PM
Technical Objects

Course Objectives

- Understand the concepts of following:
  - ✓ Functional Locations
  - ✓ Equipment
  - ✓ Fleet Objects
  - ✓ Production Resource Tools
  - ✓ Serial Numbering
  - ✓ Warranties
  - ✓ Counters and Measuring points
- Create Technical objects hierarchy
- Manage technical objects.

Course Direction

Technical Objects
Functional Locations
Equipment
Fleet Objects
Production Resource Tools (PRT)
Serial Numbering
Warranties
Measuring Point

Structure of Technical Object

- **Maintenance Plant**

  - ✓ A maintenance plant is a place where operational systems of a company are installed which requires periodic maintenance.
  - ✓ Each manufacturing or maintenance setup will form a separate maintenance plant.

- **Planning Plant**
  - ✓ A maintenance planning plant is the organizational unit where the planning for maintenance are performed.
  - ✓ Each manufacturing or maintenance setup will form as maintenance planning plant.

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Functional Locations

- **Functional location**
  - ✓ A functional location is a position within the hierarchical structure and represents a location where technical objects can be installed.
- **Functional Location Structure (FLS)**
  - ✓ A logical break down of a plant or section of a plant that allows both operations and maintenance personnel to easily find the correct area of the plant and specific pieces of equipment that require maintenance.

Structure of IND6 (FLS)

- Plant structure is broken into four parts:

