

Knowledge Base Development and Application Processes applied on Product-Assembly Co-design

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Content

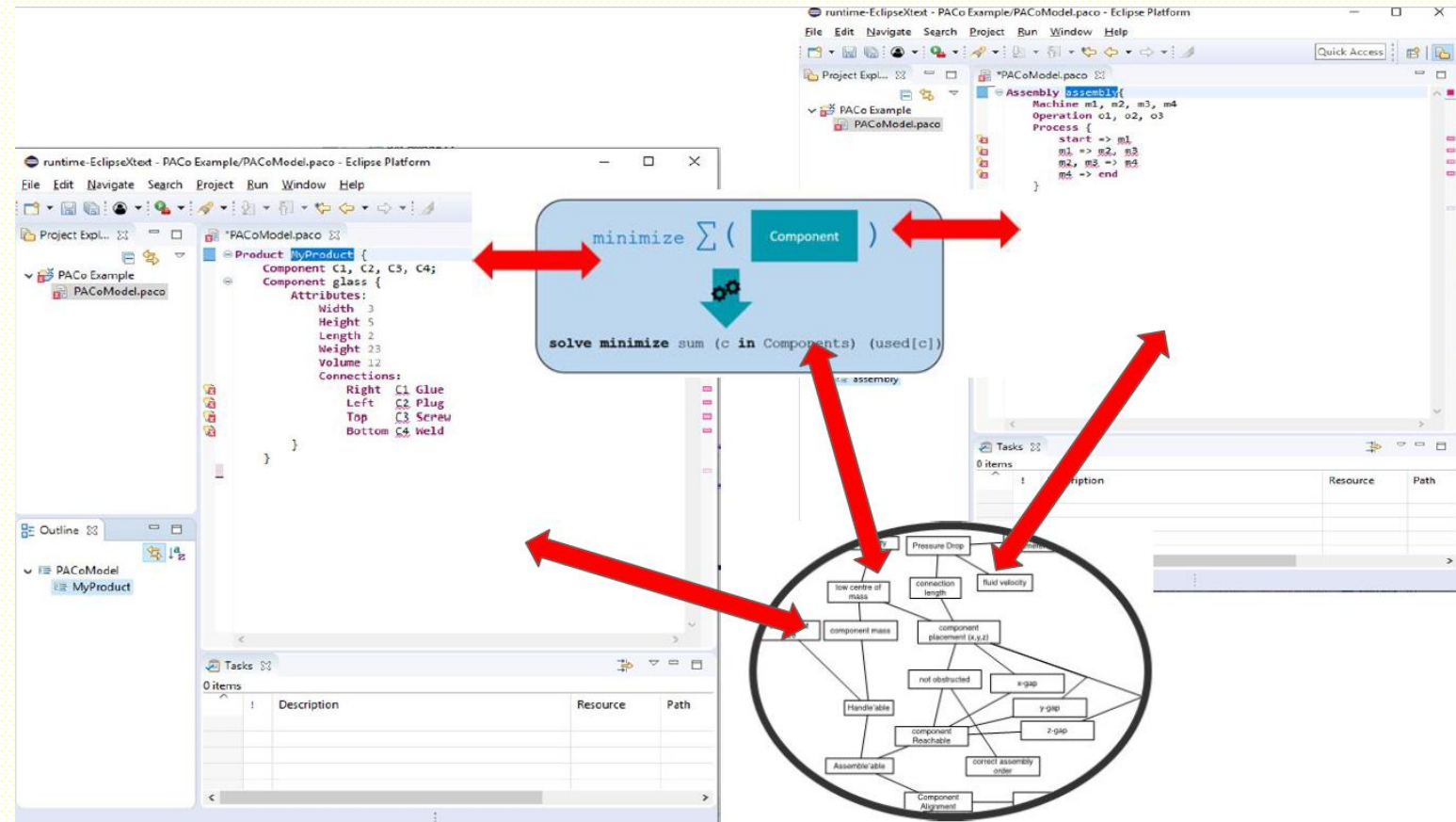
- Context: PACo and its Knowledge-base
- FTG+PM for the KB development and usage
- Example
- Discussion

Knowledge-base
Development &
Application
Processes for
Product-Assembly
Co-design

