



# What's The Context?

PLM World 2006

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# Agenda



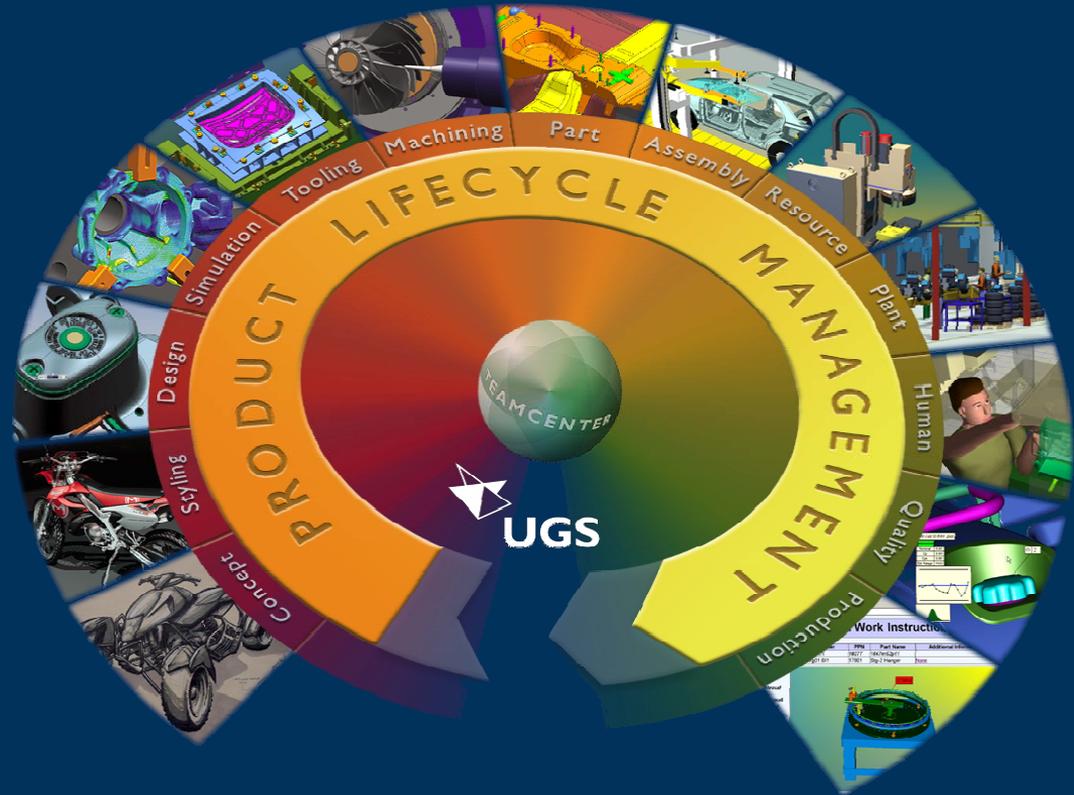
- ▶ Overview
- ▶ Fundamentals
- ▶ Applications
- ▶ Business Process Support
- ▶ Summary
- ▶ Q&A



# Context Management Big Picture



- ▶ Help users tame information overload
- ▶ Processes are contextual, the data needs to reflect this
- ▶ Repeatable processes are made possible in a complex environment because the right data can be consistently recreated



