

PLM Integration of TeamCenter and DELMIA

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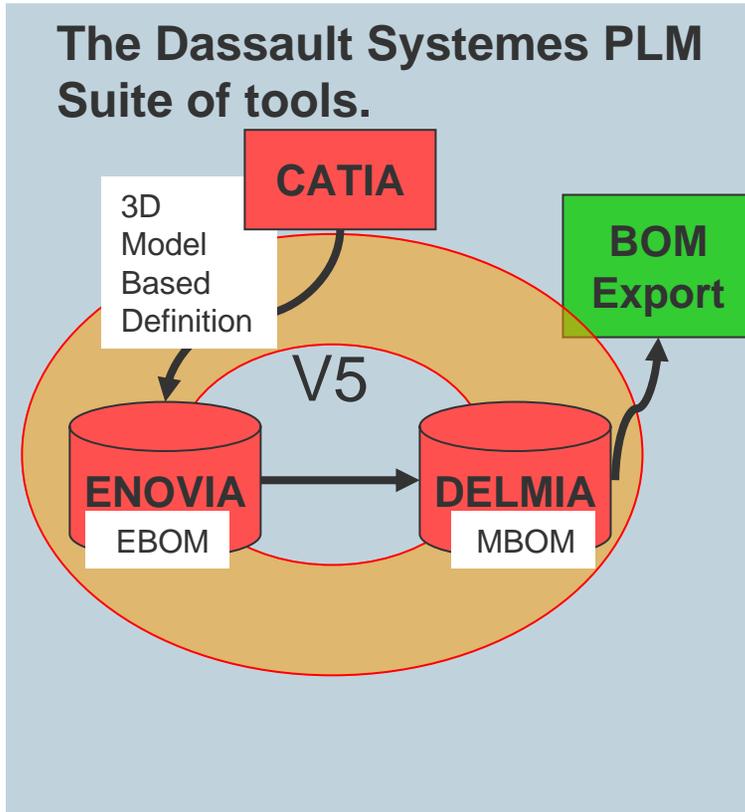
Microsoft

Agenda

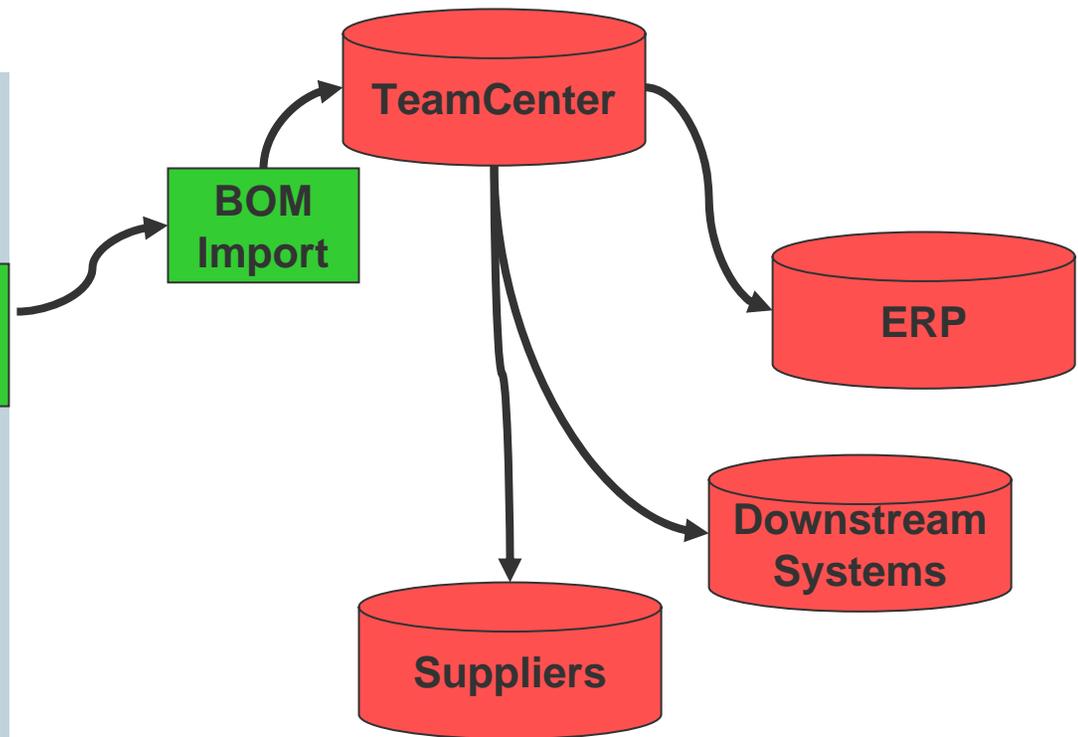
- Interface Overview
- Requirements
- Issues / Challenges
- Overall Design
- Part Loader
- Module Builder
- Q & A

