PRODUCT DATA MANAGEMENT SYSTEMS

LECTURE 15 – MAE 455 COMPUTER-AIDED DRAFTING AND DESIGN

MODERN CAD/CAM/CAE PRACTICE

Information from all product lifecycle activities is available from a single database.
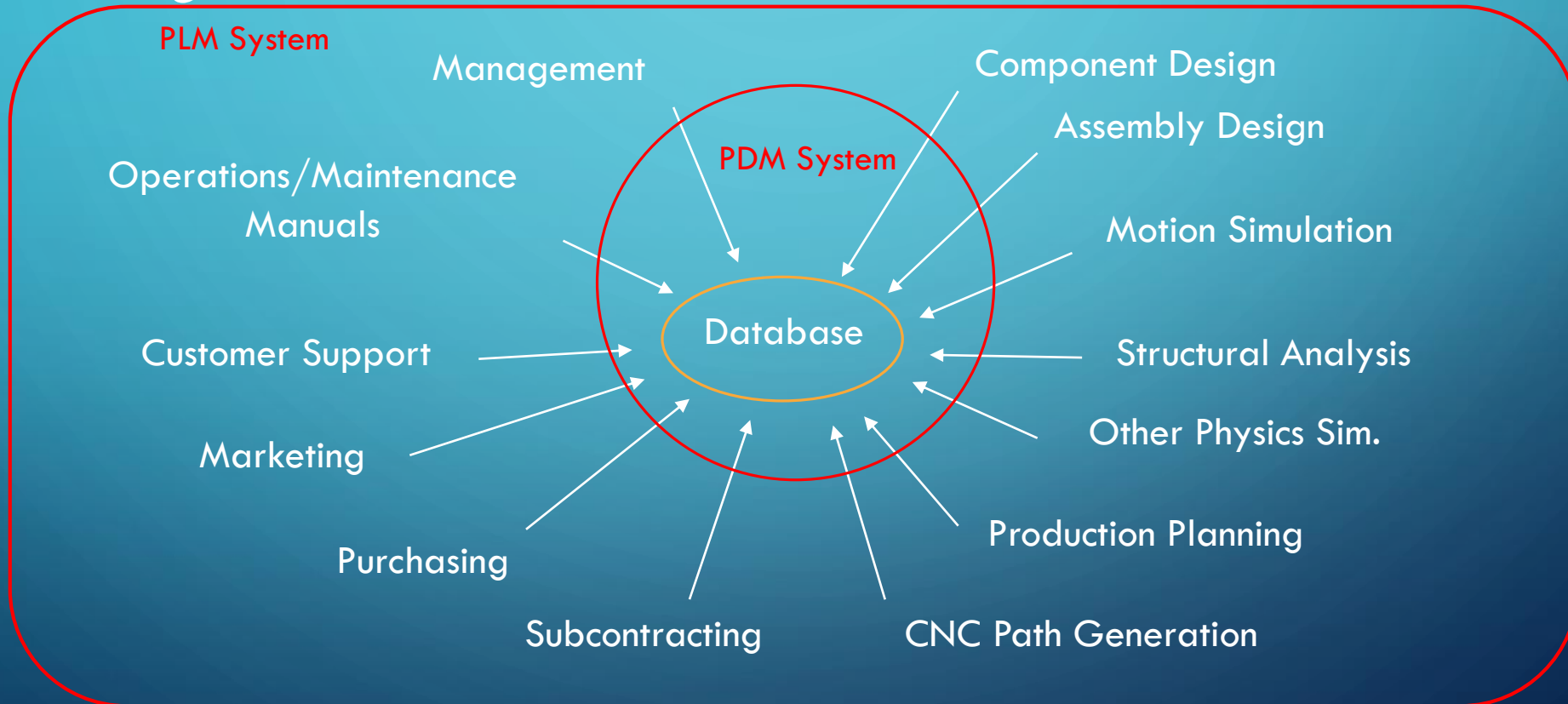
PDM AND PLM

- PDM – **Product Data Management**
is the activity of storing, retrieving, and controlling the use of digital product data shared by multiple users.

- PLM – **Product Lifecycle Management**
is the strategic, integrated use of diverse software to support all product lifecycle activities of a manufacturing enterprise, from the conception of a product, through design, manufacturing, customer support, and product retirement.

