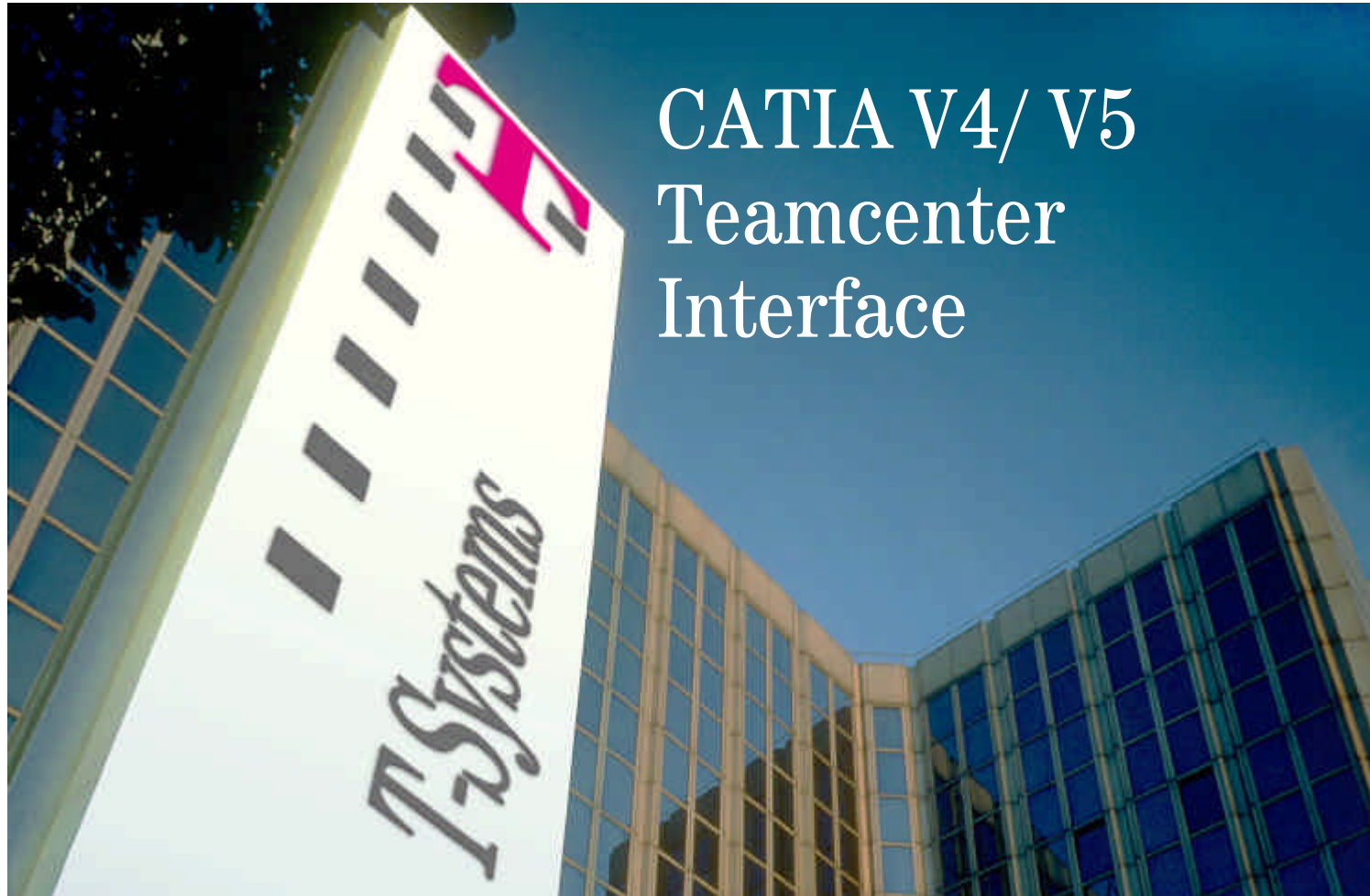


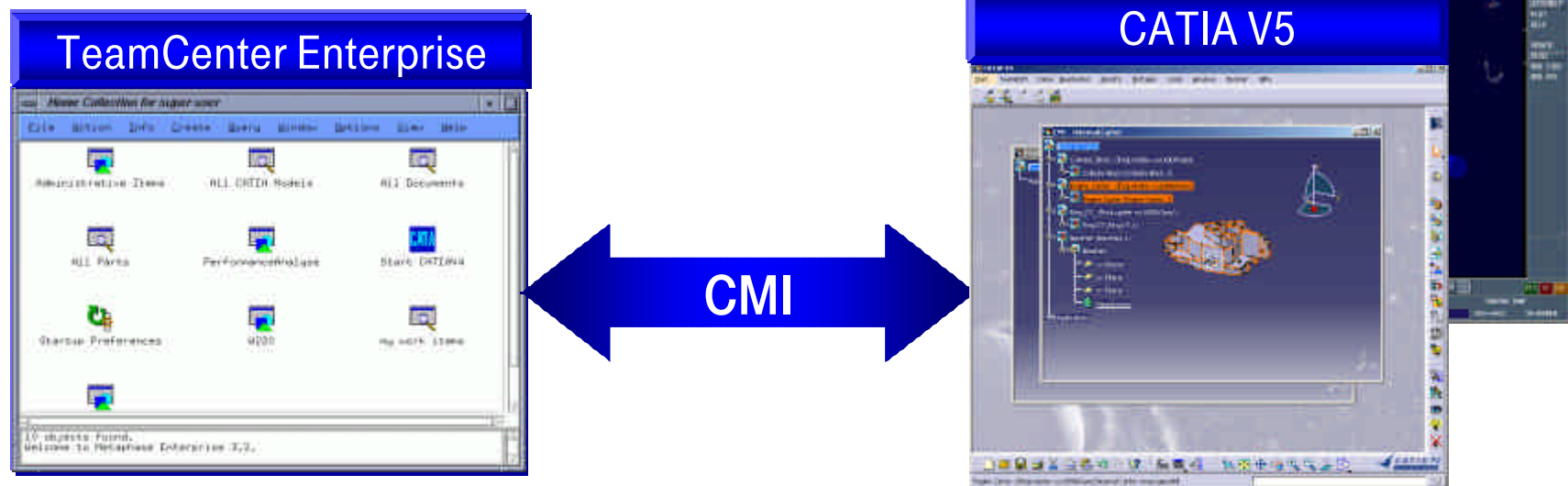
CMI - CATIA Teamcenter Integration



CATIA V4/ V5 Teamcenter Interface.