Interface Overview

New Program



PDM System for Business Units supporting the new Program



Interface Contents

- **Parts List report**
 - Generated in DELMIA
 - Mostly Engineering View data originated from ENOVIA
 - Contains part attributes, notes, components
- **Installation Plan Data List report**
 - Generated in DELMIA
 - Usage of part instances into Installation Plans
 - Applicability of each part instances

TeamCenter Import Translator – Requirements

- TeamCenter product structures are to be equivalent to the source, ENOVIA
- Use all existing TeamCenter & Downstream systems for manufacturing processes, part ordering, queries and distribution
- Manual work done in TeamCenter to be preserved if possible

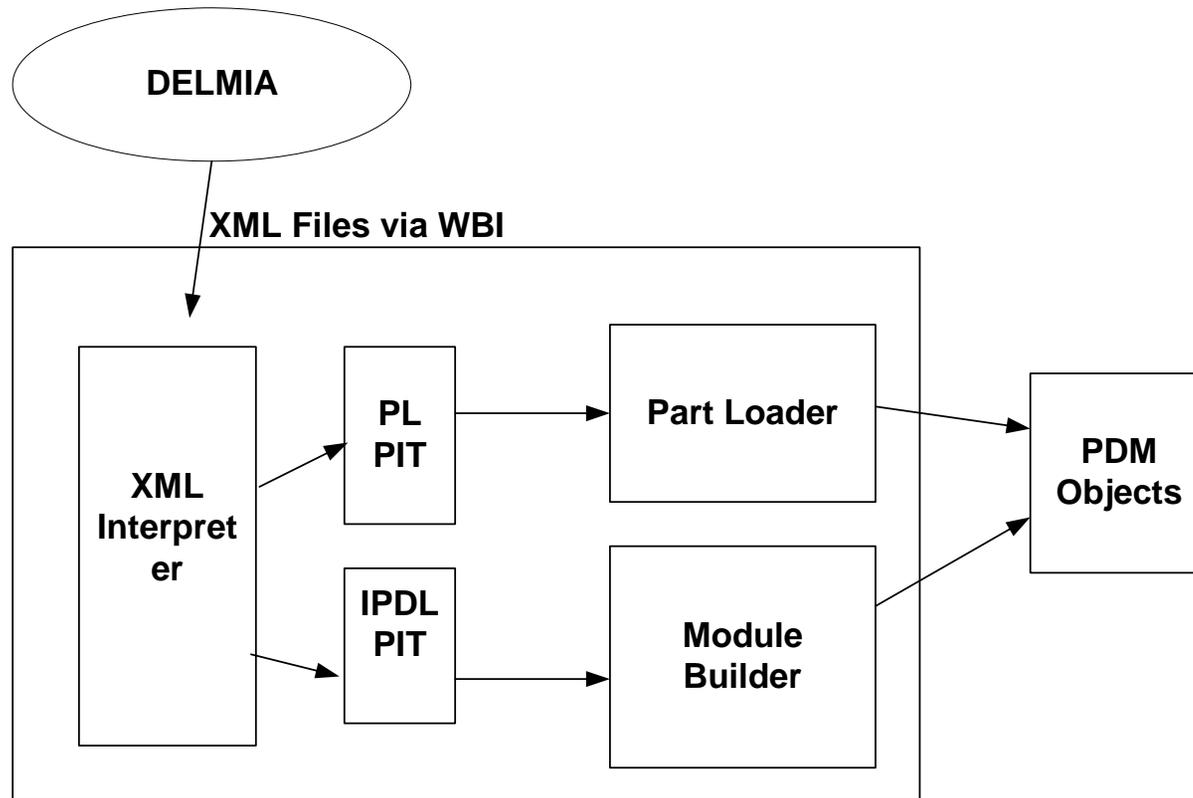
TeamCenter Import Translator - Challenges