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PURPOSE OF PDM SOFTWARE

- Product Data Management (PDM) software enables members of a team or enterprise to **share information** and **manage** it.

- Individuals who need to access CAD data:
  - Designers
  - Engineering Analysts
  - Project Engineers
  - Managers
  - Purchasing
  - Marketing

- Activities they do:
  - See what parts and assemblies look like.
  - Evaluate them in some way.
  - Modify parts, or use them in assemblies or for analysis.
  - Review, accept and release designs.

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PDM SOFTWARE IMPLEMENTATION

- PDM software employs **databases** to store information.

- CAD data or **any other kind of data** from the life-cycle of a product or process can be managed by PDM software.

- The ability of individuals to access and change the data is controlled.

- Examples of PDM software include **Teamcenter** (Seimens PLM)**, Windchill** (PTC) and **ProductCenter** (SofTech)**.

USING PDM SOFTWARE

PDM applications typically provide a **personal workspace** where you can create and organize information in your own folders and receive items to work on (e.g., from searches).

Workspace tabs

"Home" (folder)

System Folder

User-defined folders

Widget Assembly
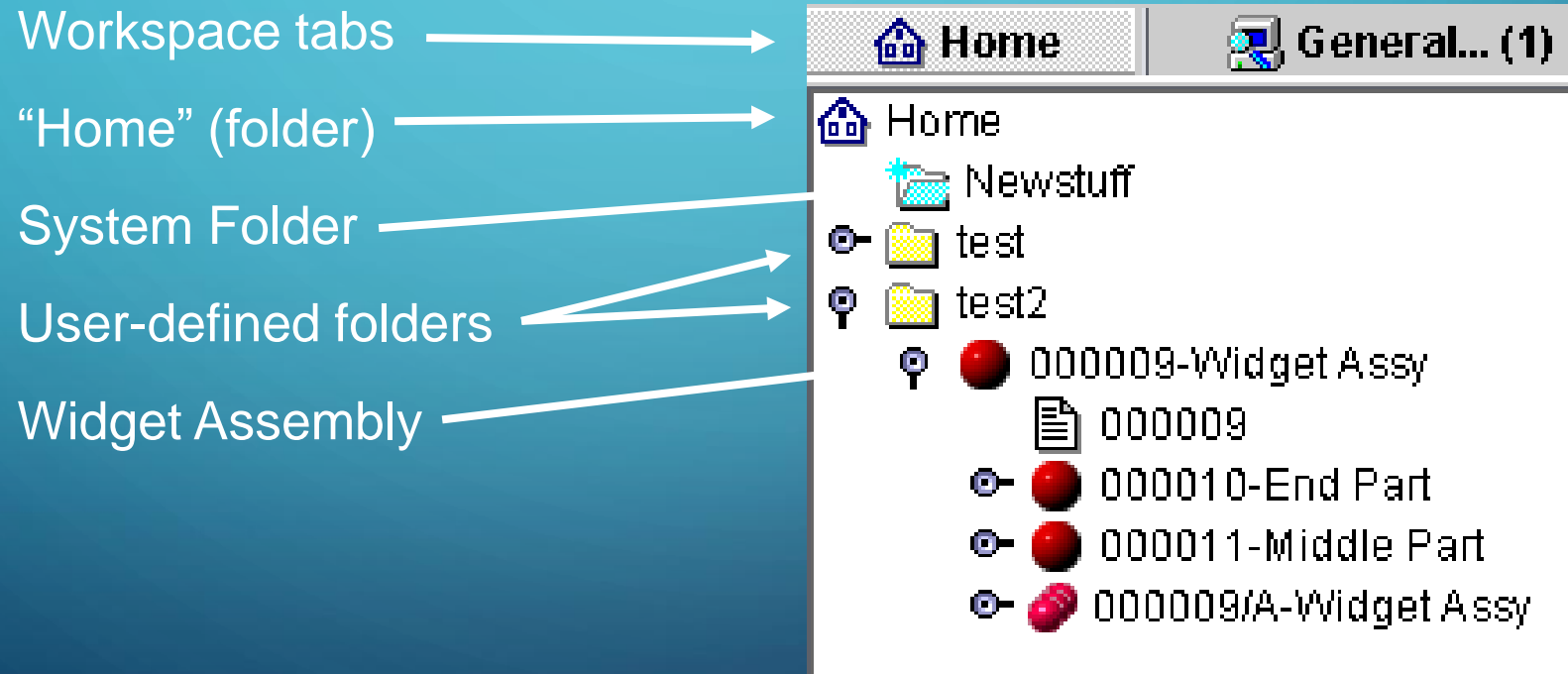
VIEWING AND MODIFYING CAD FILES