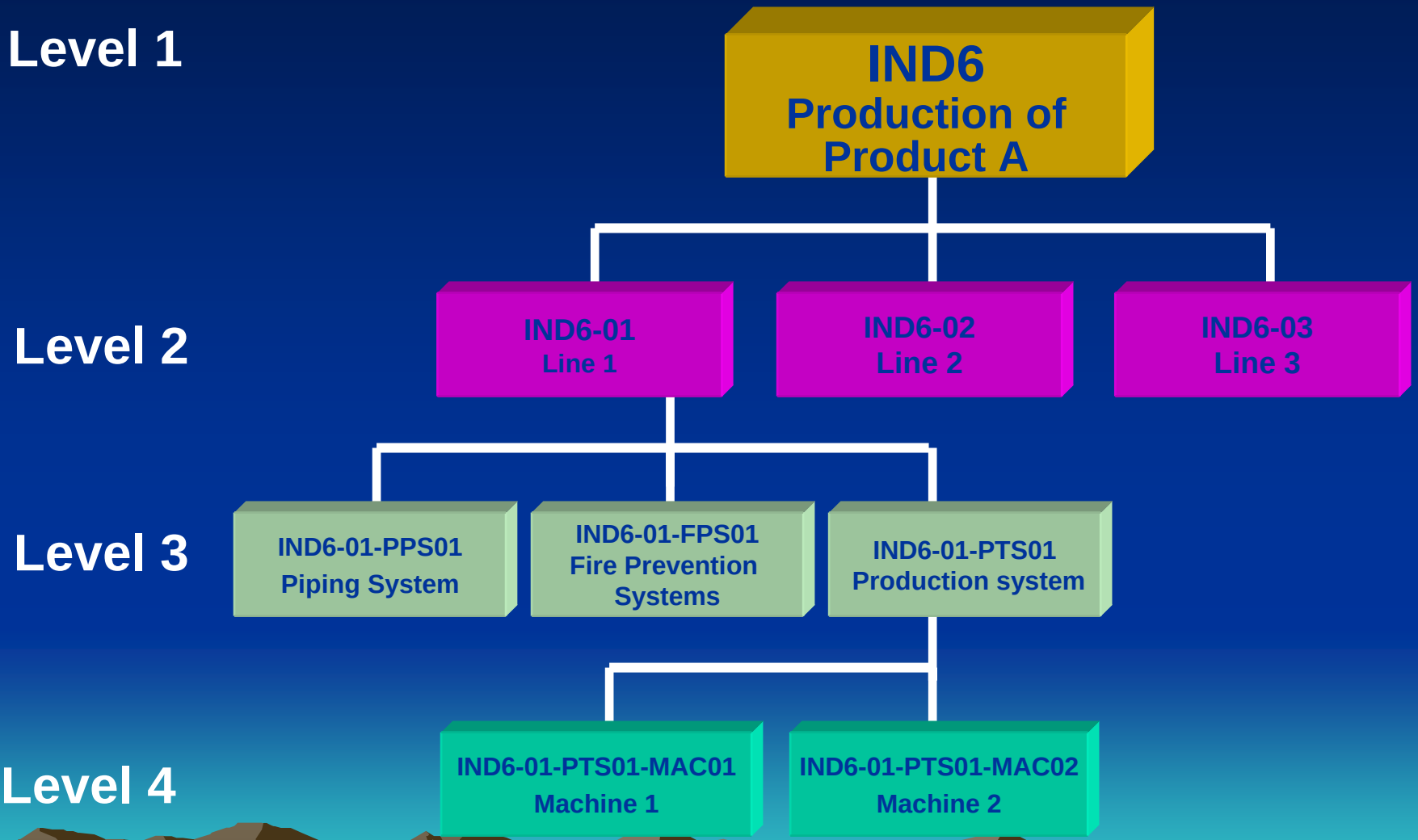
AAZZ-NN-ZZZZZ-ZZZZZ

1 2 3 4

Level 1:	Plant & Processing Area
Level 2:	Processing Lines / Facilities
Level 3:	Major Processes / Facilities
Level 4:	Sub-Processes / Facilities

- It is suggested to use standard abbreviations for the naming convention for each level.

Structure Example (FLS)



Functional Location Master

- Functional Location Master data contains

- ✓General Data – reference data and manufacturer data
- ✓Location -- Location data, address
- ✓Account data -- Cost center, company code
- ✓Structure -- Functional location structure info.
- ✓Data links -- Data link to master records.
  E.g. Measuring point

Functional Location Category

- ✓ Initially functional locations and structures are part of PM master data.
- ✓ The functional location category controls the layout of the functional location master record.
- ✓ The functional locations can be broken up into the different categories:

Creating Functional Locations

- New functional locations are created when:
  - ✓ A new plant is built
  - ✓ An existing plant is expanded
- Functional location can be created by copying from an existing functional location.
- Copied details from the existing functional location into the new functional location can be changed.

Functional Location Maintenance

- A functional location will need to be maintained when:
  - ✓ Functional location is activated
  - ✓ Maintenance responsibility changes
  - ✓ Financial responsibility changes
  - ✓ Functional location is no longer required
- When several functional locations are to be changed, the Change Functional Locations Using List Editing transaction(IL05) can be used.
- If a functional location is no longer required it should be deactivated.

Transaction code tips

- ✓IH01 - Display Functional Location Structure
- ✓IL01 – Create Functional Location
- ✓IL04 –Create Functional Location using List Editing
- ✓IL02 – Change Functional Location
- ✓IL05 – Change Functional Location using List Editing

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Equipment

- ✓ Equipment is an individual physical object.
- ✓ It is maintained as an independent unit to track maintenance costs and technical history.

Equipment Record

- ✓Equipment record represents physical object in the plant.
- ✓Equipment can be installed and dismantled from functional locations.
- ✓Maintenance is planned and executed with equipment
- ✓Maintenance records are kept against each equipment

Installing & Dismantling of Equipment

- ✓Equipment can be installed in the functional location at right level
- ✓Equipment can be installed only at ONE location at a time
- ✓Installing and dismantling indicates the physical movement of equipment
- ✓Measuring point and counter transfers are broken during installation or dismantling

Equipment Record info

- Master record contains following information

- ✓ Equipment general data
- ✓ Equipment location
- ✓ Equipment usage
- ✓ Equipment classification
- ✓ Serial number data
- ✓ Classification
- ✓ Measuring points and counters
- ✓ Warranties

- Equipment record can be linked to an asset number

Equipment Category

- Equipment records can be broken up into the categories.

