Use Case: Exchange of a Product Assembly with Fasteners information

Aim

Exchange of a Product Assembly with Fasteners information

Actors

- One OEM
- Supplier partners dealing with design and manufacturing engineering or with simulation

Preconditions

OEM is able to produce a valid technical data package from different applications of its information system, which is essentially its CAD, PDM and Fastener system. The content of the dataset exported is the multilevel assembly structure, the master data of each assembly/component part, the 3D positioning of each component part and a reference to 3D geometry, to associated documents and to an xMCF file that describes the fasteners.

The supplier is able to consume the technical data package, by validating and importing the information inside its information system (PDM and CAD).

Description

- Each mating bundle object holds the information about:

  - Type of mating (screwing, welding, riveting, clips, gluing, …)

  - Which parts are mated together (so-called linked parts)

  - Which fasteners (defined by parameters + by geometry)

  - In which order (stacking)

  - Direction of the fasteners and 3D positioning

  - Mating attributes, for example tightening torque

  - In case of 150% BoM: configuration of the involved fasteners and of their 3D positioning

- Having a stable Id of the Mating object in case of geometrical changes

- Used in the same way for all types of mating (same methods and functions, with different parameters)

Alternative 1:

- A bundle object describes all the fasteners needed for a given set of linked parts.

- Each fastener may have a different mating type and definition.

- The fasteners may be reused in one or in several bundles

- Especially usefull in case of products having large number of identical fasteners within the same bundle (for example hundreds of rivets to link the same partsLooking for a solution based on AP242 (and xMCF) for data exchange
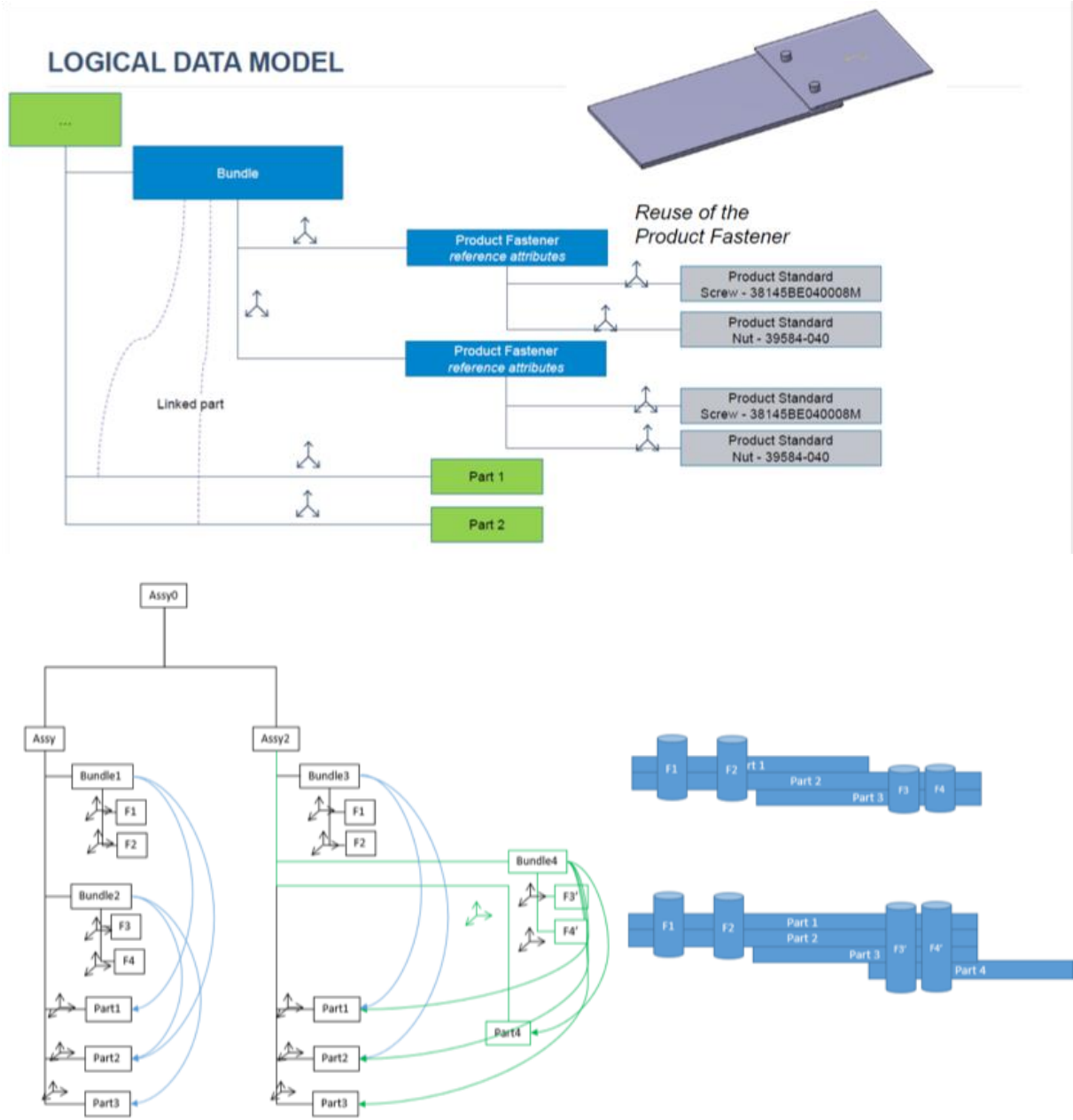
Alternative 2:

- Each fastener is managed individually (composition, position and linked parts)

