Use Case: Exchange of design Issues with redlining information (so-called Visual Issue Management, VIM)
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Aim

At a very first change management step during design (not needing Change Requests or Change Orders), so-called 'Issues' shall be exchanged on parts/assemblies, explaining the Issue in text form as well as using redlining information. For a better semantic, the redlining shall reference geometric elements out of the AP242 XML file that describes the whole Issue and product structure, rather than being a screenshot, a dedicated CAD model or being part of the part geometries.

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Actors

- One OEM
- Supplier partners dealing with design engineering

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 Issue Management system. The content of the dataset exported is the Issue definition, the project/product scope, the involved people, the affected/new parts/assemblies (possibly part of a larger assembly), possibly some context geometry and finally redlining information.

The supplier is able to consume the technical data package, by validating and importing the information inside its information system (CAD and possibly PDM and/or Issue Management system) and is able to produce back to the OEM the same kind of technical data package with his comments/proposal on the Issue.

Description

The information is extracted from multiples OEM's repositories (CAD, PDM, Issue Management system). The information is organized in directories and files, assembled in a zip file. The information is then checked, crypted and sent to the suppliers.
The design supplier gets the information, that he has to decrypt, and import to its own repository, using at least a CAD system and possibly a PDM and/or an Issue management system.
Scope of exchange:
- Based on ISO 10303 STEP AP242 Domain Model (XML) standard and on the collaboration patterns defined within VDA 4965:
  - Issue definition, optionally with a reference to associated describing documents
  - (optional) scope of the Issue (project, product, product variant or product zone/subconcept)
  - involved people (as Issue creator and assignees + as comment creator)
  - affected part(s)/assembly(s) with reference to their 3D definition
  - (optional) new proposed part(s)/assembly(s): as new versions of existing parts or as new parts. Some of them may be marked as alternatives. One of the alternatives can be marked as the 'chosen' one.
  - (optional) top assembly node that places all affected/new parts in 3D
  - (optional) context geometry (same coordinate system than the top assembly node or (if none) than the affected/new parts)
  - (optional) redlining information with reference to geometric elements (face, edge, point, …) of the 3D definition
  - (zero to many) comments to the Issue (definition + comment creator)
- 3D definitions and associated documents in standard or native formats

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Out-of-scope of exchange:
- Workflow Management process (changes of the lifecycle state of the Issue)
- Change Management follow-up process (Change Request, Change Order)

Alternatives (only if applicable)

If no PDM system is involved, the affected/new parts can be simply represented by their 3D definitions. In this case, all 3D definitions shall have the same coordinate space (so-called 3D session).

Postconditions

The supplier is able to understand the Issue, to comment it and optionally to provide a design alternative or a fix as a feedback.

Diagram
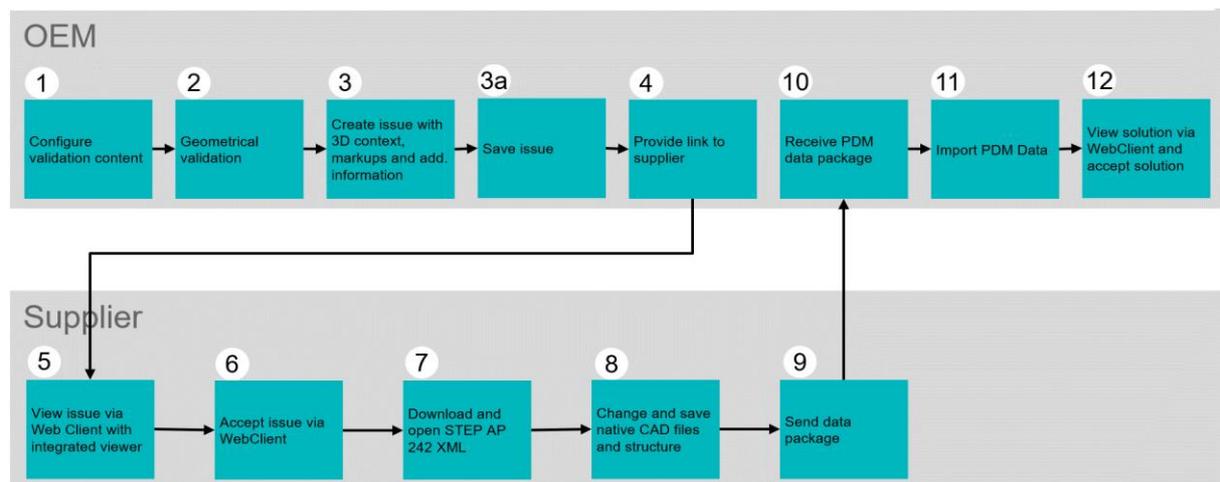
Benefits

Enable a powerful Issue management across company boundaries. Ability to describe complex Issues in a semantically accurate way (without editing the 3D definition of the affected parts, nor to produce semantically poor redlining screenshots nor additional 3D definition files), relying on appropriate collaboration patterns (VDA 4965) with the associated recommended usage of AP242.

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Notes and⌷SEP⌷ deduced requirements (only if applicable)

Two major enhancements for the AP242 Domain Model have been identified in order to fully support this use case:

- Introduce 'Issue' as a dedicated object beside WorkOrder, WorkRequest and Activity.
- Introduce geometric elements in order to define the redlining information

These enhancements are being defined within the PDM-IF and the JT-IF for AP242 Ed3. For now, the following workarounds have been defined:

- Map 'Issue' as a Work Request
- Define the redlining information in a dedicated CAD model referenced by the Issue.

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