- Example of equipment categories
  - ✓ B for Safety
  - ✓ K for Electrical
  - ✓ F for Fleet
  - ✓ E for Instrument
  - ✓ M for Mechanical
  - ✓ P for Production Resources & Tools
- The equipment category controls the layout of the equipment record.
- The equipment numbering can be internal generated numbering.

Equipment Classification

- Helps to organize equipment master records and describe them in a structured way.
- A class hierarchy will help to assist in the search for equipment classes.
- Only required equipment can be classified.
- The class can be used to search for equipment master records.
- Each class will contain several characteristics.
- The characteristics are used to store specific information against the equipment master records.

Characteristics

- Each class will contain a required characteristics: Example
  - ✓ Data Sheet Code
  - ✓ Drawing code
  - ✓ Instrument Drawing code
- Additional characteristics can also be included in the class.
- A value should be entered for each of the characteristics.
- The characteristic data can be viewed from within the equipment master record.

Equipment Statuses

- ✓User status and system status helps to manage equipment
- ✓System status is always attached to the equipment
- ✓User status can be attached to an equipment as optional
- ✓E.g. Available status of equipment system status will allow it to install

Equipment Dismantling

- Equipment can be dismantled from the functional location when it is required. E.g. removed from the functional location.
- Upon dismantling the equipment the following step should be taken into account:
  - ✓ Update the account assignment (i.e. cost center)
  - ✓ Update the user status (if applicable)
  - ✓ Deactivate maintenance plans (if applicable)

- A usage period will be created upon dismantling.
- The system status will change to AVLB for ‘Available’.

Equipment Installing

- An equipment can be installed at a functional location or a superior equipment.

- Upon installing the equipment the following step should be taken into account:
  - ✓ Update the account assignment (i.e. cost center)
  - ✓ Update the user status (if applicable)
  - ✓ Activate maintenance plans (if applicable)
- The system status changes to INST for ‘Installed’.
- A usage period is created for the equipment record.

Equipment Scraping

- When scrapping an equipment the following steps should be performed.

  - ✓ Delete any task lists, BOM and measuring points.
  - ✓ De-activate maintenance plans (if applicable)
  - ✓ Equipment dismantled
  - ✓ Update the account assignment (i.e. cost center)
  - ✓ Update the user status to SCRP for ‘Scrapped’

- All serialized equipment that are to be scrapped should be returned to the warehouse.

Transaction code tips

IE01 – Create Equipment

IE02 – Install Equipment

IE02 – Change Equipment

IE05 – Change Equipment using List Editing

IE02 – Dismantle Equipment

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Fleet Objects

A fleet object is an equipment that moves from one location to another to perform maintenance functions.

Example:

- ✓ Forklifts
- ✓ Trucks

Fleet Objects

- A fleet object is a special category of equipment.
- It has the same functionality as a normal piece of equipment.
- Includes additional tabs to record fleet information:
  - ✓ Identification details
  - ✓ Dimensions
  - ✓ Weight specifications
  - ✓ Load specifications
  - ✓ Engine details
  - ✓ Fuel and lubricant details
- Need not be installed at a functional location.

Fleet Object

- A fleet object can also be created as a PRT and a work center.
  - ✓ To create a PRT record for a Fleet object, maintain entries in the PRT tab of the Fleet object record.

- A fleet object as a work center allows:
  - ✓ Scheduling of fleet object
  - ✓ Costing
- A fleet object as a PRT allows the fleet object to be assigned to an operation within the order.