- Design Authority Issues
 - Dual source of PDM data
- Data mapping
 - Non-equivalent Part Types
 - Transformation of Installation Plan centric DELMIA product structure to Module centric TeamCenter product structure.
- Performance

TeamCenter Import Translator – Design Criteria

- Handshake with middleware
- XML pre-processing
- Bottom-Up construction of Product Structure
- Local multithreads within sequential processing blocks
- Transaction status & manual task list report to users
- Design that facilitates simpler integration & easier testing

Import Translator Design



**XML BOM Import
Translator in TeamCenter**

TeamCenter Import Translator Design – Major Blocks

- Master Client
- XML Parser
- Part Loader
- Module Builder
- Report Generator

TeamCenter Import Translator Design – Master Client

- Started by the middleware upon completion of XML files delivery
 - Middleware logs into TeamCenter & posts an event
 - Dispatcher starts the Master Client as it is registered in the configuration file
- Config file (config.cfg) forces singleton mode
- Controls overall flow of the BOM translation

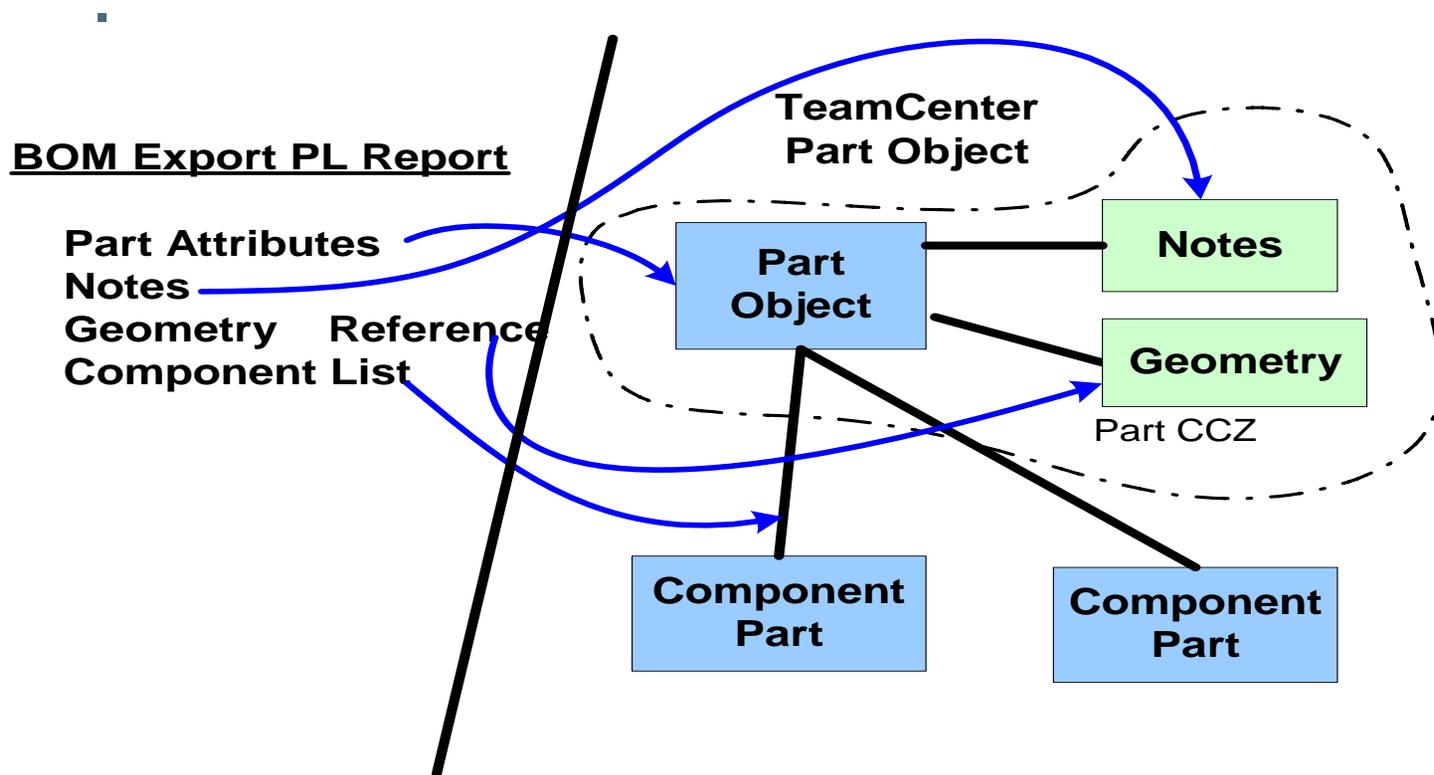
TeamCenter Import Translator Design – XML Parser