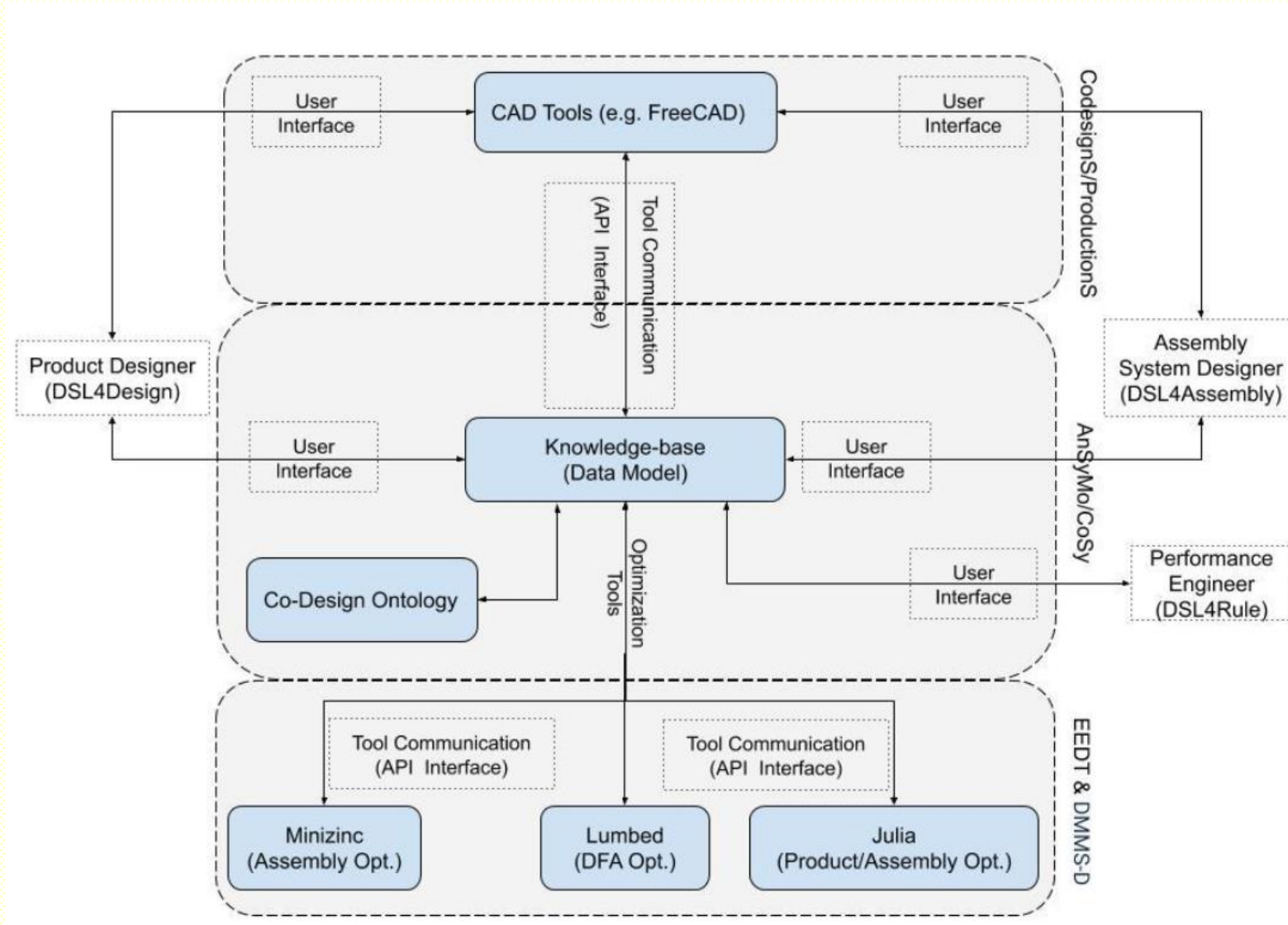


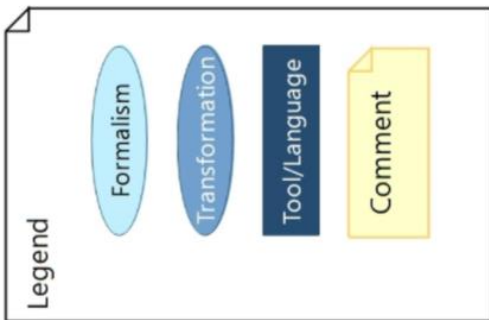
Context: PACo

- Product-Assembly Co-Design (PACo)
 - "front-load" production knowledge to the early stages of the product design process,
- Different stakeholders
 - Product designer
 - Assembly system designer
 - Mechanical engineer
 - Quality engineer
 - ...