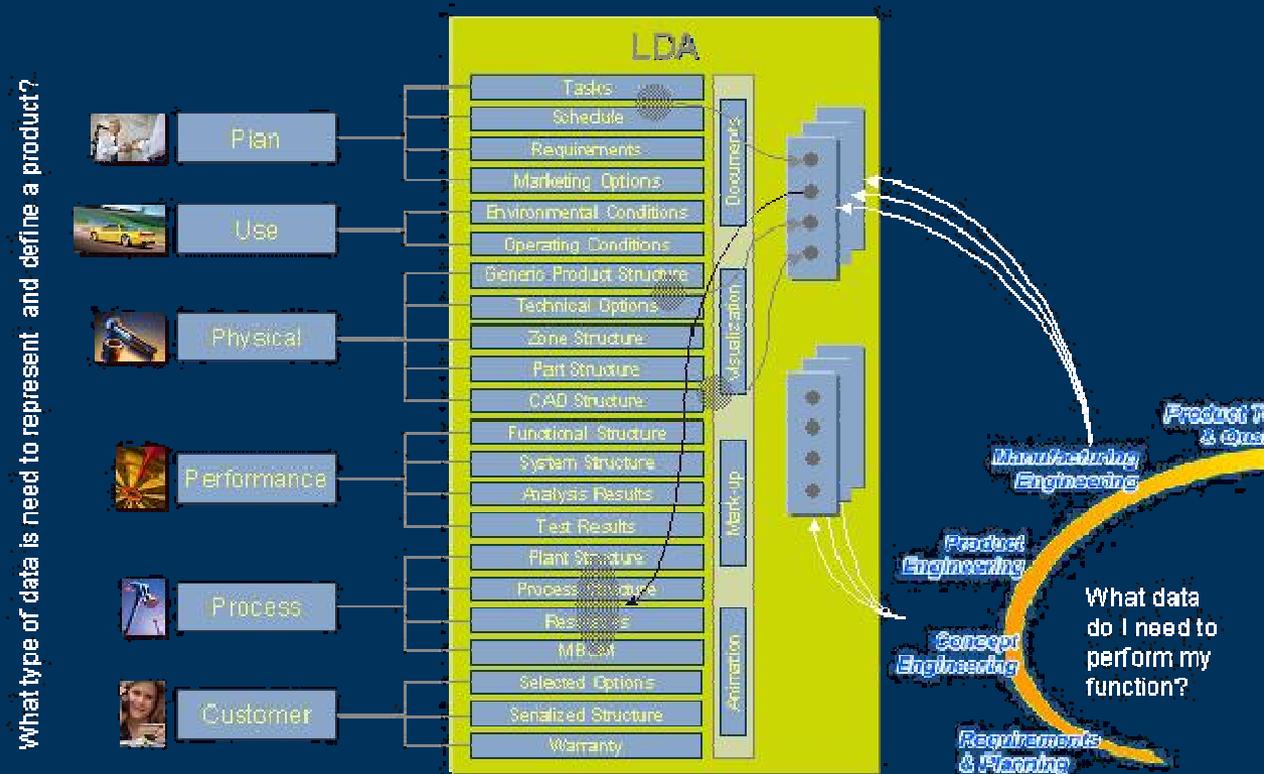


# Motivation for Context Management



- ▶ For full lifecycle integration, we must understand the different types of product data representations and the associations between them. Additionally, we must understand how users and applications need to access and share this product data

- Users often need information that may come from different representations
- They use this information to author new information





# Context Management Business Value



- ▶ **Enable collaborative processes and concurrent engineering**
  - ▶ Different representations can evolve in parallel
  - ▶ Relevant portions of different representations at different levels of maturity can be brought together for cross-disciplinary collaboration
  - ▶ Guarantees that there is a repeatable method for accessing the right data even in rapidly changing environments
- ▶ **Increase Productivity**
  - ▶ All the disparate information the user needs for their task is in one place but without the extraneous information they do not need
  - ▶ Lowers the barrier-to-entry for non-PDM users to access the right information and add value to the overall process flow
- ▶ **Grow product complexity without driving up process complexity**
  - ▶ Context management allows the applications to stay manageable as the amount of product and lifecycle data that is managed grows significantly
  - ▶ An individual user is never overwhelmed because they see just what they require