- Independent Client invoked by the Master Client
- Validates XML Schema
- Based on Xerces XML Parser
- Minimal validation of input data
 - Check for duplicate key attributes
 - Filter out unused attributes
 - Mandatory data checks
 - Other basic data sanity validation
- Inserts Input file contents into intermediate Oracle tables

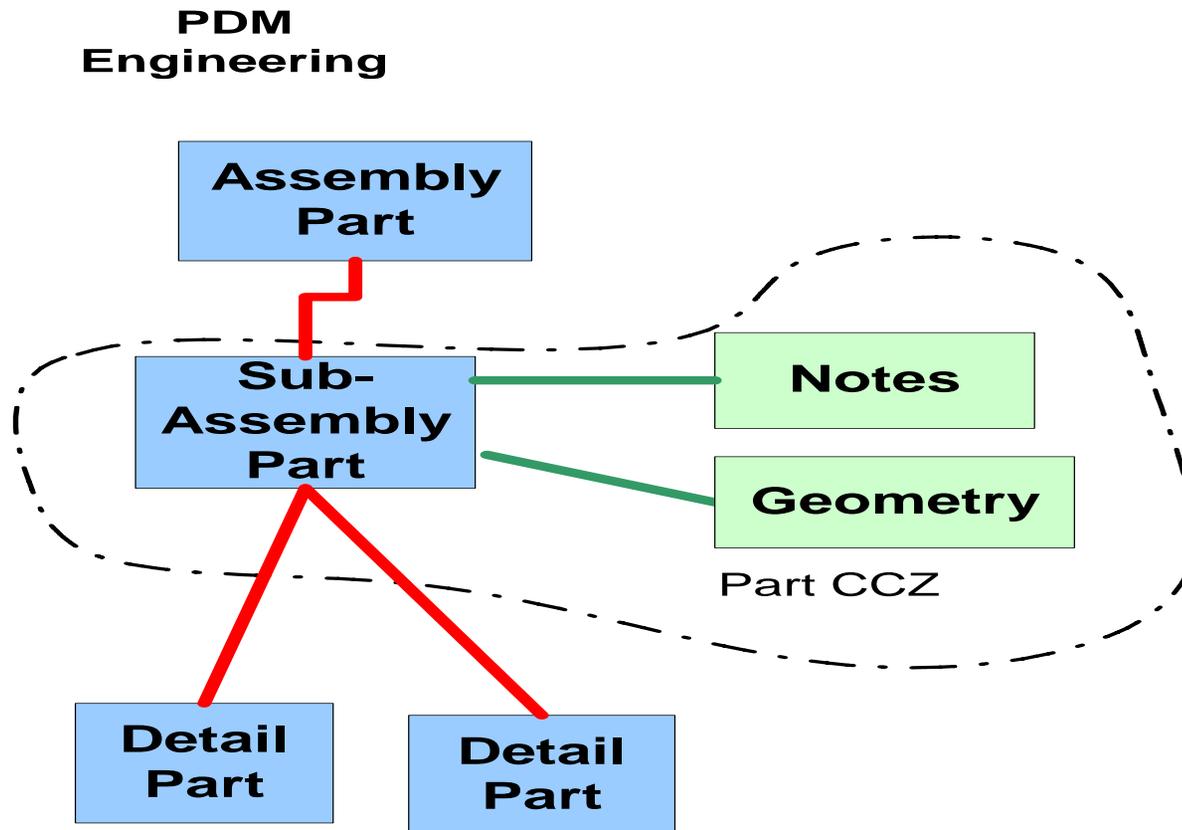
TeamCenter Import Translator Design – Part Loader