- To **view** a part without changing it, double-click on it in the PDM application and it will open it in the CAD application.

- To **change** a part, you must "**check out**" the <u>item</u> before you can work on it.
  - Only one person can check out an item at a time. This avoids problems of designers making simultaneous changes that conflict with each other.
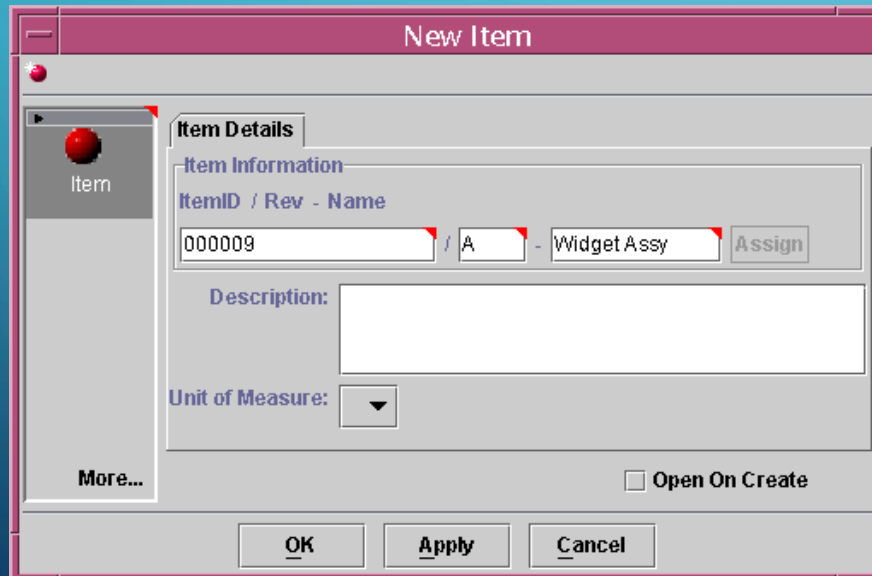
WORKING WITH OTHERS

- In order for others to access your product items you must give them the correct **permissions.** Options include: read-only, read & write, etc.

- In order to bring up an item created by someone else, you must retrieve it from the database. This is typically done using a "search" procedure. You can search for files by:
    - Part name
    - Part number
    - Who created it
    - Region of product
    - MANY other choices.

WORKING WITH "ITEMS"

- So far in this course all of your CAD models have been stored in **part files**. Each part file represents one part, assembly or drawing.

- In a typical company
  - CAD information represents **only a portion** of the information that must be maintained about a part. Other information includes suppliers, costs, and inventory.
  - Some information does not involve parts at all (e.g., Design Specifications, Manufacturing Process Information).

- Therefore, a PDM system stores information as generic **"Items,"** rather than as part files.

WORKING WITH "ITEMS"

- To create an item in PDM software:

1. Typically select File →New → .

2. Input information in a dialog box and press OK.

3. The item automatically gets put in the database.
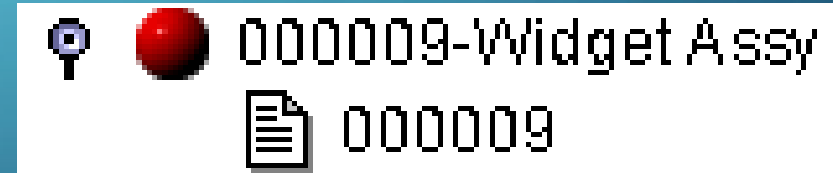
Form for Widget Assembly
"Item Details"

WORKING WITH "FORMS"

- In a database, data can be in the form of **text**, **real numbers**, **integers**, or **choices** from a list.

  ```
  Part number: 608537-X1
  Supplier: Acme Widget Supply Co.
  Quantity in Inventory: 3
  ```

- This kind of information is input in "Forms" and can be **accessed** or searched **directly** in the database. (E.g., it is possible to search the database for all parts supplied by "Acme Widget Supply Co.")