# Fundamentals

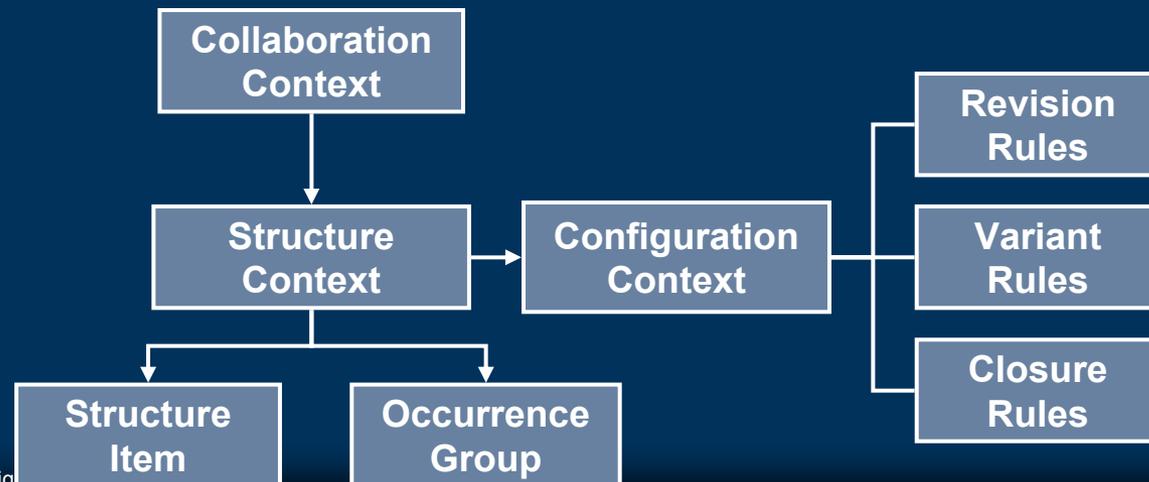


# Context Management

## Fundamental Constructs



- ▶ A **Configuration Context** represents the collection of qualification criteria needed to configure a representation e.g. selected options, effectivity, maturity state, closure etc.
- ▶ A **Structure Context** is a mechanism to persist structure data and the configuration context by which the data is configured
- ▶ A **Collaboration Context** is an information structure that is needed to manage the information boundary between an intended working task and shared data as a whole
- ▶ A **Composition** is a mechanism for representing an environment composed of occurrences from different products, for making design decisions that take into account information from different products' representations





# Compositions for Manufacturing Operation Setup



BOM Line	Item Description	Occurrence Type
[-] Bki Assembly/A		
[-] Hammer Large/A		MEResource
[-] Spanner/A		MEResource
[-] Socket Wrench/A		MEResource
[+] fr_ski_left/A	fr_ski_left	MEConsumed
[+] chassis_assy/A	chassis_assy	MEConsumed
[-] station-2/A		MEWorkArea
[-] mrm_test/A		
[-] ugc010101_001		

▶ Operation Setup is a specialized kind of composition, it deals with:

- ▶ Work area
- ▶ Resources
- ▶ Parts & consumed items
- ▶ Tools and fixtures
- ▶ In process assemblies
- ▶ ...

BOM Line	Item Description	Occurrence Type
BSU_Roughing/A	Rough back side of part on CNC	
[x] 23270-5/A	Ejector Half Plate	METarget
[x] Mitsui_Seiki_5/A	Mitsui_Seiki_5	MEResource
[x] Clamps/A	Clamps	MEResource
[x] Mitsui Seiki/A	Milling machine area	MEWorkArea
[+] ugti0301_009/A	ugti0301_009	MEResource
[+] ugti0301_033/A	ugti0301_033	MEResource
[+] ugti0301_009/A	ugti0301_009	MEResource



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Applications



# Context Management Teamcenter Applications

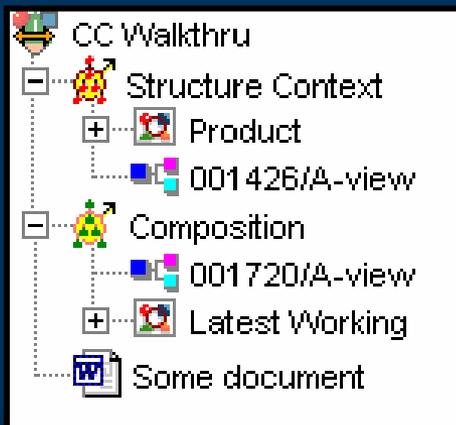
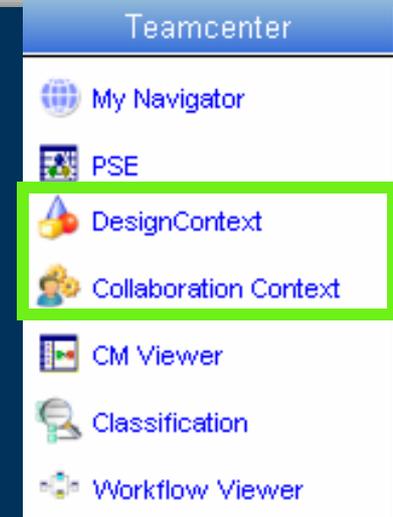