- Generate part-level product structure with input in the intermediate table
- Sequence of processing:
 - Create/Revise part object, notes, geometry (multi-threaded)
 - Create *Uses relations between parts (multi-threaded)*
 - *Promote parts to terminal state, bottom up (single-threaded)*

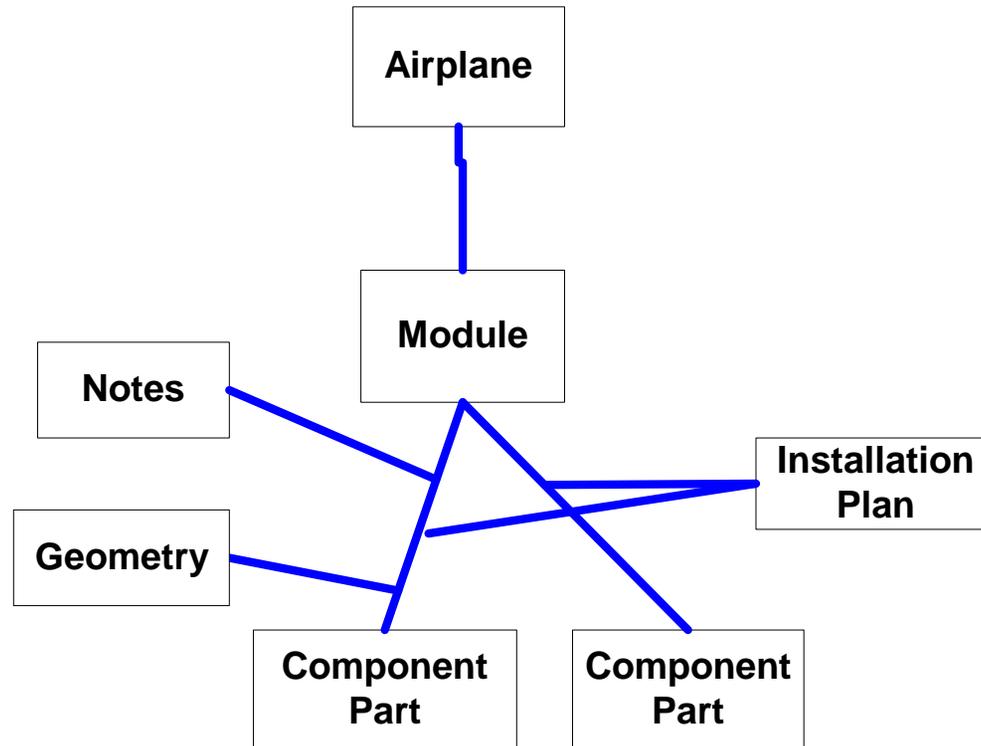
TeamCenter Import Translator Design – Part Loader mapping



TeamCenter Import Translator Design – Part Level Tree



TeamCenter Import Translator Design – Module Level Product structure in TeamCenter