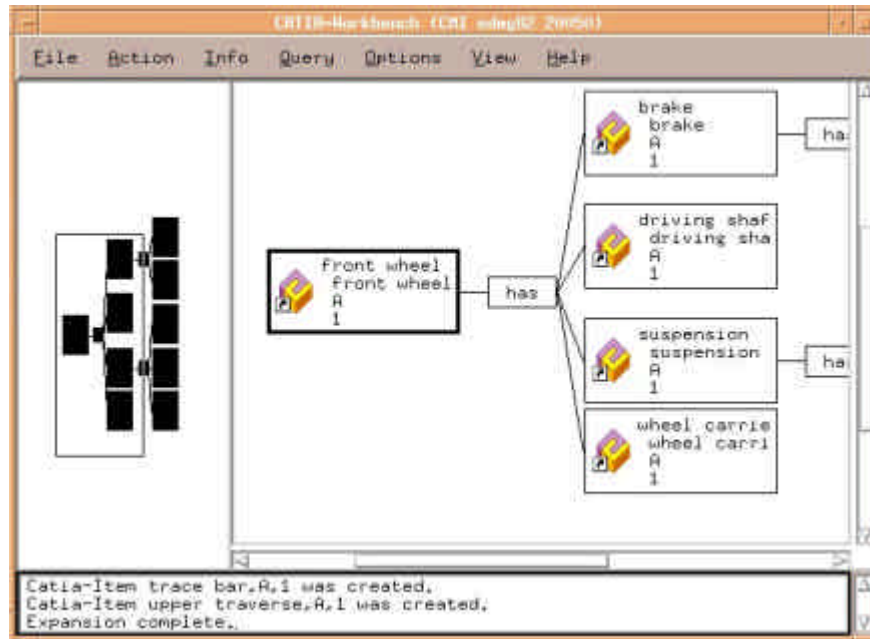
CATIA Metaphase Interface - Overview

- Integration of CATIA V4 / V5 and TeamCenter Enterprise
- TeamCenter Enterprise as global PDM system
- Product since 1995
- Assembly functionality in CATIA V4
- Integration of bill of material and geometry data
- Wide range of customization possibilities
- www.cmi-support.com



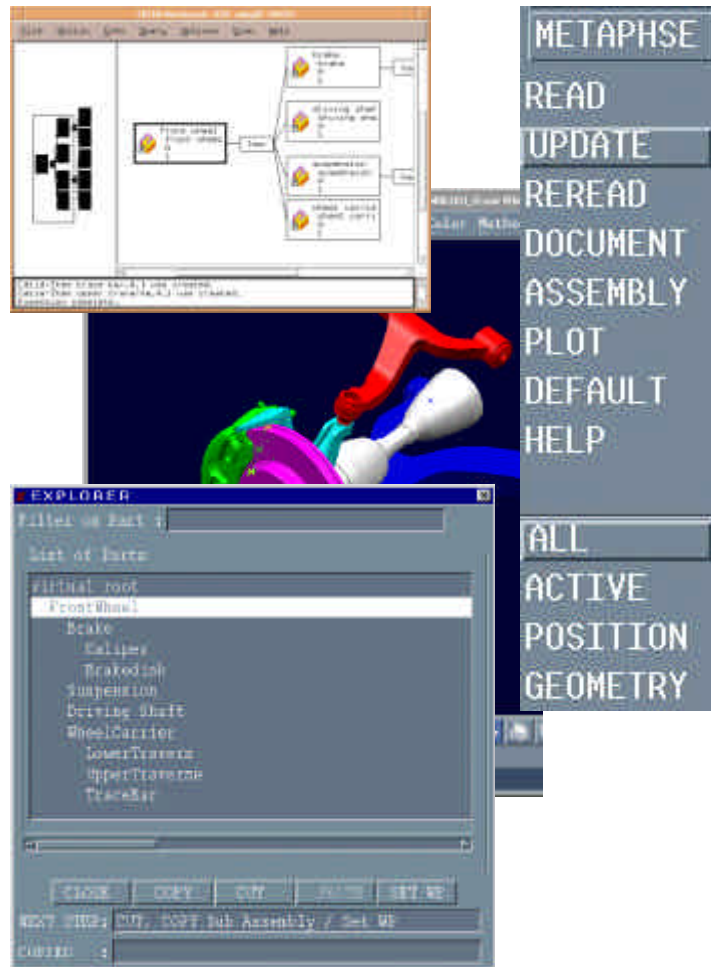
CATIA V4/ V5 Teamcenter Interface.

The CMI Workbench Concept



- The CATIA workbench represents the content of the CAD system CATIA.
- In CMI workbench the selected product structure can be tailored, expanded, inflated and items can be selected.
- Multiple product structures or single geometry objects can be located in the CMI workbench.
- Information for each item in the CMI workbench can be displayed
- The communication process with CATIA can be started directly from the CMI workbench
- The displayed item icon gives information about the type and important properties of the represented Teamcenter object and the related CATIA data.

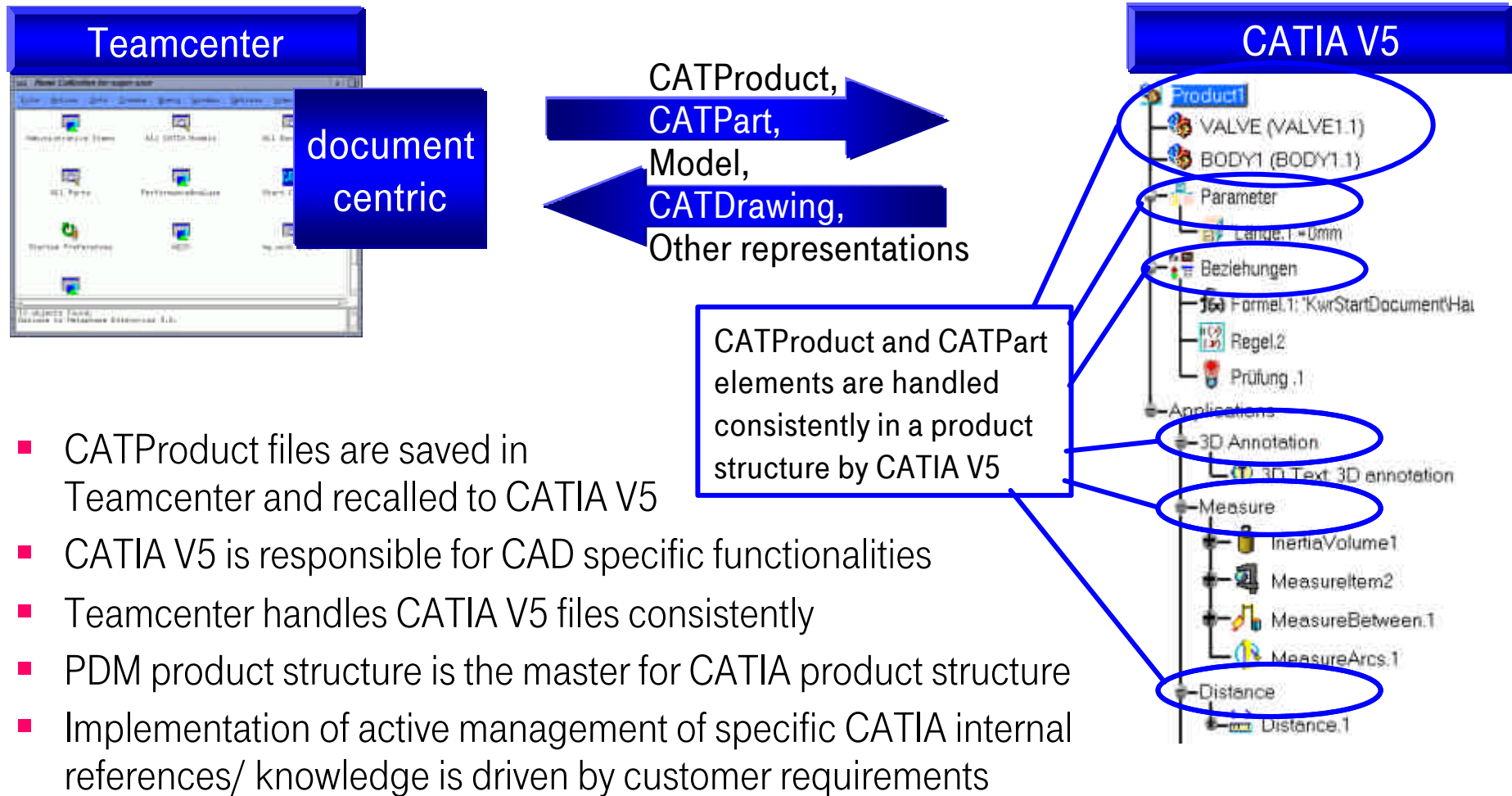
CATIA V4/ V5 Teamcenter Interface. CATIA V4 Integration.



