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

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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
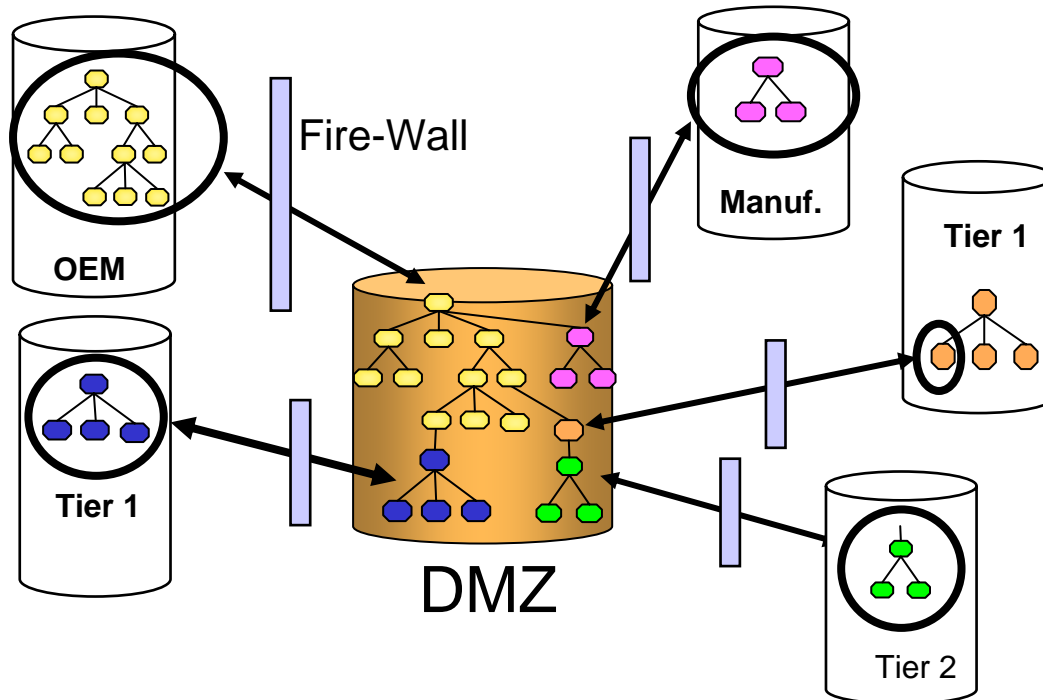 - ✓ Frequent designs reviews on smaller work packages