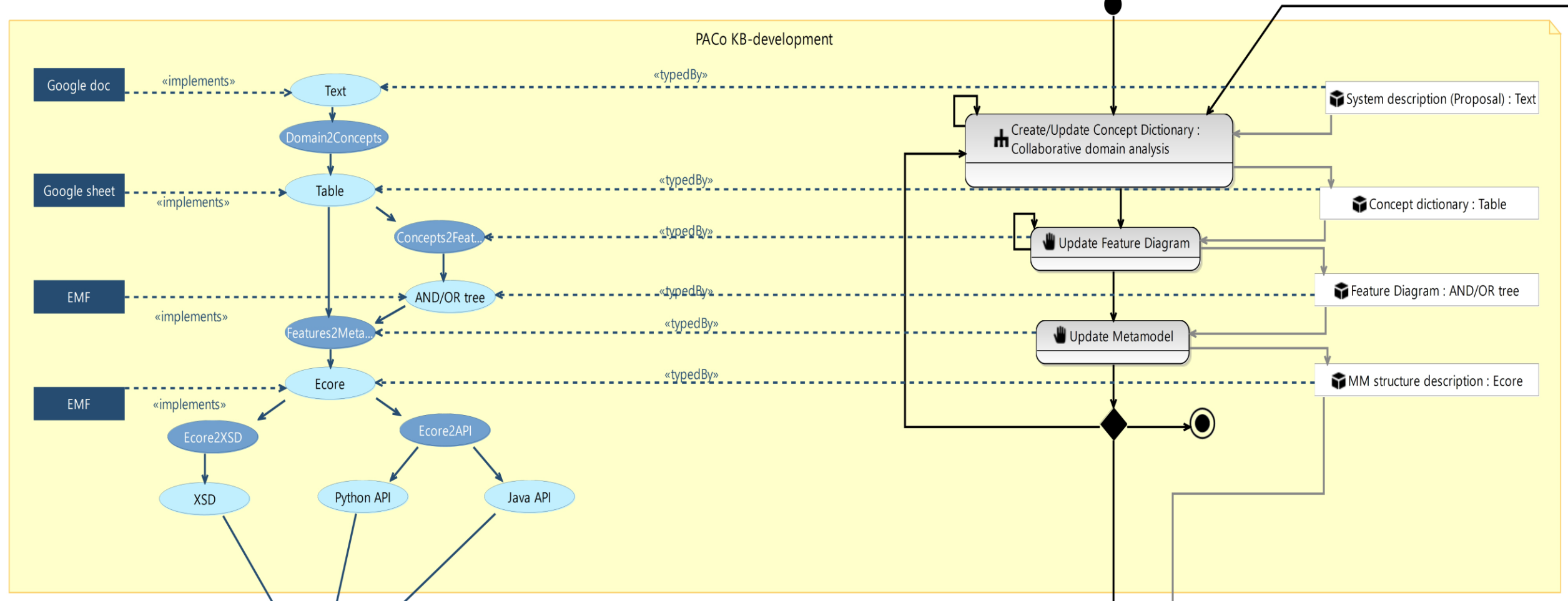
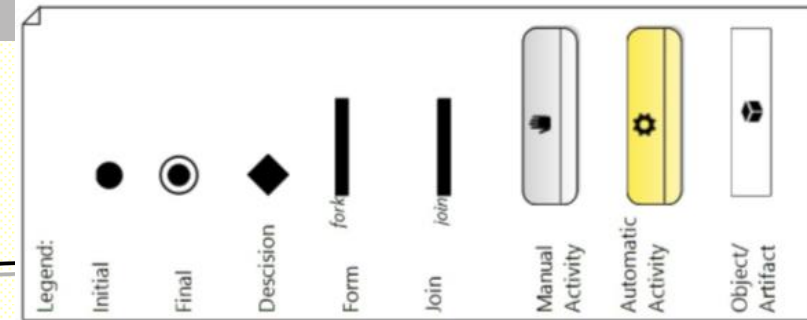


Context: KB for PACo

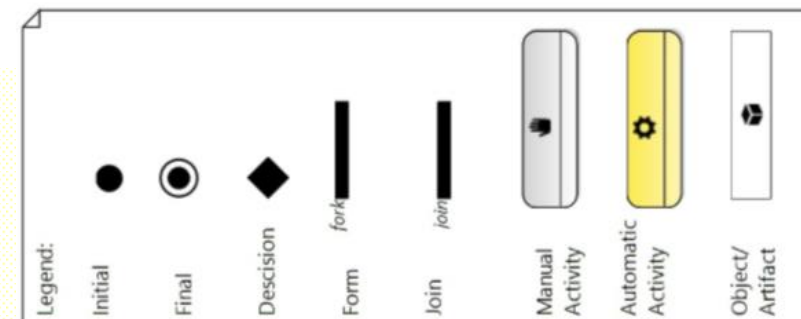
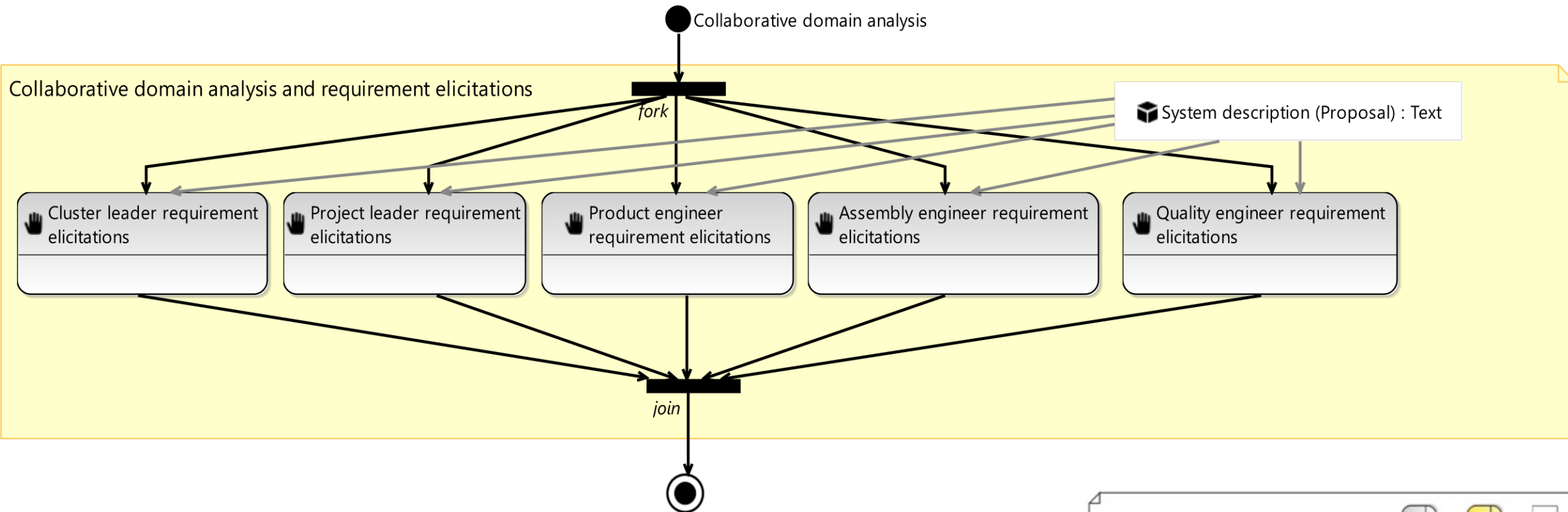