## ▶ DesignContext

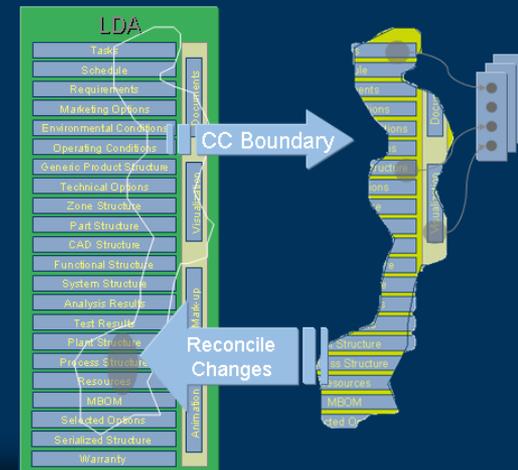
- ▶ Wizard application to establish a context to do design or evaluations

## ▶ Collaboration Context

- ▶ Provide representations that support information sharing in the context of a defined functional activity



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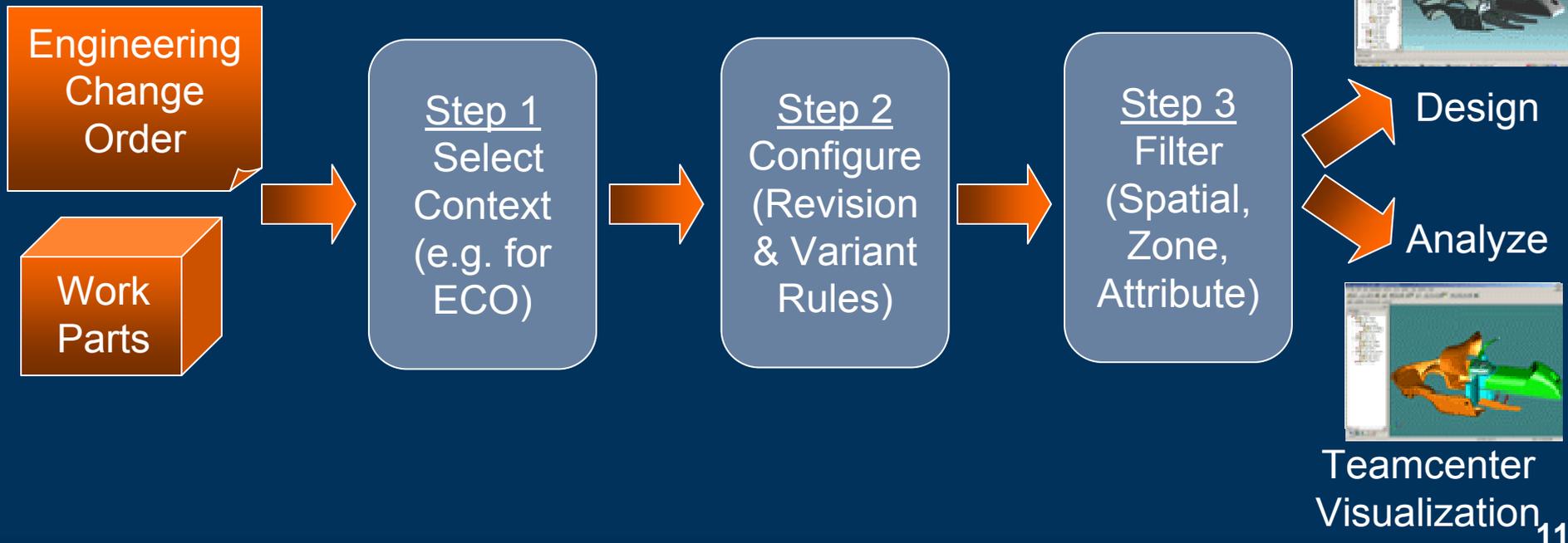