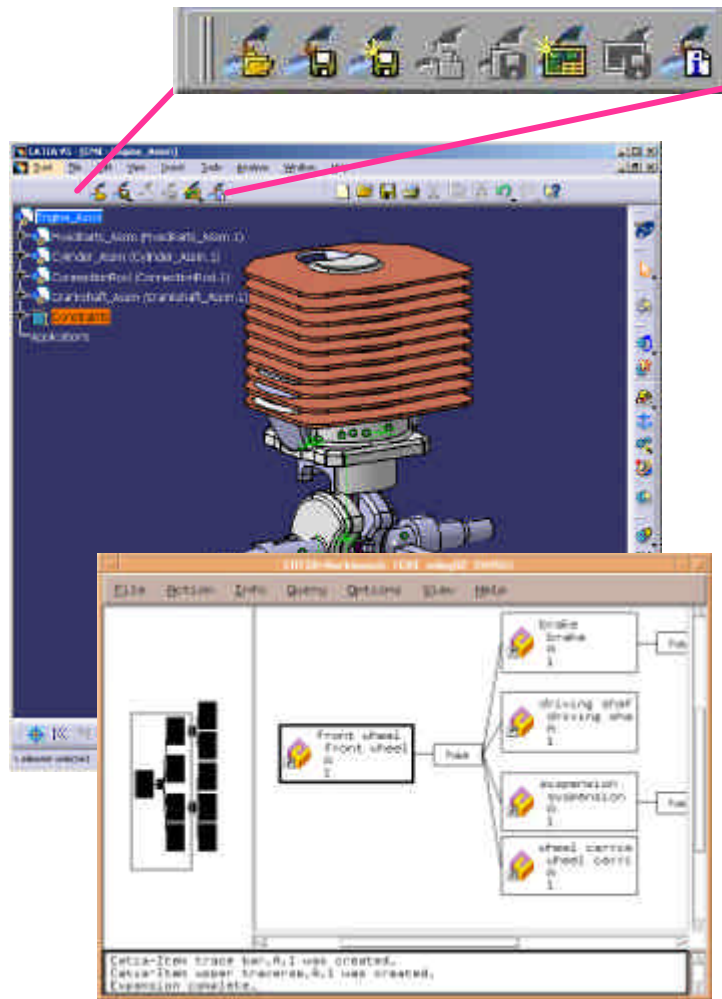
- In CATIA V4 CMI is visible through a menu.
- It provides a wide range of functions for update, creation and read actions to enable the transfer of CATIA V5 data from and to Teamcenter.
- The main benefit of CMI in CATIA V4 is the sophisticated multilevel assembly functionality it provides to the CATIA V4 designer.
- With the CMI work plane concept the navigation in the product structure is an easy task.
- The highlight functionality enables the identification of models in CMI workbench and vice versa.

CATIA V4/ V5 Teamcenter Interface.

CMI Philosophy with CATIA V5



CATIA V4/ V5 Teamcenter Interface. CATIA V5 Integration (CMI 8.3).



