these segments for a given facility**