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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 manual consolidation tool (Manual data update in databases).
  - ✓ Using Exter V2 for data sending and data retrieving.
  - ✓ Suitable for easier collaboration with few updates and not to complex data.
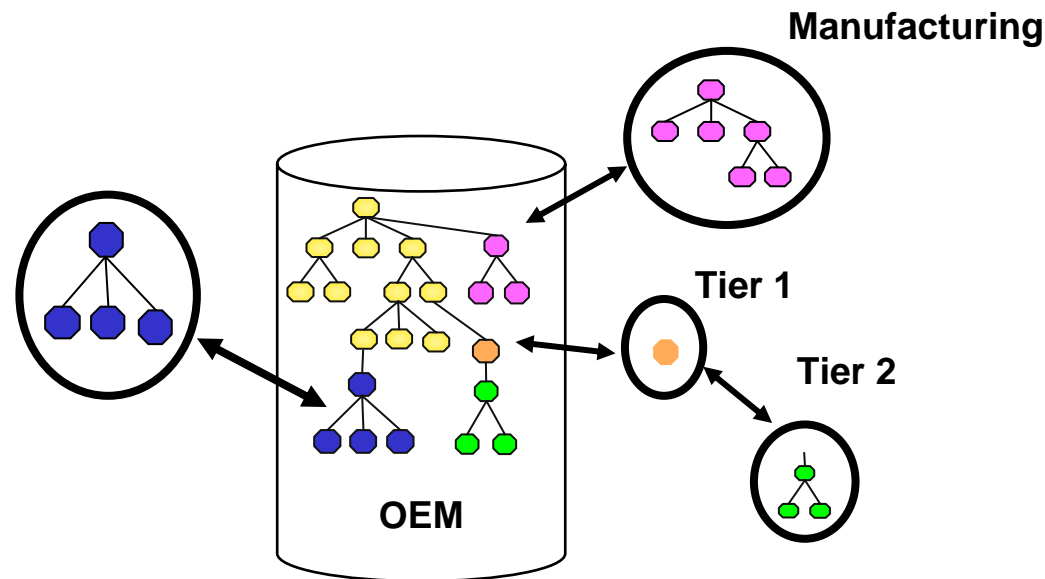
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- **Semi Automatic supplier Collaboration**
  - ✓ Using ISO step AP 214 for structure consolidation.
  - ✓ Using STEP protocols for sending and retrieving data.
  - ✓ Using specific software to handle security in DMZ (Demilitarized zone).
  - ✓ Process support to manage supplier collaboration.
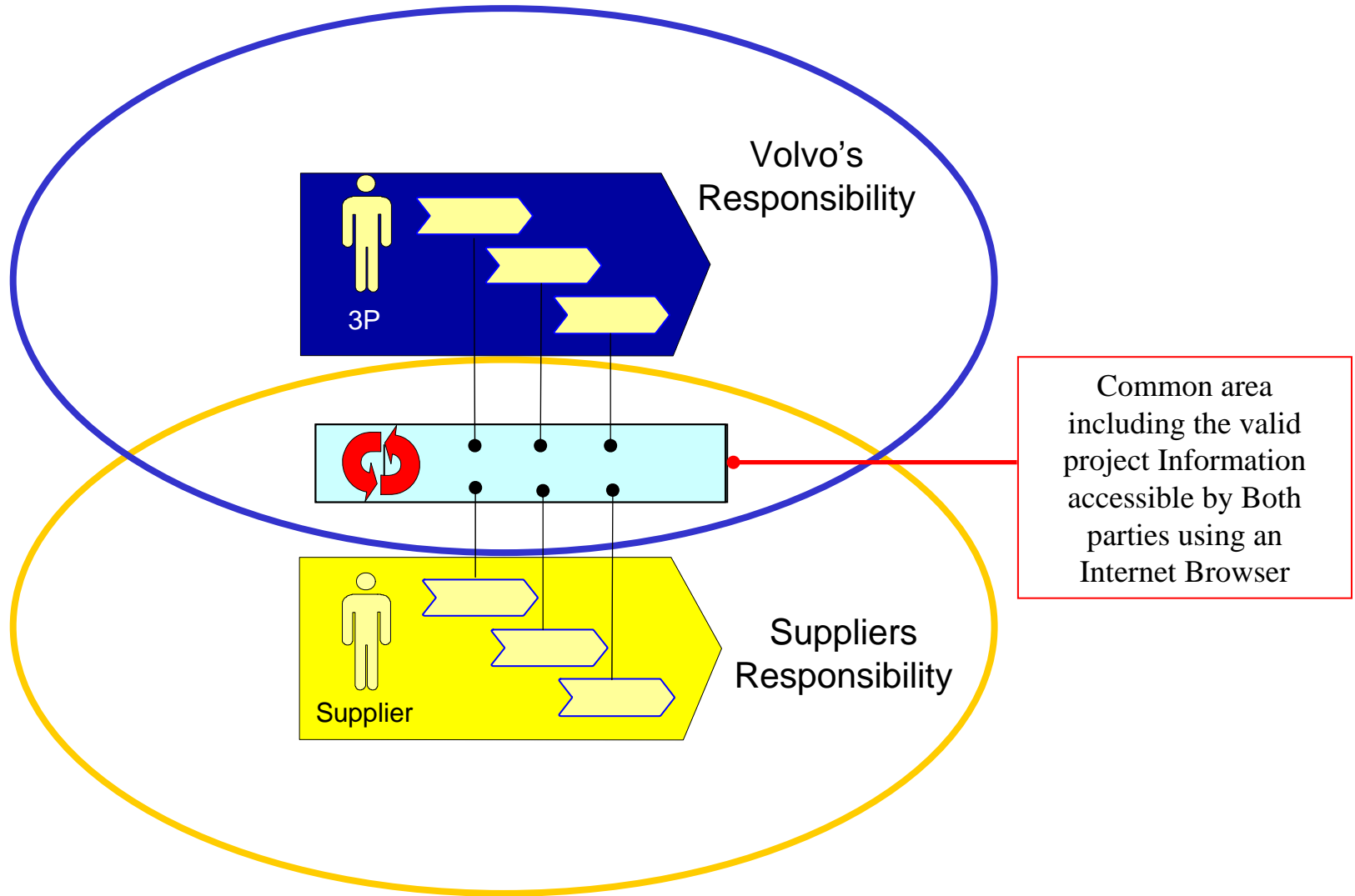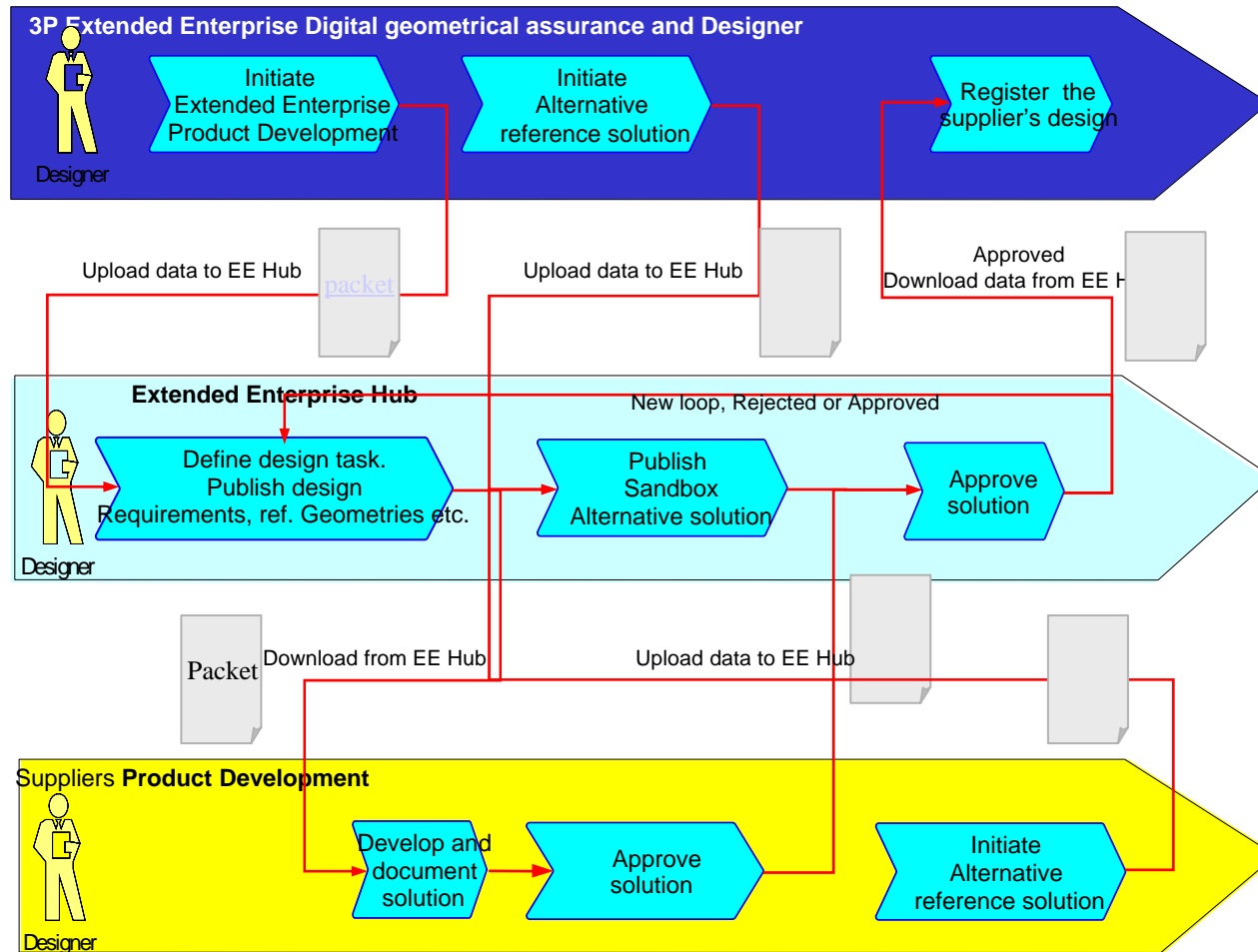 - ✓ Suitable for early involvement of

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- **Satellite Office**
  - ✓ Integrating in to the OEMs processes and tools.
  - ✓ Not suitable for suppliers only for handling internal resource issues (resource peeks).

Manufacturing

Tier 1

Tier 2

OEM

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Semi Automatic Collaboration process - Concept

Volvo's Responsibility

3P

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

Suppliers Responsibility

Supplier

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Semi Automatic Collaboration process – Upload EE HUB from Volvo

✓ First loop

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

✓ Second + loops

- <u>DMU Vault</u>
- Automatic updates of reference geometries
- New reference geometries (new created reference parts and other variants)
- <u>Other Volvo systems (Manual update)</u>
- Requirement document updates
- Updates of project planes
- Minutes of meetings

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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

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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)

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- Questions ?

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