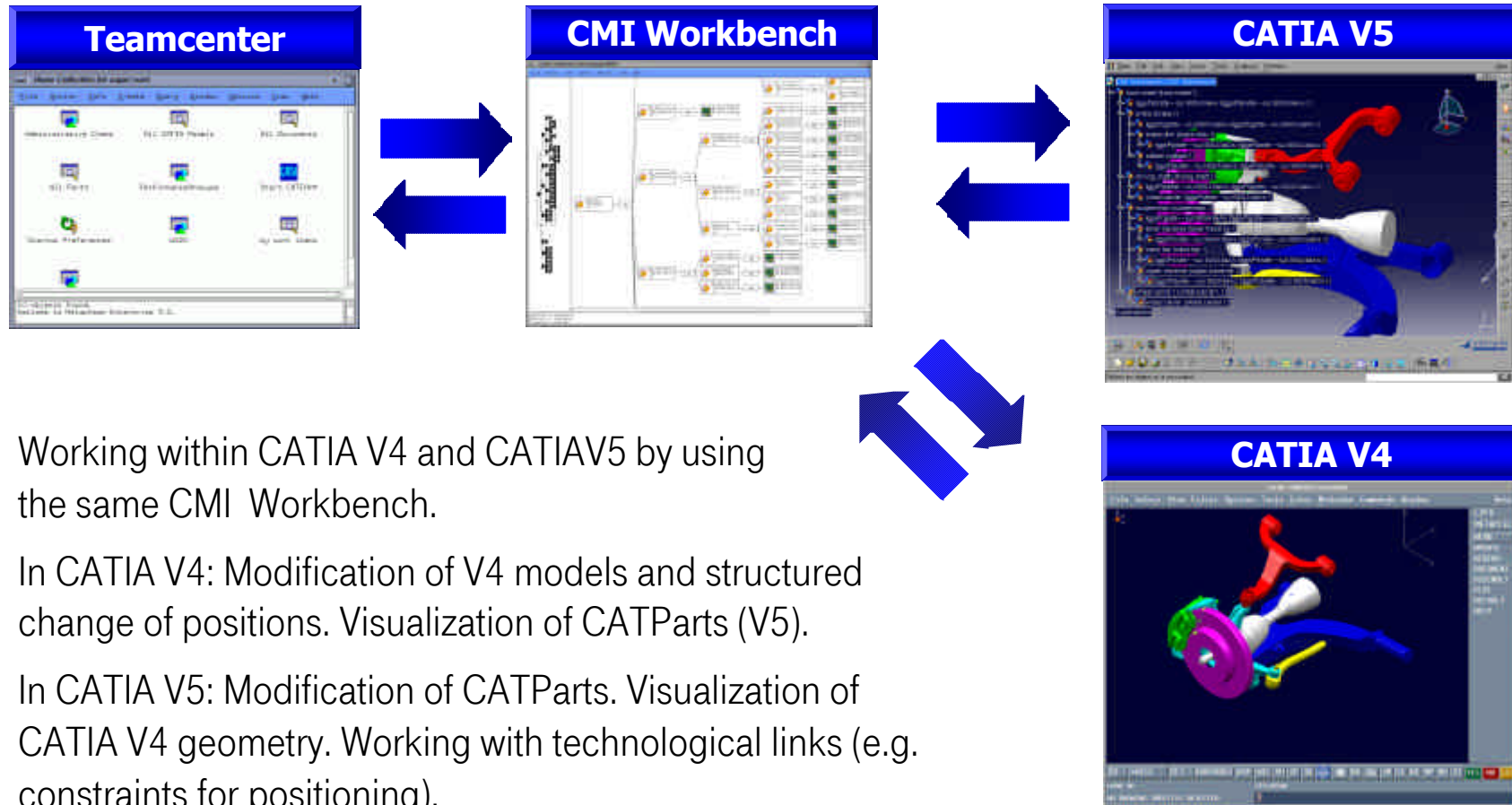
Key features

- Support of Win2000 and UNIX
- Data management of CATParts, CATDrawings and CATProducts
- Neighborhood search facility integrated in Teamcenter
- Handling of transformations (analogous to CMI CATIA V4 integration)
- Parallel support of CATIA V4 and V5
- Bi-directional communication

Technical highlights

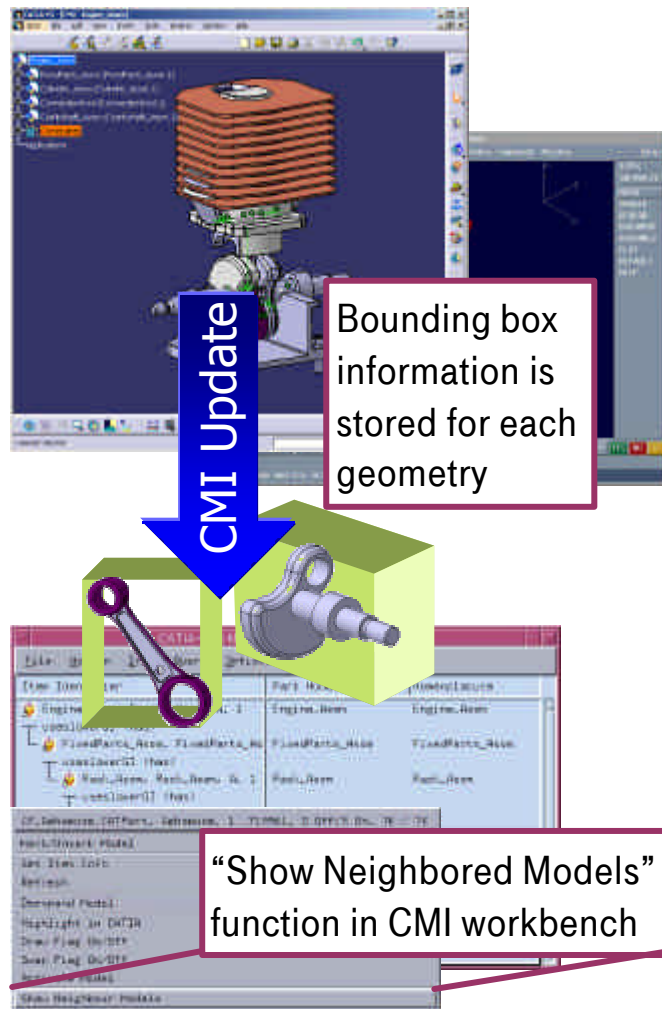
- CMI workbench content in single or multiple windows
- Consistent handling of CATProducts: constraints, application data, technological links, ...
- Create/Save As for CATParts/CATDrawings
- Create for CATParts added into a CMI product structure
- Full support of CMI workbench functionality

CATIA V4/ V5 Teamcenter Interface. Using CATIA V4 and V5 in parallel.



CATIA V4/ V5 Teamcenter Interface.

Neighborhood Search Facility



Key features

- Bounding box creation for CATIA V4/ V5 geometries
- Neighborhood search works with CATIA V4 and V5 geometries
- Pre-selection for DMU research in DMU Navigator

Technical highlights

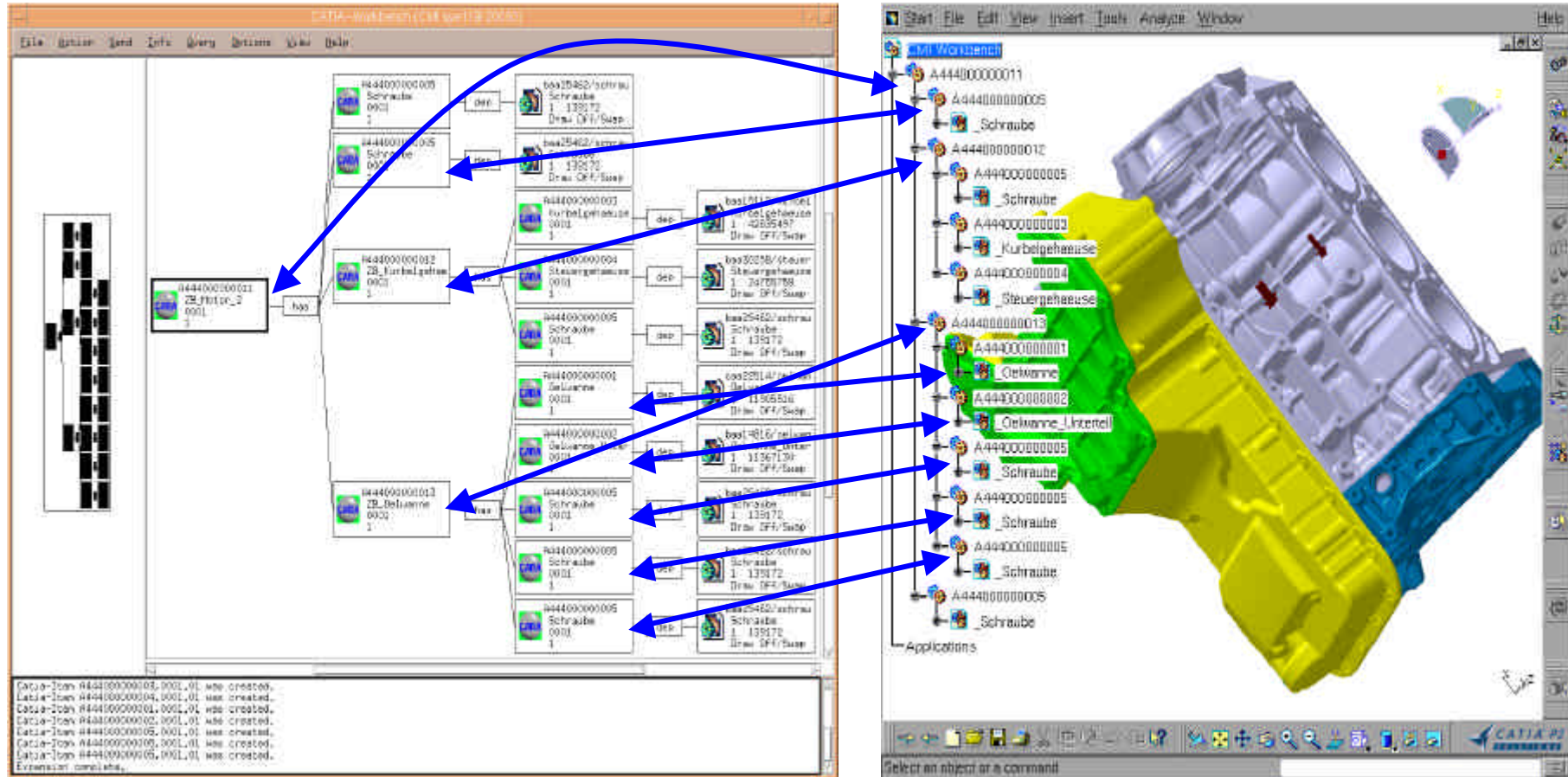
- Model orientated, tightly wrapped bounding box
- Fast collision detection algorithm
- Recognition of multiple instances of a model