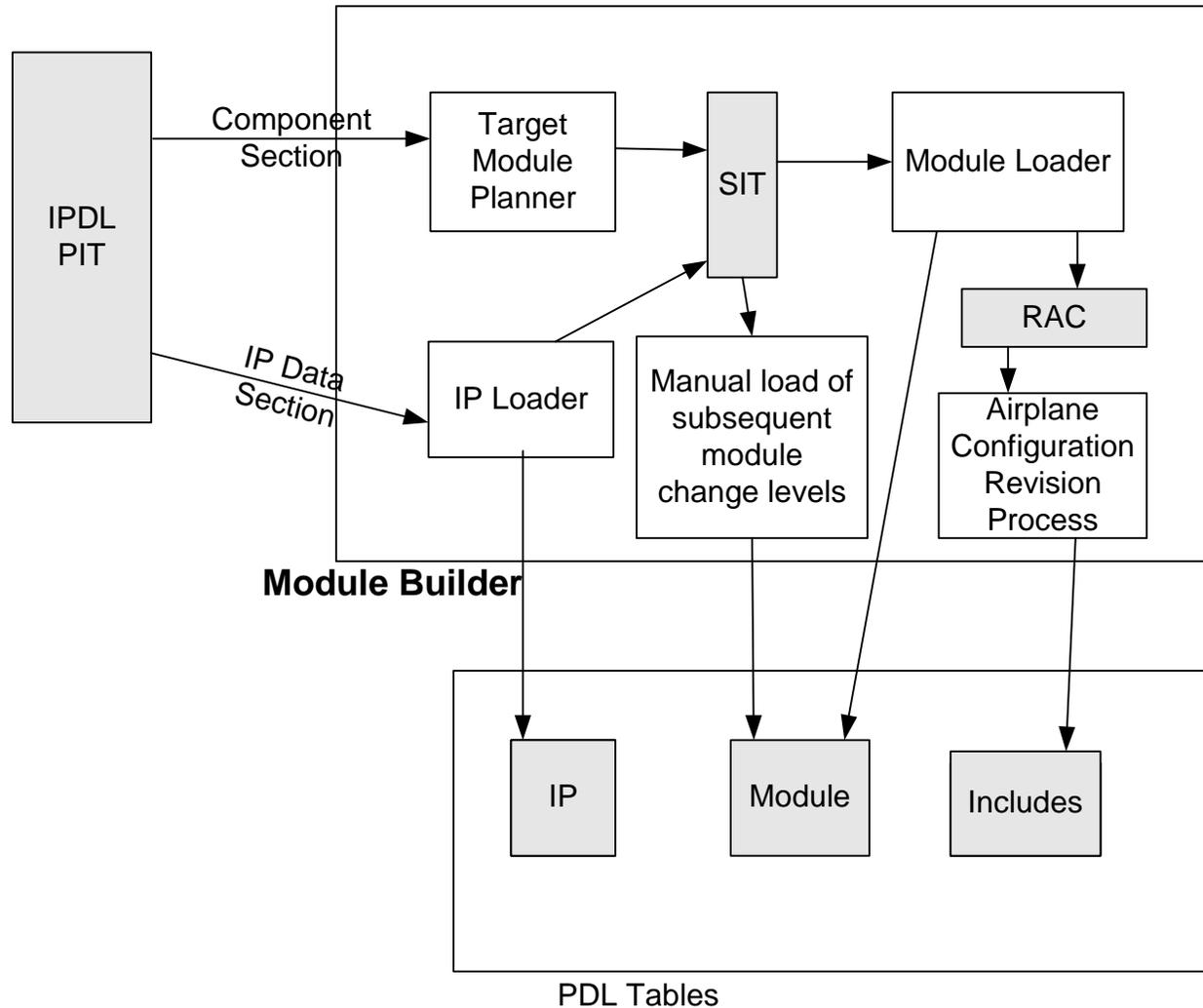


TeamCenter Import Translator Design – Module Builder

- **Challenges:**
 - Transformation of Installation Plan-centric data to Module-centric representation
 - Derivation of TeamCenter Engineering View from DELMIA Manufacturing View report
 - Aggregation of multiple Installation Plan Data List report to possibly multiple Module Numbers and Module Manufacturing Change Levels.

- **Solution:**
 - Create Secondary Intermediate Table.
 - ❖ Key Attributes : Module Number, Module Manufacturing Change Level
 - ❖ Other Attributes: Installation Plan Identifier, Consumption Type, Applicability

TeamCenter Import Translator Design – Module Builder Data Flow



TeamCenter Import Translator Design – Module Builder

- **Calculate target module configurations**
 - Use pre-determined part class as basis for module
 - Interrogate multi-value note on the PL to determine Engineering View product structure
 - Aggregate IPDL reports for target Manufacturing View module definitions - calculate module configurations based on un-superseded IPDL reports
 - Create/modify Secondary Intermediate Table entries
- **Load modules**
 - Automatic creation of first sequence
 - User pull of subsequent revisions or manufacturing change levels
- **Connect modules to airplanes**

TeamCenter Import Translator Design – Report Generator

- Upon completion of client run, a text report file is generated and emailed to registered business users and IS support personnel
- Includes the following:
 - Successfully loaded, partial success, or rejected XML files
 - Reasons for each anomalies
 - Manual task list to be performed by users

TeamCenter Import Translator Design – Q & A

Questions?