# DesignContext Application Benefits



- ▶ Rich Client Application
- ▶ Simplifies Product Configuration
- ▶ Fast Access to Very Large Assemblies
- ▶ Intuitive User Interface





# Collaboration Context Application

## Allows user to:



- ▶ Create Structure Context and Collaboration Context objects
- ▶ Creating multiple representations by allocating occurrences from one representation to another
- ▶ Creating/editing occurrence groups
- ▶ Creating Composition by allocating occurrences/occurrence groups from one representation to Compositions
- ▶ Reposition occurrence groups in a Composition
- ▶ Comparing structures that share occurrences
- ▶ Find occurrences by occurrence id
- ▶ Partially loading assembly structure
- ▶ Capture snapshots from base structures
- ▶ Exchange objects from the Collaboration Context with external system



## Business Process that Rely on Context Management

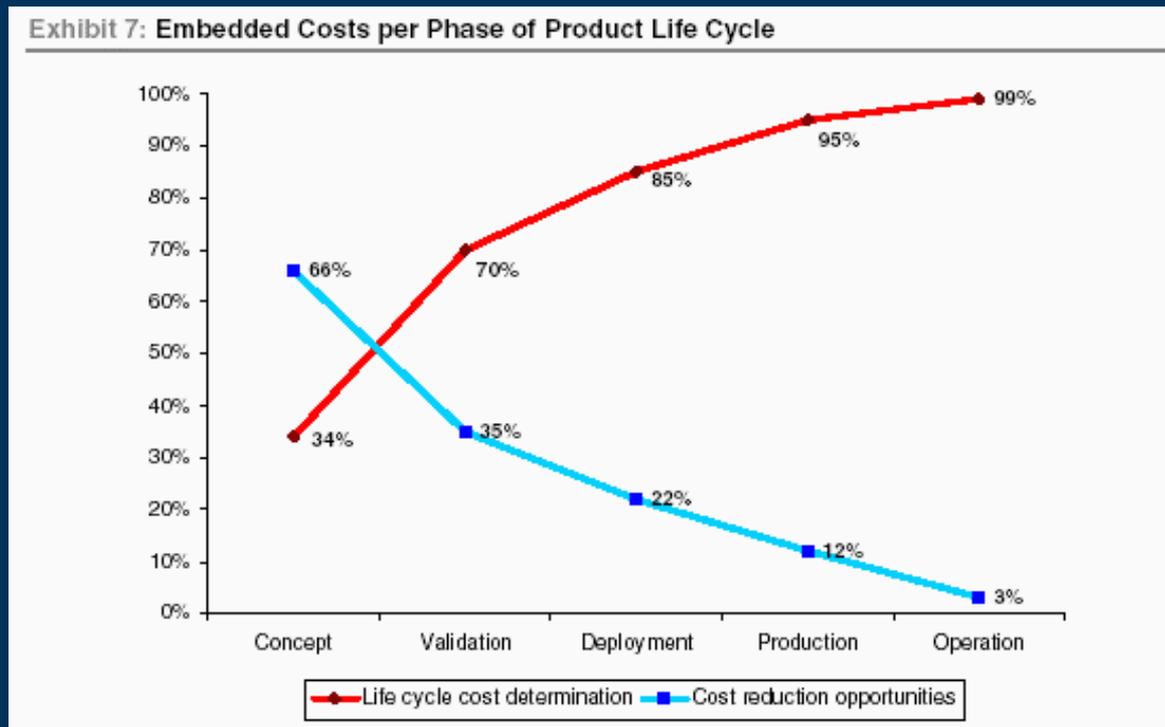
Repeatable Digital Validation  
Supplier Integration



# Repeatable Digital Validation



- ▶ A combination of software & process enabling on-demand digital mockups for use throughout the product development lifecycle
- ▶ Context management is a key enabler
- ▶ Goal is to maximize cost reduction...early in design cycle





# Info Week Article

GM will on average produce a newly designed automobile every 22 days

Design cycles cut from 44 to 18 months

Efforts such as continuous review based on RDV will save GM millions of dollars each year

RDV key to supplier collaboration

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**General Motors Takes Design Up A Notch**  
Feb. 23, 2004

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**Automaker upgrades PLM software to improve design and manufacturing processes**  
By Beth Bachelder

General Motors Corp. this year will, on average, produce a newly designed automobile every 22 days. Add in the updated versions of existing models, and that number drops to 11 days.