Strategy

- Volume based search
- Dynamic update of DMU-file with “CMI-Update”
- High performance multi-level expand
- Combination of geometrical researches

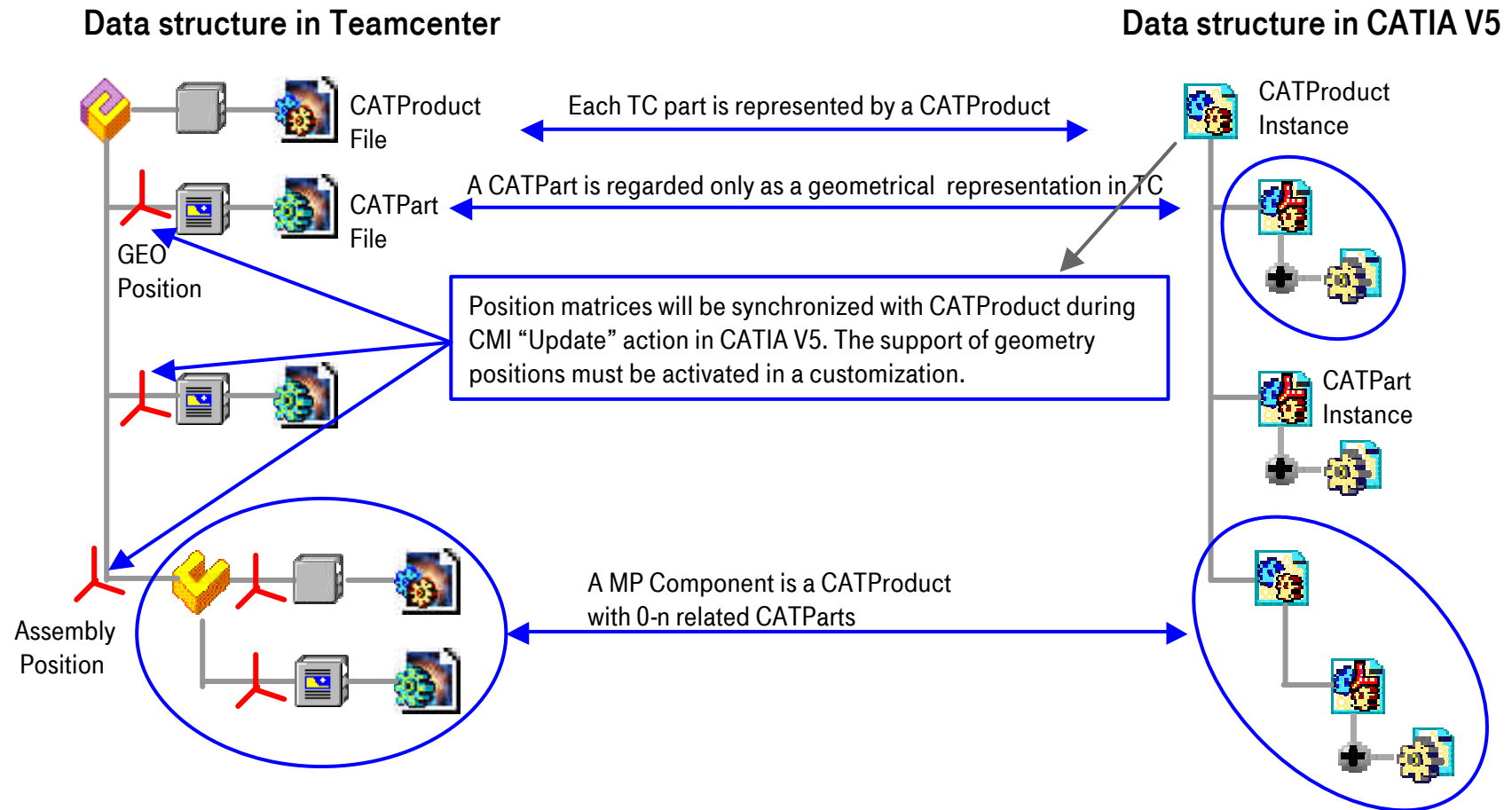
CATIA V4/ V5 Teamcenter Interface.

Teamcenter product structure in CATIA V5.



CATIA V4/ V5 Teamcenter Interface.

Mapping of Teamcenter Data Model in CATIA V5



CATIA V4/ V5 Teamcenter Interface.

New Features In CMI 8.3

- Embedded product support (CATIA V5 components)
- Status panel for CMI actions
- CMI item info functionality
- CATIA V4/V5 Bounding Box facility
- CATIA V5 standard property support
- Virtual CATProduct representing the CMI workbench
- Enhanced CATProduct management
- Multi Quantity Support for CATIA V5
- Neighborhood search in CMI workbench
- CATPart type detection for CATIA V5 technological parts (Fastener, Piping, ...)

CATIA V4/ V5 Teamcenter Interface.