FTG+PM: PACo KB Development



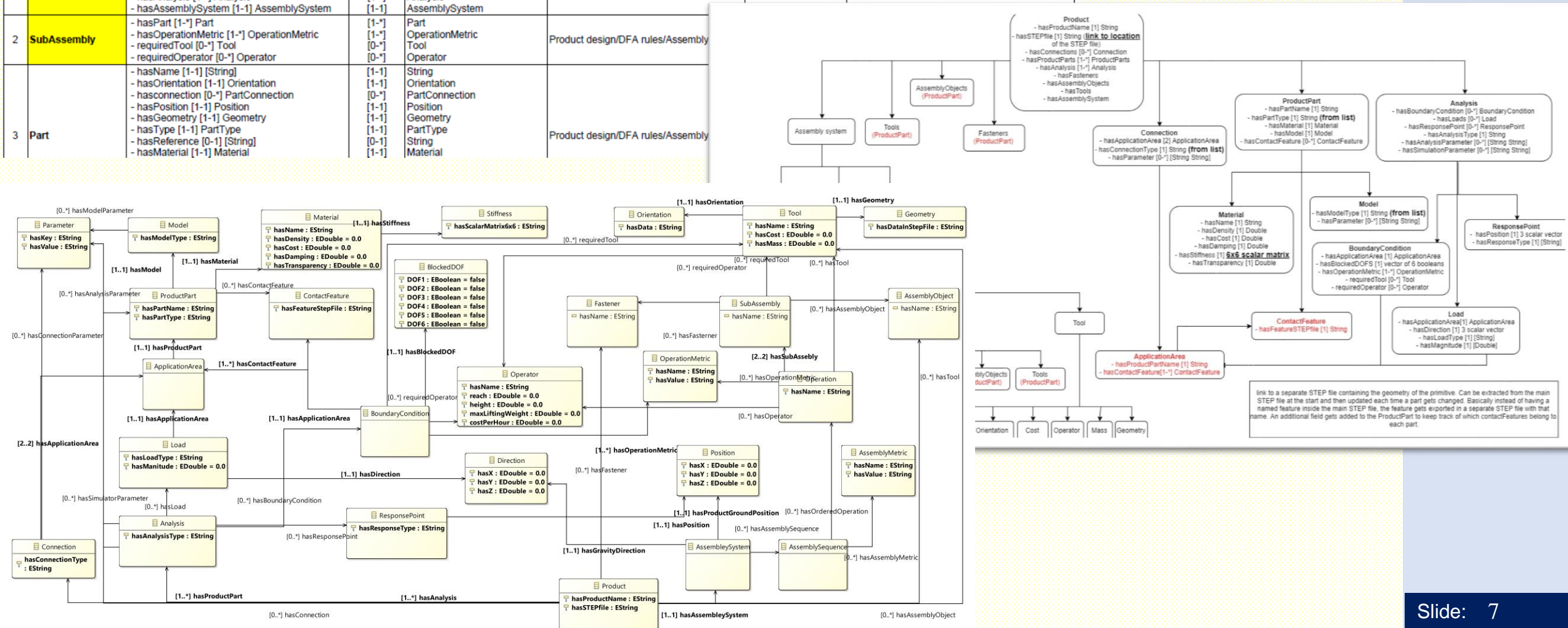
FTG+PM: Collaborative Domain Analysis

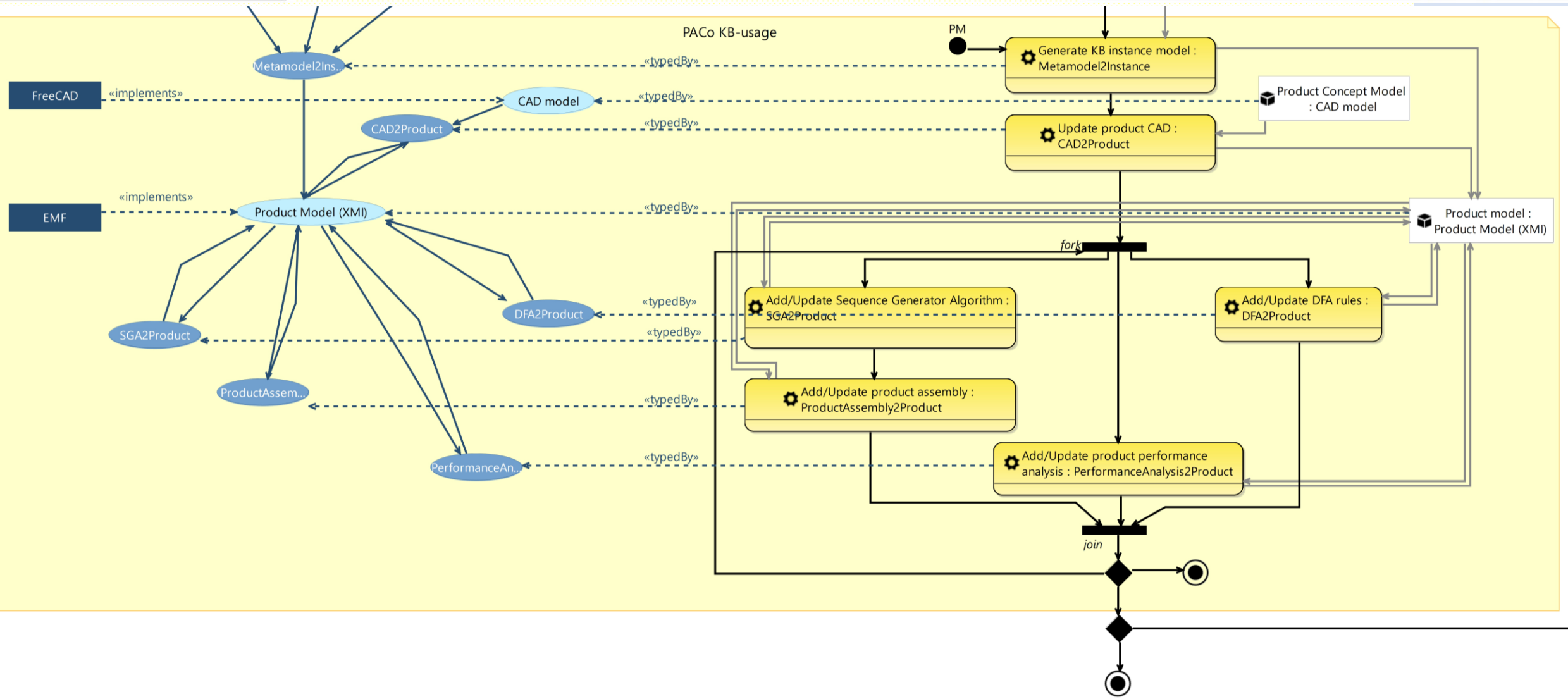


Snapshot of the models in the development process

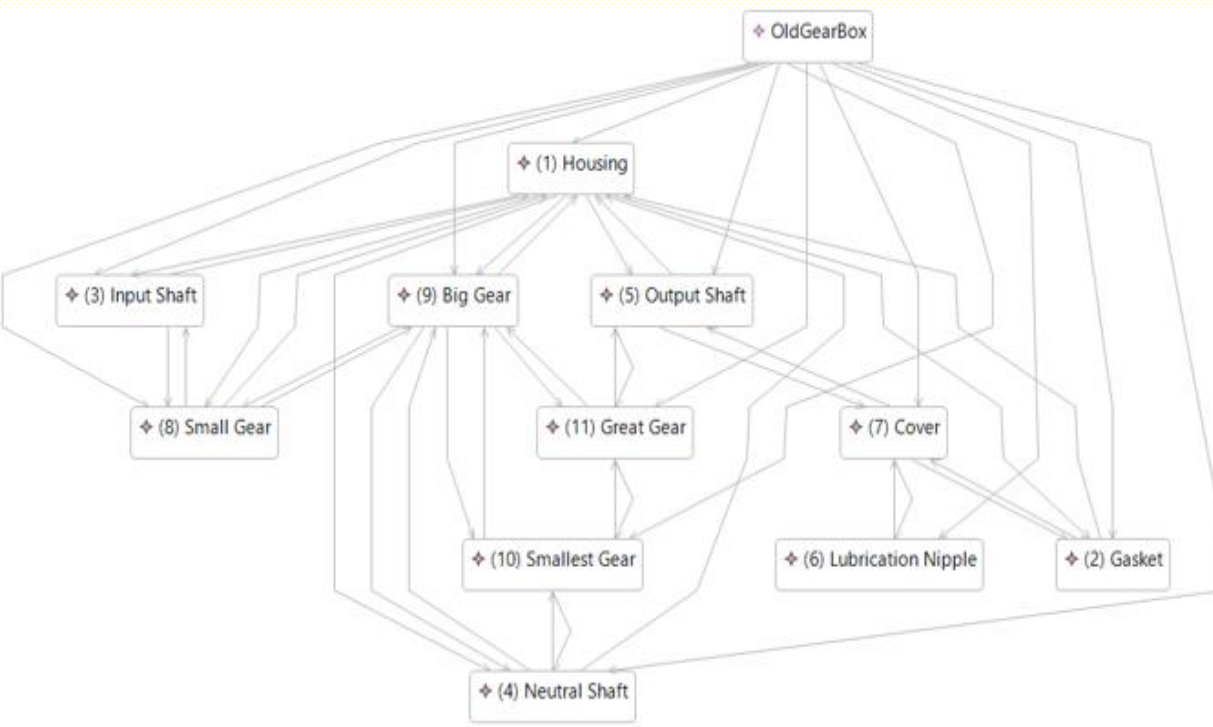
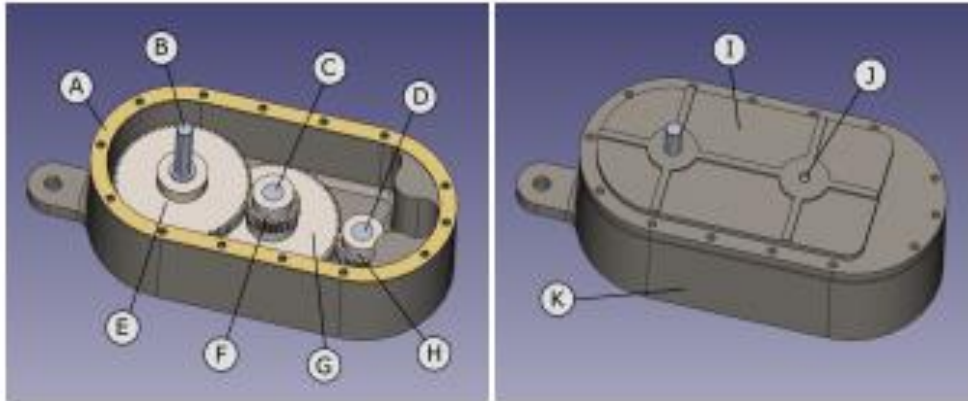
Knowledge-base
Development &
Application
Processes for
Product-Assembly
Co-design

| No | Concept Name | List of relations to the other concepts and attribute | Cardinality | Relation to the other concept name(s) and attribute types | Is it for product design, assembly system, or DFA Rules | Proposing Company | Description or additional details |
|----|--------------|---|--|---|---|-------------------|-----------------------------------|
| 1 | Product | - hasProductName [1-1] String - hasSTEPFile [1-1] String - hasPart [1-1] Part - hasAnalysis [1-1] Analysis - hasAssemblySystem [1-1] AssemblySystem | [1-1] [1-1] [1-1] [1-1] [1-1] | String String Part Analysis AssemblySystem | Product design/DFA rules/Assembly system | CoDesignS | |
| 2 | SubAssembly | - hasPart [1-1] Part - hasOperationMetric [1-1] OperationMetric - requiredTool [0-1] Tool - requiredOperator [0-1] Operator | [1-1] [1-1] [0-1] [0-1] | Part OperationMetric Tool Operator | Product design/DFA rules/Assembly | | |
| 3 | Part | - hasName [1-1] String - hasOrientation [1-1] Orientation - hasConnection [0-1] PartConnection - hasPosition [1-1] Position - hasGeometry [1-1] Geometry - hasType [1-1] PartType - hasReference [0-1] String - hasMaterial [1-1] Material | [1-1] [1-1] [0-1] [1-1] [1-1] [1-1] [0-1] [1-1] | String Orientation PartConnection Position Geometry PartType String Material | Product design/DFA rules/Assembly | | |