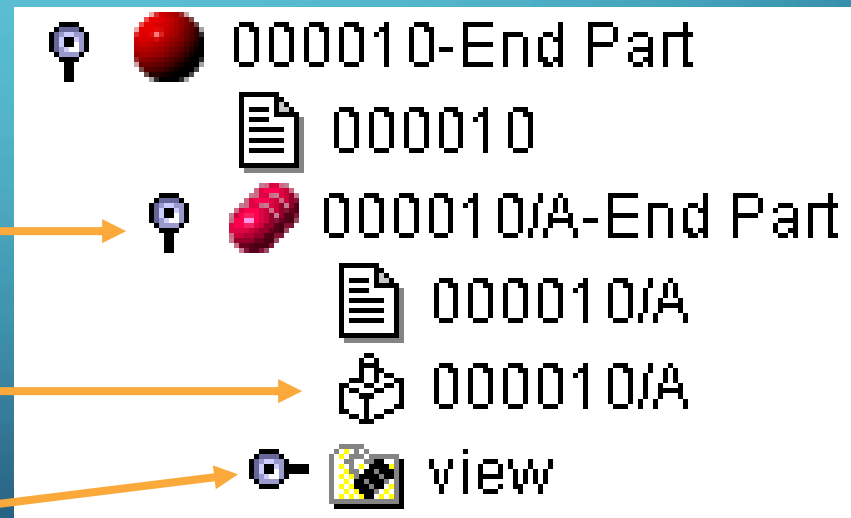- A database can also hold **complete files**.

WORKING WITH "DATASETS"

- Information that is stored as a complete file is called a "dataset." It is accessed as a whole.

- CAD model files are stored as datasets.

End Part

Revision A of End Part

CAD model file (**dataset**)

Alternative "views"
(formats to display textual information)

DEFINING PRODUCT STRUCTURES

- Product structures are **hierarchical** listings of the "items" that make up your product.

- Typically the product structure matches the **assembly hierarchy** from CAD files.

- The product structure is usually **created automatically** when working in the CAD software, but can also be created directly in the PDM software.

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DEFINING PRODUCT STRUCTURES

Widget Assembly

Component parts

000009-Widget Assy
000009
000010-End Part
000011-Middle Part
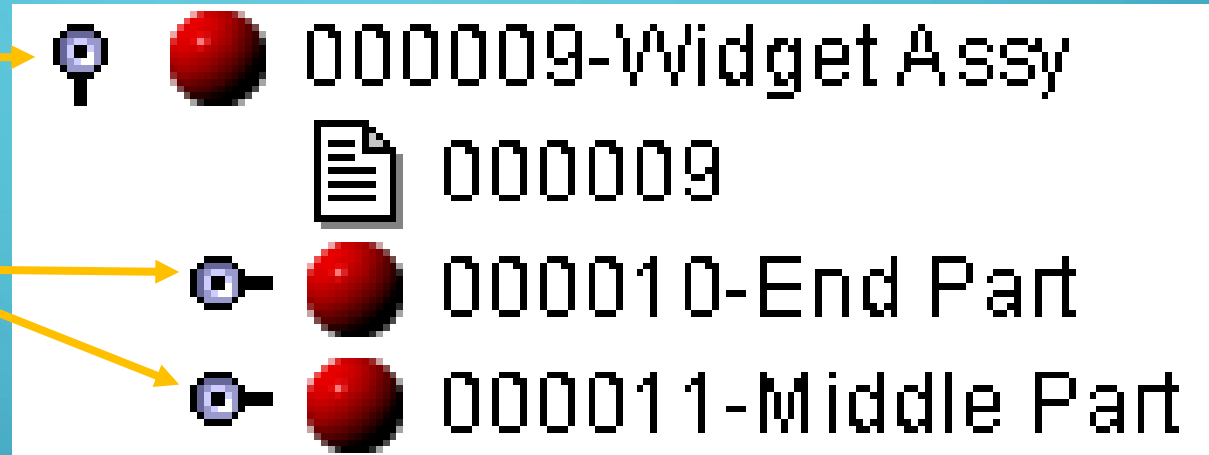
- The product structure can also be displayed in the PDM application as a Bill of Material "**view**".