Such a feat requires speedy, simplified design cycles aided by product life cycle management software and digital-design tools. GM has been using software from UGS PLM Solutions, an EDS subsidiary, for several years and has already cut design cycles to 18 months from 44. The automaker also has slashed \$1 billion from product-development and engineering costs.



This year, GM will produce a new model every 22 days.

GM is raising the bar by leveraging an upgraded version of UGS PLM's Teamcenter software, being launched next week. The software lets GM test and validate part designs in the context of an entire vehicle and any design changes that occur during the design cycle. Such efforts will save GM millions of dollars each year by improving accuracy. "What we're trying to promote is a continuous review," says Terry Kline, global information officer for product development at GM.

The software, based on math-based processes called repeatable digital validation, lets GM store designs and all the data behind the parts' relationships so designers can collaborate more effectively. Design and engineering groups can zero in on specific areas of a vehicle as they work through the design process.

Repeatable digital validation is key to GM's efforts to interactively collaborate with some 900 North American and 1,000 European suppliers during the design and manufacturing phases, Kline says. Equally important is GM's decision to implement a single product-life-cycle-management and digital-design system throughout its operations. GM now has 28,000 seats of UGS PLM's software.



- ▶ **The Repeated Digital Validation (RDV)**  
application supports test, validation and visualization of particular variants
  
- ▶ **Key Features**
  - **Repeatable digital validation**
    - ✓ Simple, automated process to rapidly identify, design and evaluate in the requested context
      - Proximity queries
      - Up-to-date configuration
      - Fast cache
  - **Visual Change Management**
    - ✓ Graphical history of change / compare
  - **Digital prototype processes**
    - ✓ Mockup and analyze product visualizations from heterogeneous CAD systems
    - ✓ Cross-section, interference/clearance checking, and other engineering functions