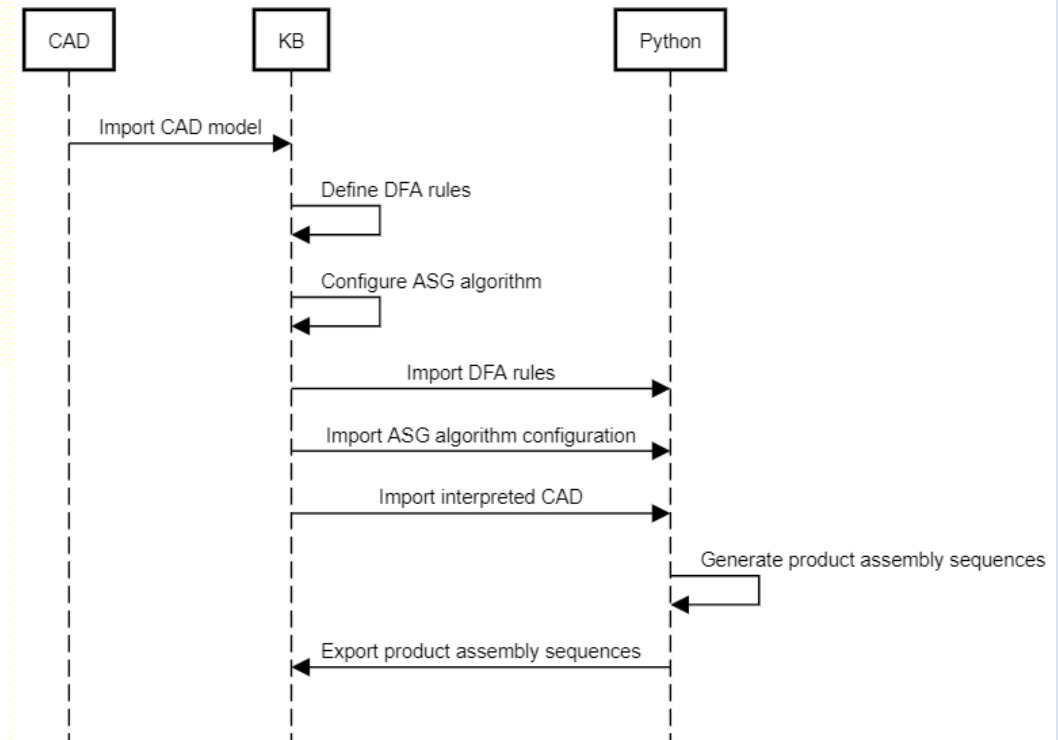




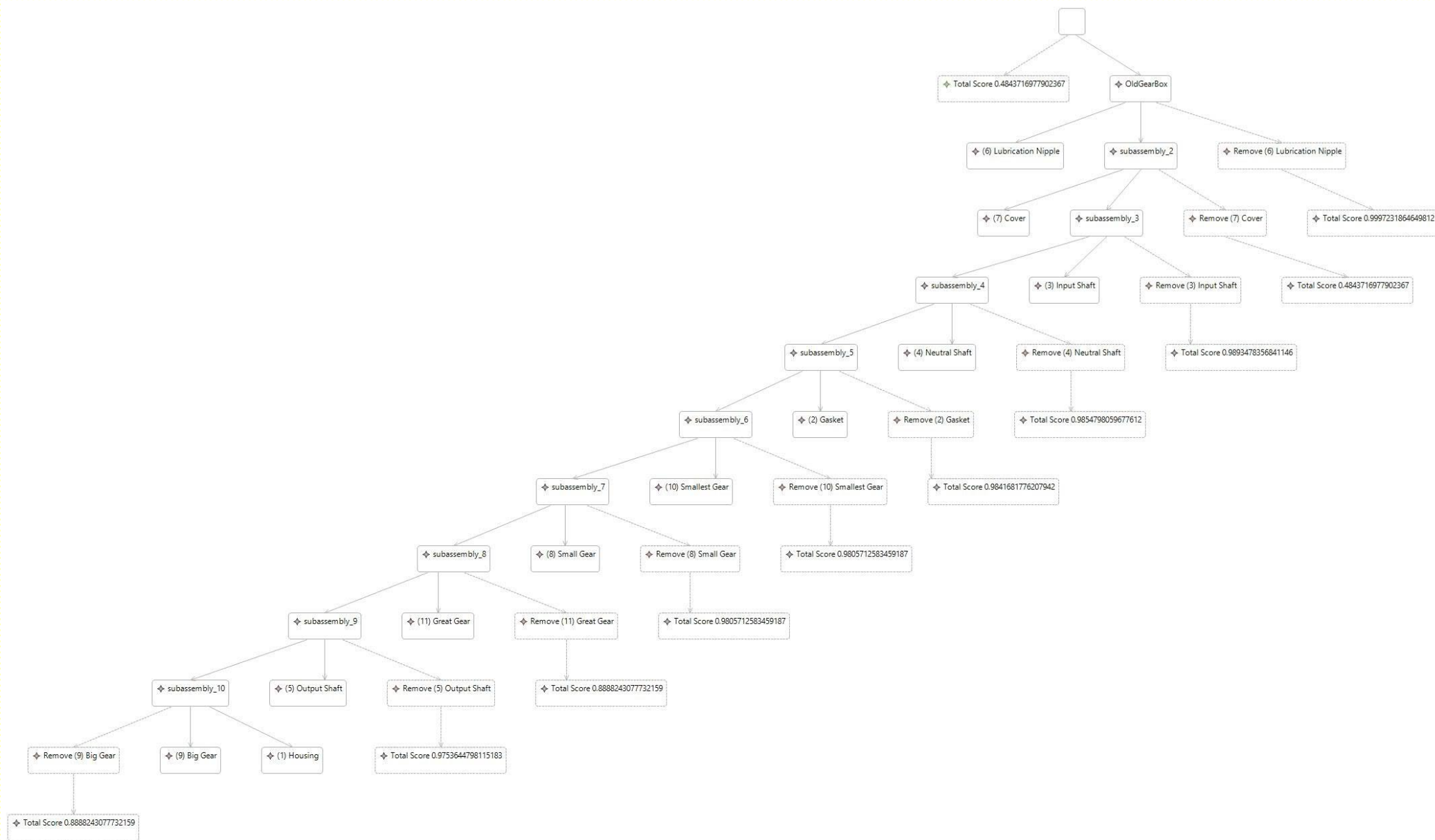
Usage example



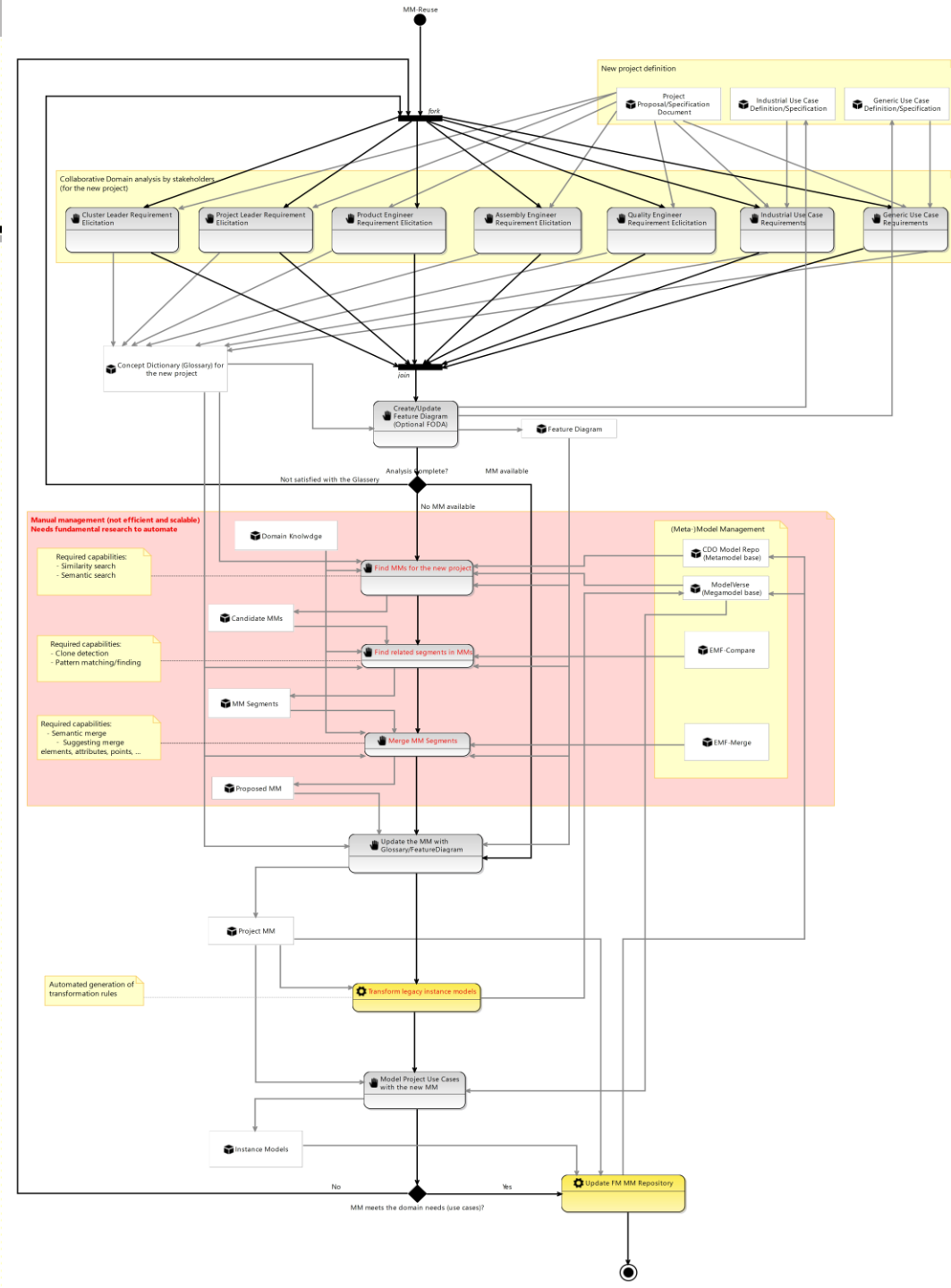
Data handling with KB



Usage example



Discussion: Benefits of using FTG+PM



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2021
Fukuoka

Universiteit
Antwerpen

FLANDERS
MAKE
DRIVING INNOVATION IN MANUFACTURING



Thank you!
Questions?