Process driven approach to supplier collaboration in the early phases of a development project

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Agenda

• The process needs
  ✓ OEM’s process needs
  ✓ Supplier’s process needs
• Overview of External collaboration strategies
• Details on the Semi Automatic Collaboration process
• Summing up and Conclusions
OEM’s Process Needs

• Virtually transparent collaboration with Supplier
  ✓ Early phases DMU
  ✓ Material structure (BOM)
  ✓ After market structure
  ✓ Manufacturing
  ✓ Purchasing

• Content control
  ✓ Share all relevant information
  ✓ Ensure that only valid information is used
  ✓ Protect intellectual property for information not to be shared with the supplier

• Collaboration process control
  ✓ Frequent designs reviews on smaller work packages
Suppliers Process Needs

• Ability to extend the collaboration process to tier 2 to n
• Standards based integration with in-house development process and tools
• + all of the OEM:s needs
• **Manual Consolidation and Data Transfer**
  - Using Exter V2 for data sending and data retrieving.
  - Suitable for easier collaboration with few updates and not too complex data.
External Collaboration strategies

- **Semi Automatic supplier Collaboration**
  - Using ISO step AP 214 for structure consolidation.
  - Using STEP protocols for sending and retrieving data.
  - Using specific software to handle security in DMZ (Demilitarized zone).
  - Process support to manage supplier collaboration.
  - Suitable for early involvement of

![Diagram showing DMZ, Fire-Wall, OEM, Tier 1, Tier 2, and Manuf. connections.](image-url)
• **Satellite Office**
  ✓ Integrating into the OEMs processes and tools.
  ✓ Not suitable for suppliers only for handling internal resource issues (resource peaks).
Semi Automatic Collaboration process - Concept

Volvo’s Responsibility

Common area including the valid project Information accessible by Both parties using an Internet Browser

Suppliers Responsibility
Semi Automatic Collaboration process – High Level

3P Extended Enterprise Digital geometrical assurance and Designer

- Initiate Extended Enterprise Product Development
- Define design task. Publish design Requirements, ref. Geometries etc.
- Upload data to EE Hub
- Register the supplier's design
- Approve solution
- New loop, Rejected or Approved
- Alternative reference solution
- Approved
- Download data from EE Hub
- Initiate Alternative reference solution
- Approved
- Download data from EE Hub
- Register the supplier's design
- Approve solution
- New loop, Rejected or Approved
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- Alternative reference solution
- Approved
- Download data from EE Hub
✓ First loop

- DMU Vault
- The first Top level Assemblies (Variant stable level) registered in 3P DMU Vault
- DMU position on Top level Assembly (Variant stable)
- Space claiming model for Top level Assembly (Variant stable)
- Surrounding Top level assemblies and parts
- Standard parts
- Other Volvo systems
- Requirement document
- Project plan
- Minutes of meetings
- Agreements

✓ Second + loops

- DMU Vault
- Automatic updates of reference geometries
- New reference geometries (new created reference parts and other variants)
- Other Volvo systems (Manual update)
- Requirement document updates
- Updates of project planes
- Minutes of meetings
Process Needs- System view

- We need to standardize collaboration methods and tools to be able to set up a collaboration whenever the need is emerging within a product development project.

- **We must be able to support:**
  - Exchanging of parts, documents, structures, variants
  - Handling of different reference geometries (variants)
  - We need to be able to handle Alias (multiple numberings and naming for parts and doc.)
  - We need to have an effective way of handling release and changes requests
  - The system/method should inform you when your information of interest is changed in some way
  - The system/method must protect AB Volvos intellectual property and also the suppliers intellectual property.
  - The system/method must support our purchasing departments rules and way of working (SIPD GDI)
  - Communicate the demand structure (demands on functionality) in the extended enterprise
  - Communicate cost on item level
  - Design review

- **We must also take following in to consideration:**
  - Manufacturing needs to exchange information for manufacturing processes
  - Aftermarket need to exchange information regarding spare parts and services
  - “different structures to support (Early project stages – DMU structure, Later stages – Material structure)
System Needs – EE Hub

• Easy to set up the EE Hub and to populate it with all relevant data
  ✓ Initiation of collaboration area
  ✓ Publish collaboration loop package using standards based formats
    • parts, documents, structures, variants
    • 2D and 3D geometries with positioning
    • reference geometries (variants)
    • effectivity information
    • alias (multiple numberings and naming for parts and doc.)
  ✓ Invite supplier to collaboration area

• Support for download and upload of all information by supplier
• Design review
  ✓ Freeze design together with reference data for review
  ✓ Web based collaboration
  ✓ Web based 2D and 3D viewing with mark-up capabilities
  ✓ Flexible scheme for creation and distribution of review result
• Multiple structure views to provide support for down-stream processes
• Consolidation of supplier information into in-house PD systems
• Engineering change management support with pre-release support
• Define and evaluate multiple design solutions
• Process control and monitoring tools
• Transfer ownership of or close down (including archiving) of an EE Hub
Semi Automatic Collaboration process – Business benefits

• Lead time reduction
  ✓ Immediate access of new and updated (latest valid) information
  ✓ Ability to involve the whole supply chain
  ✓ Reduction in rework due to right information at the right time to the right person (process control, workflow)

• Quality improvement
  ✓ Enables more frequent design reviews (DMU data quality)
  ✓ Ability to involve the whole supply chain in the supplier collaboration process (Tier 1 to n)
  ✓ Ensures valid and up to date information
  ✓ Possibility to document the whole product structure once from the supply chain (DMU, material, manufacturing and aftermarket structure).

• Strategic benefits
  ✓ System support for the strategic early involvement of suppliers in product development projects.
  ✓ The residents engineer role can be used for driving the relationship instead of hunting data
  ✓ The system solution can enable the outsourcing of engineering tasks (strategic sourcing)
Semi Automatic Collaboration process – Questions

• Questions ?