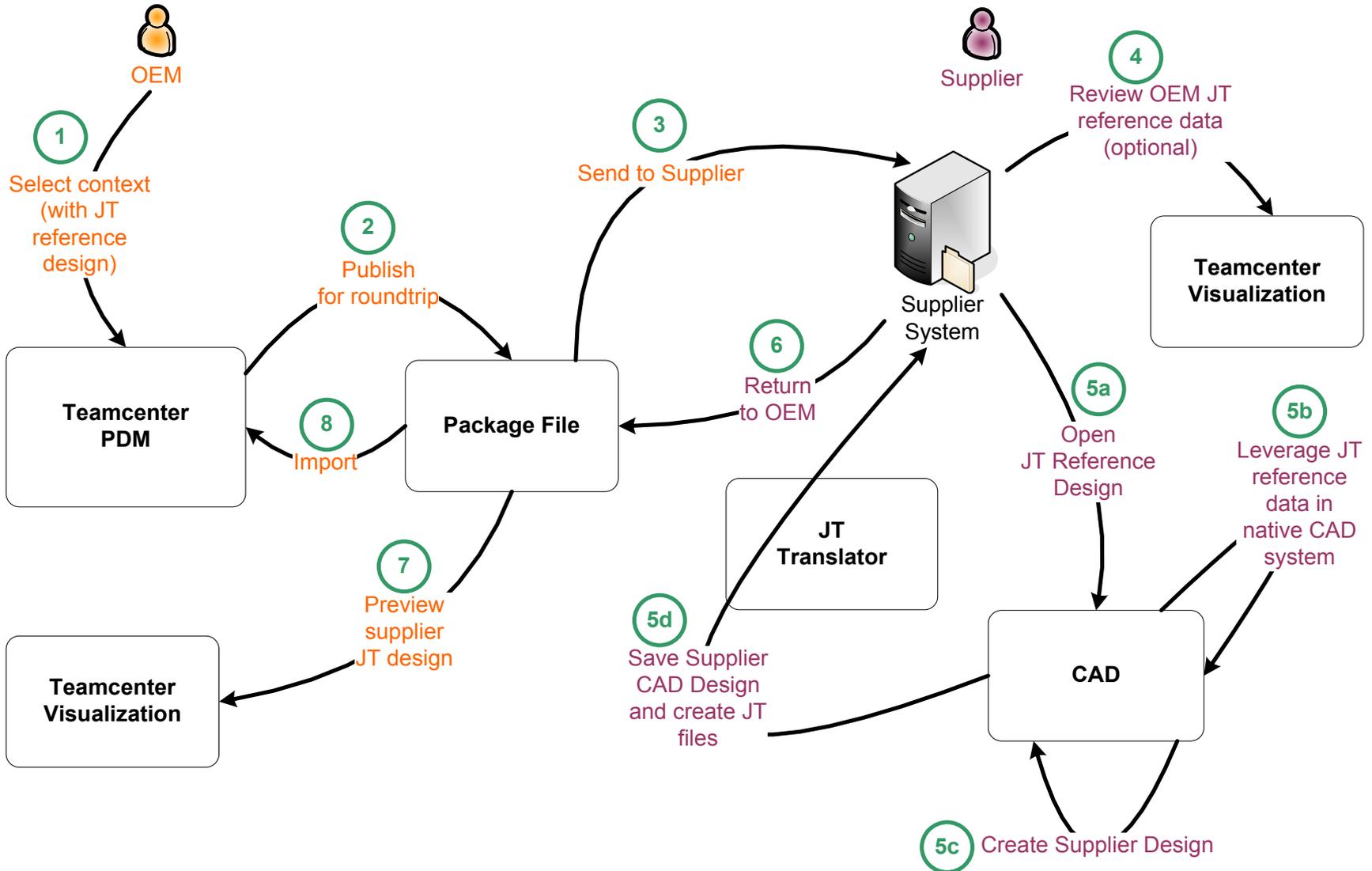
- ▶ Looking forward, Teamcenter will leverage context management to exchange information with suppliers
- ▶ One of the key use cases is design-in-context
  - ▶ OEM sends supplier reference geometry and related information
  - ▶ Supplier designs components in the context of this reference geometry
  - ▶ Supplier sends design back to OEM
- ▶ Next Slide
  - ▶ Shows a design-in-context use case based on exchanging JT data



# Supplier Integration Design-in-Context Use Case



## Supplier JT Design-in-Context Use Case





# Benefits of Leveraging Contexts In Supplier Integration



- ▶ The context ensures that the supplier gets the right information each time
- ▶ The definition of a context is not limited to geometry and can also include a wealth of related documents pertaining to the product or process
- ▶ The data exchange complexity can be managed by few and used by many
- ▶ The context can be defined to optimize the total volume of data exchanged and filter out data or Intellectual Property that should not be shared
- ▶ The value of the context definition increases as it is reused in iterative design cycles



# Context Management Summary



- ▶ Supports collaborative processes and concurrent engineering
- ▶ Enables task focused user interaction
  - ▶ All the disparate information the user needs is in one place
  - ▶ But without the extraneous information they do not need
- ▶ Allow the applications to stay manageable as the amount of product and lifecycle data continues to grow
  - ▶ An individual user is not overwhelmed because they see only what they need



# For More Information



- ▶ Previous session:
  - ▶ **Supplier Integration**
    - ▶ Monday May 8<sup>th</sup>
    - ▶ Keith Walk, Teamcenter Product Management, UGS
- ▶ Please attend:
  - ▶ **Managing Multiple Lifecycle Representations**
    - ▶ Thursday, May 11<sup>th</sup>
    - ▶ Frances Evans, Teamcenter Architect, UGS
  - ▶ **Product Configuration and Variant Management**
    - ▶ Thursday, May 11<sup>th</sup>
    - ▶ Amy Strucko, Teamcenter Product Management, UGS



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