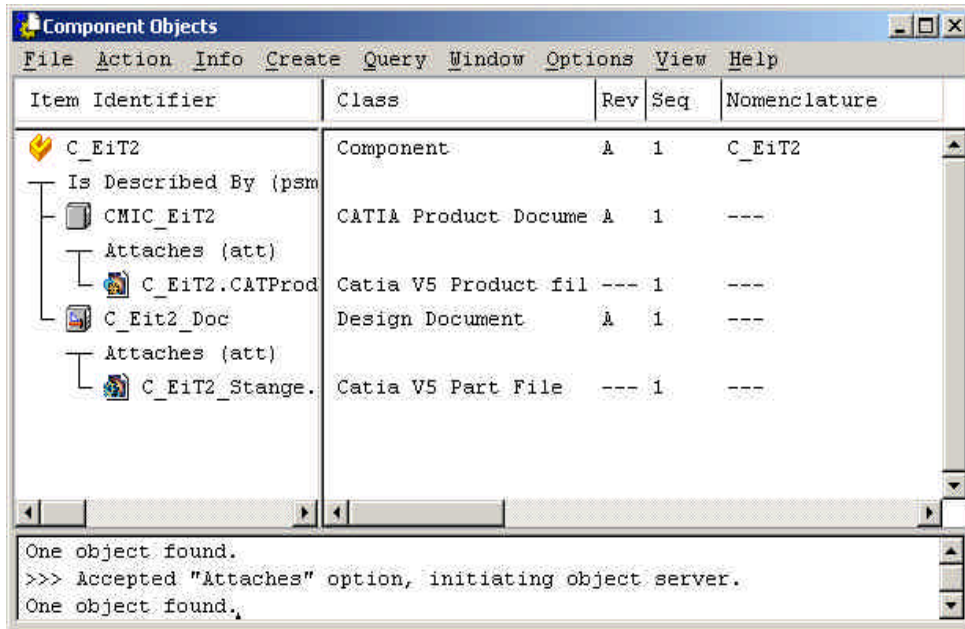
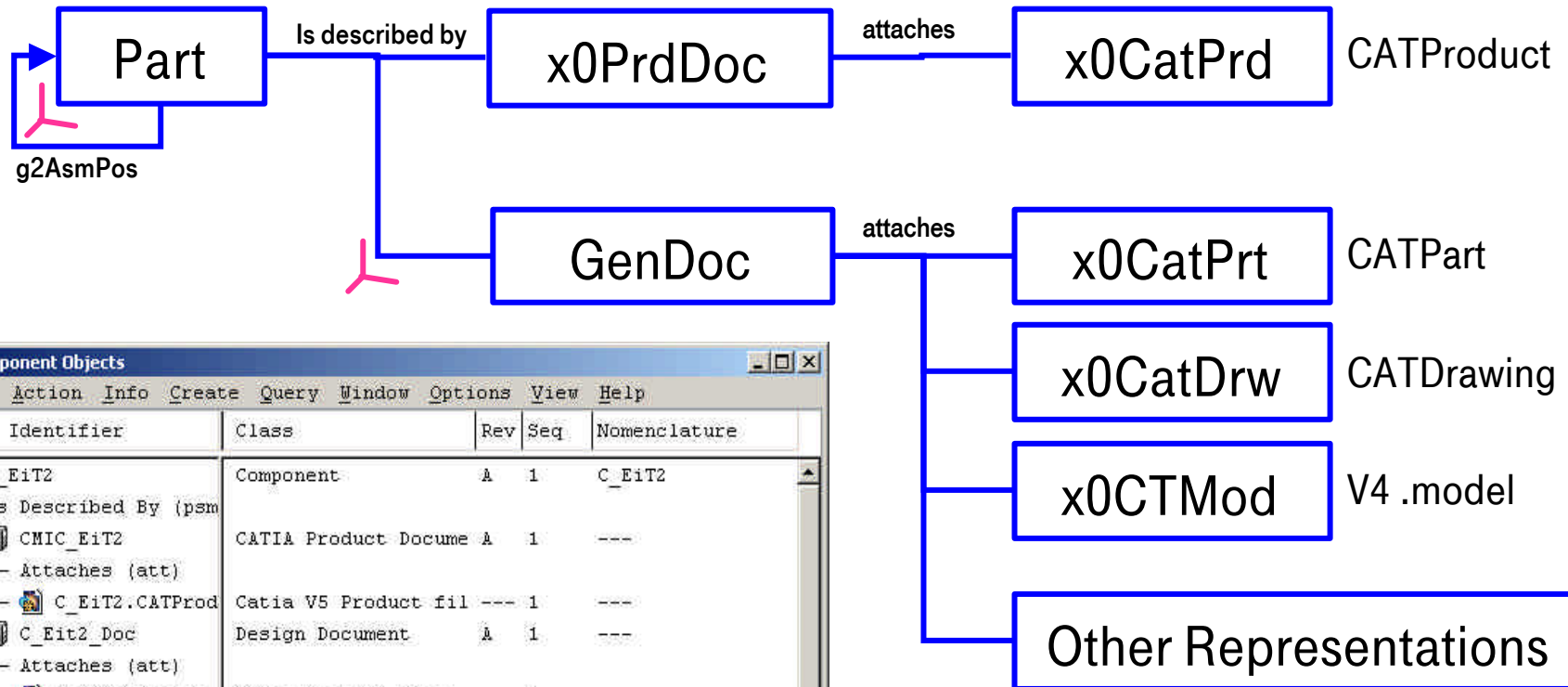
New Features In CMI 8.4

- Extended CATIA properties support
- ADS module support
- Volume based search for geometries in CMI workbench
- Remove sub-tree from product structure in CATIA V5
- Add new part (CATProduct) to product structure in CATIA V5
- Support of non-BOM CATIA V5 subassemblies
- Highlight in workbench for CATIA V5
- CMI Pull-Down menu in CATIA V5

CATIA V4/ V5 Teamcenter Interface. Further Planning

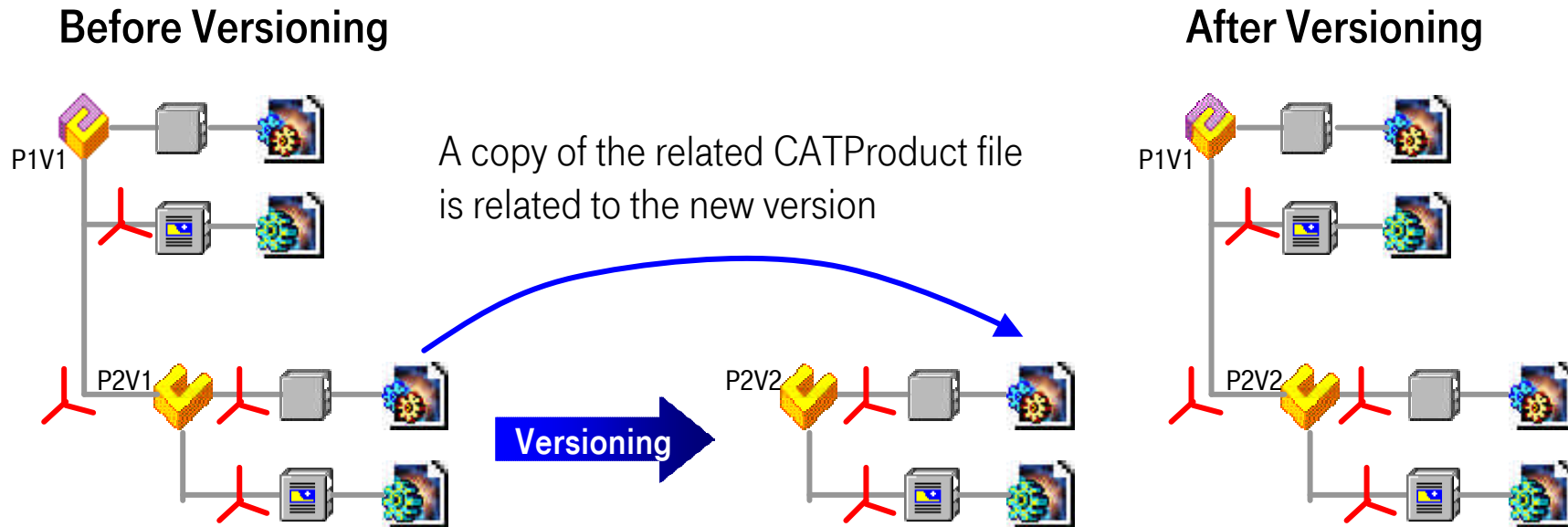
- Replace a sub product structure in CATIA V5
- Support of CATIA V5 CATPart as Teamcenter component
- Standard part integration with CATCatalogs
- Support of CATProcess
- Management of different versions of product structures in one CATIA V5 session

CATIA V4/ V5 Teamcenter Interface. Data Model



CATIA V4/ V5 Teamcenter Interface.