CONFIGURATION MANAGEMENT

- Configuration Management (CM) is the activity of **tracking** and controlling **changes** to products and processes.

- Every time you create something new, edit, or delete something, you are making a change.

- Each new version of an item is stored in an **"Item Revision."**

CONFIGURATION MANAGEMENT

- Item revisions are created automatically when you first create an item or save an item as a new version.

Revision 'A' of End Part

Form for Revision 'A'

CAD model
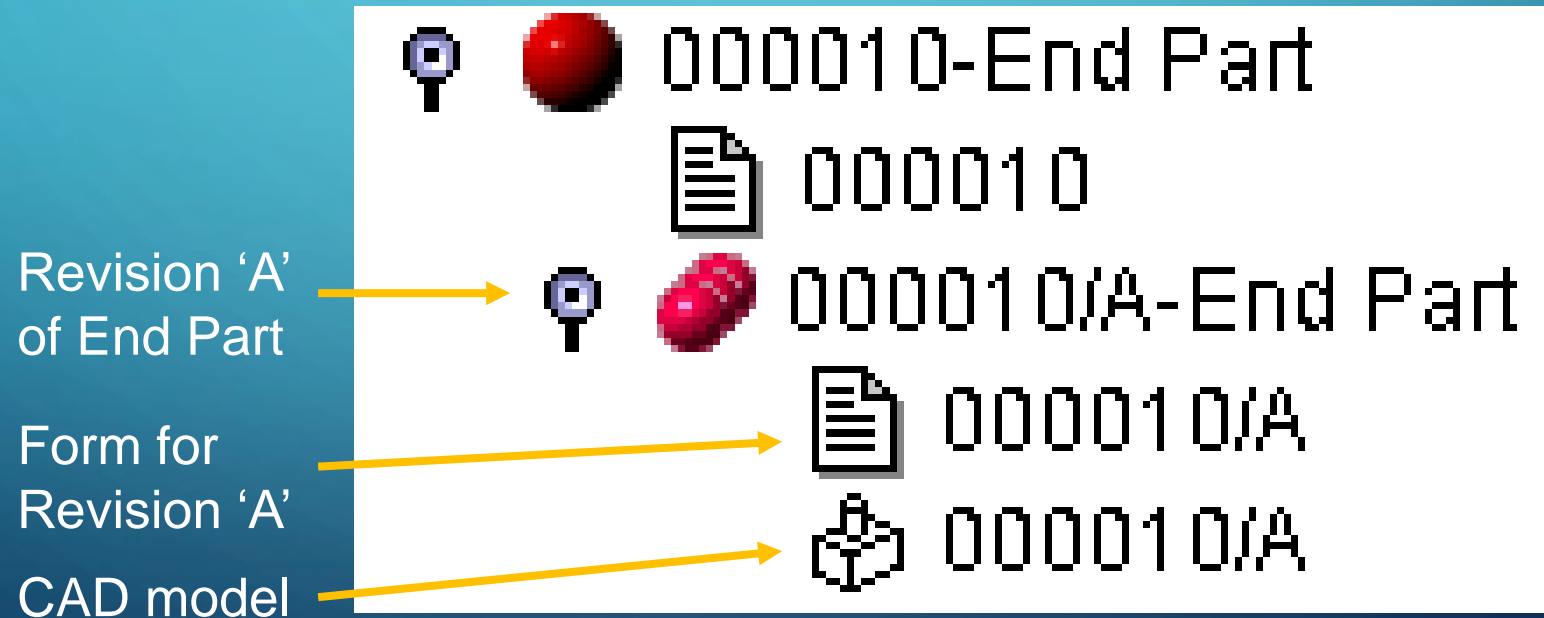
PDM ADMINISTRATION

PDM administrators manage:

- Organizational structure
    - People/User accounts
    - Roles/Role assignments

- Processes
    - Steps of a process
    - Who has access permissions at each step
    - Who has sign-off authority at each step.

- Other Types of Information and Forms