- Sufficient in case of products that have few fasteners (no long lines of rivets)
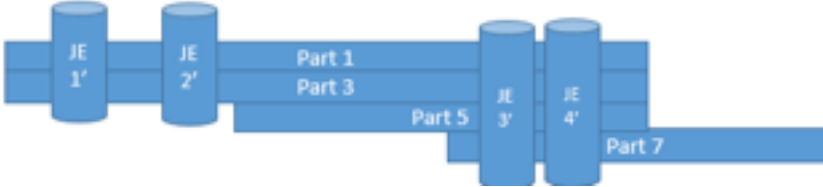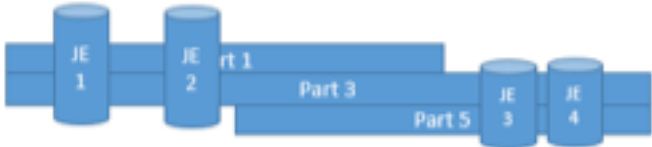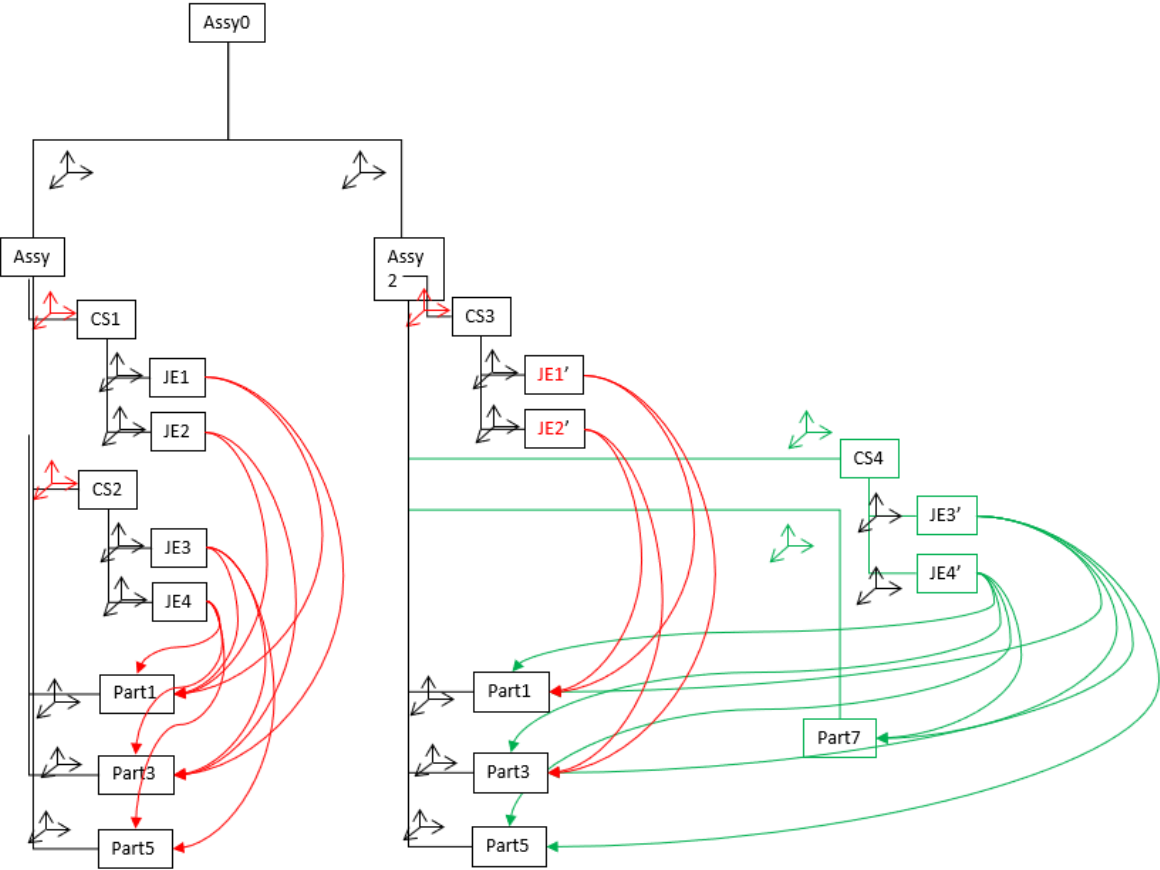
Postconditions

The supplier is able to interpret the fastener data to perform his design, manufacturing or simulation process.

Diagram

Alternative 1:

LOGICAL DATA MODEL

Bundle

Product Fastener *reference attributes*

Product Fastener *reference attributes*

Linked part

Part 1

Part 2

Reuse of the Product Fastener

Product Standard Screw - 38145BE040008M

Product Standard Nut - 39584-040

Product Standard Screw - 38145BE040008M

Product Standard Nut - 39584-040

Assy0

Assy

Bundle1

F1

F2

Bundle2

F3

F4

Part1

Part2

Part3

Assy2

Bundle3

F1

F2

Bundle4

F3'

F4'

Part1

Part2

Part3

Part4

F1 F2 Part 1 Part 2 Part 3 F3 F4

F1 F2 Part 1 Part 2 Part 3 F3' F4' Part 4

Alternative 2:

Out-of-scope of exchange:
- Geometric level stacking (which geometric faces are involved)

Benefits

Enable a powerful Fastener management across company boundaries. Ability to describe complex Fasteners in a semantically accurate way, relying on appropriate collaboration patterns with the associated recommended usage of AP242.