Versioning and CATProducts (#1)

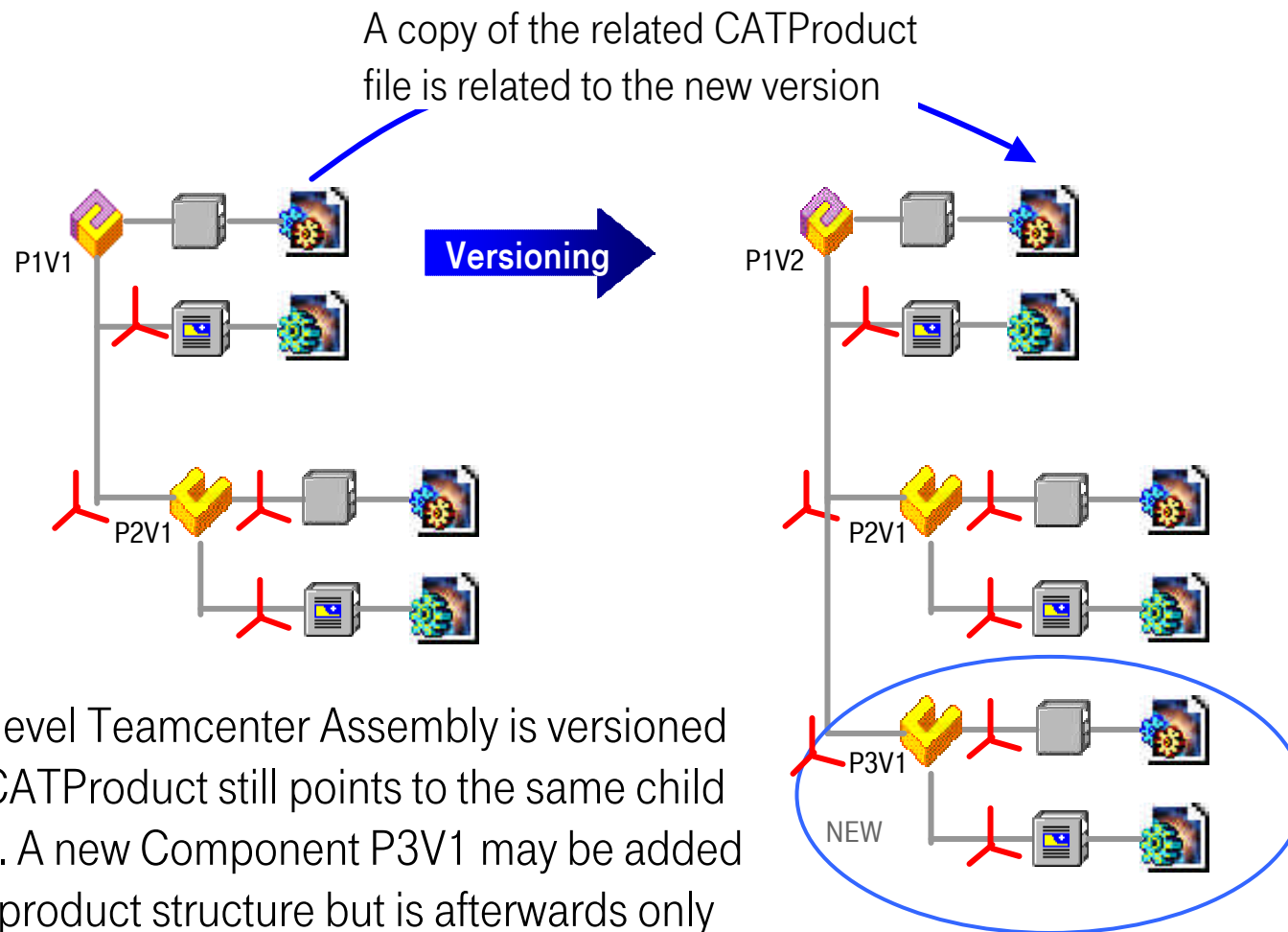


After versioning of part P2 in Teamcenter the father CATProduct in CATIA V5 accepts both P2V1 or P2V2.

Depending on the context in Teamcenter P2V1 or P2V2 can be loaded with CMI as part of the P1V1 product structure to CATIA V5.

CATIA V4/ V5 Teamcenter Interface.

Versioning and CATProducts (#2)

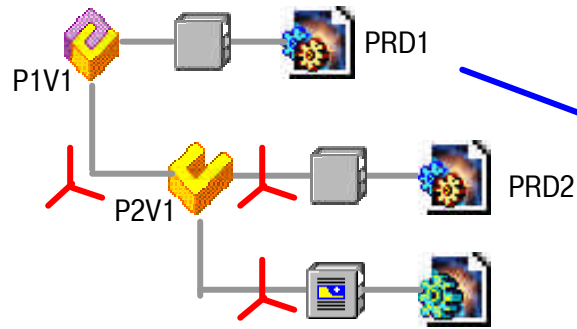


When a top level Teamcenter Assembly is versioned the related CATProduct still points to the same child CATObjects. A new Component P3V1 may be added to the P1V2 product structure but is afterwards only referenced in the context of P1V2 and not in P1V1!

CATIA V4/ V5 Teamcenter Interface.

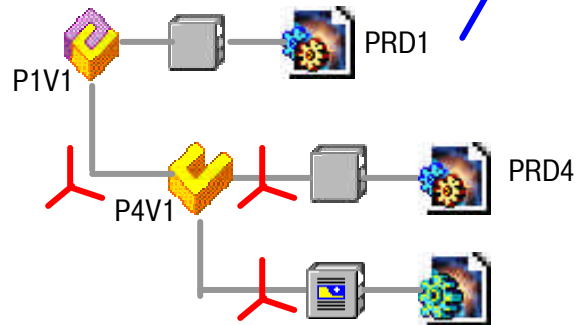
Configurations and CATProducts

P1V1 in configuration context 1 in Teamcenter

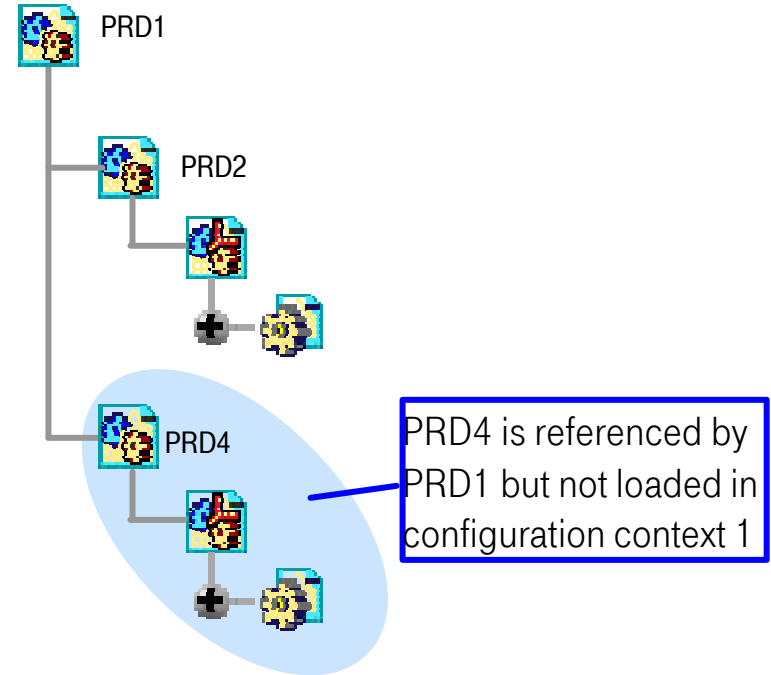


Within different configurations the same CATProduct PRD1 is used for P1V1.

P1V1 in configuration context 2 in Teamcenter



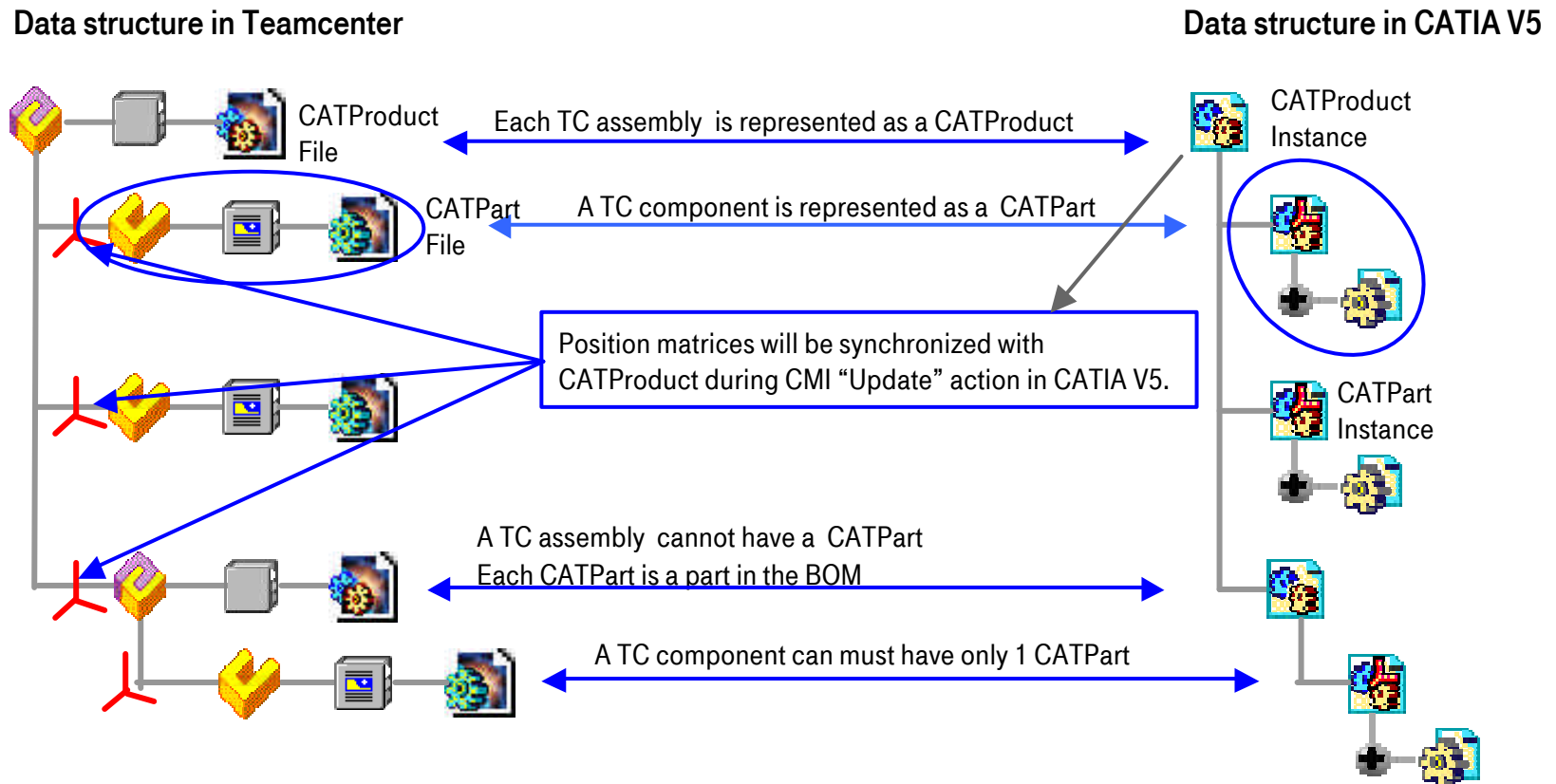
P1V1 in configuration context 1 in CATIA V5



A CATProduct in CMI refers to child CATObjects from all configurations. In CATIA V5 only the CATFiles which are valid in a certain context defined by CF2 can be accessed. The context provided by Teamcenter is a filter for the CATIA V5 session.

CATIA V4/ V5 Teamcenter Interface.

Mapping of CATIA V5 Data Model in Teamcenter



CATIA V4/ V5 Teamcenter Interface.

Mapping of CATIA V5 Data Model in Teamcenter

Restrictions of CATIA V5 data model in Teamcenter

- A Teamcenter component can only relate to 1 CATPart and necessarily needs a CATPart
- A Teamcenter component cannot relate to a CATProduct
- Each CATPart is a part in the BOM of TC
- A Teamcenter assembly cannot relate to a CATPart
- A Teamcenter assembly relates to 1 CATProduct
- A CATIA V4 model is a component in CATIA V5 and not a part like the CATPart
 - CATIA V4 assemblies cannot be handled with this data model

CATIA V4/ V5 Teamcenter Interface.

Mapping of CATIA V5 Data Model in Teamcenter

Advantages of CATIA V5 data model in Teamcenter

- Direct mapping of native CATIA V5 product structures
- No inflated product structures through additional CATProducts in CATIA V5
- Definite CATProduct – CATPart relation
 - The drop of a component in Teamcenter can be tracked in CATIA V5
- Geometry position is no longer needed
 - Symmetry position is located in the CATPart object