Creating Fleet Objects

- A fleet object master record is created to represent a mobile device that requires maintenance history to be recorded.
- A new fleet object master record is created when;
  - ✓ A new fleet object is purchased or
  - ✓ An existing fleet object replaced.
- During the creation of the fleet object it is possible to:
  - ✓ Create measuring points and counters
  - ✓ Assign warranties

Fleet Object Counters

- Counters can be used for fleet objects to assist in:
  - ✓ Calculating fuel and oil consumption
  - ✓ Determining replacement or maintenance of object
- For each individual fleet object counters can be created using measurement positions.

Transaction code tips

- **IE31 – Create Fleet Object**
- **IE02 – Change Fleet Object**

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Production Resource & Tool

- ✓ A PRT is a special resource required by a crew to perform a maintenance task.
- ✓ A PRT could be a special tool.

Production Resource & Tool

- A PRT equipment is a special category of equipment.
- It has the same functionality as a normal piece of equipment.
- Includes an additional tab for PRT information:
  - ✓ Usage details
  - ✓ Default values
  - ✓ Ability to lock
- An equipment PRT can be planned as a requirement against an operation within a maintenance order.
- Maintenance can be performed and history recorded for a PRT equipment.

Creating PRTs

- A PRT equipment is created for an object when it needs to be planned within a maintenance order.
- PRT not installed at a functional location.
- During the creation of the PRT equipment it is possible to:
  - ✓ Create measuring points and counters
  - ✓ Assign warranties

Transaction tips

- **IE25 – Create PRT Equipment**
- **IE02 – Change PRT Equipment**

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Serial Number

- Serialization is the assignment of a unique SAP serial number to a Material and Equipment master record.
- The Serial number is the common link between Material number and Equipment number.

Equipment Serialization

- New serial number will be given by warehouse for new material.
- Equipment record is created automatically.
- The serial number will always stay unique to the equipment

Transaction code tips

IE02 – Maintain Serialization for Equipment

IQ09 – Display Serial Numbers using List Editing

MMBE – Display Serial Numbers from Stock Overview

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Warranties

- A warranty is given to the customer by a vendor or manufacturer.
- This assures to the customer that the product is reliable and free from known defects.
- It also assures customer to undertake the responsibility for any defect within stipulated period

Warranties

- Two types of warranties available:
  - ✓ Inbound -- Vendor / Manufacturer
  - ✓ Outbound -- Customer
- Both a Vendor/Manufacturer and a Customer warranty can be assigned to an equipment.
- A warranty can be assigned to the equipment by:
  - ✓ Entering the warranty start or finish dates directly in the technical object record or
  - ✓ Assigning a master warranty
- Warranties that are maintained without a master warranty on the equipment record can only be time based.

Master Warranty

- To define more complex warranties for an equipment a master warranty can be used.
- A master warranty is broken into three parts.
  - ✓ Header
  - ✓ Item
  - ✓ Counter

Master Warranty Counters

- Warranty counters are used to define the conditions and requirements for the master warranty.
- Warranty counters can be:
  - ✓ Time based
  - ✓ Performance based counters
  - ✓ Combination of both
- If the master warranty contains more than one warranty counter an “and/or” relationship must be entered.
- If performance based counters are used within the warranty master the corresponding counters must be first created for the technical object.

Master Warranty (Cont.)

- When assigning a master warranty to an equipment a warranty start date must be entered.
- Once a master warranty is assigned to an equipment record a warranty check is performed each time a maintenance notification or order is created against the equipment.
- The user can then investigate if the maintenance activities are covered by the warranty and take the necessary actions.

Transaction code tips

IE02 – Maintain Time Based Warranty for Equipment

BGM1 – Create Master Warranty

BGM2 – Change Master Warranty

IE02 – Assign Master Warranty to Equipment

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Measuring Points

- ✓ A measuring point is a physical or logical position for a technical object (Equipment) where a condition can be recorded.
- ✓ A counter is a kind of measuring point that accumulates performance based readings.
- ✓ A Technical object (equipment) can have multiple measuring point

Measuring Points

- Measuring points and counters are created for technical objects to record a condition for the technical object at a given point in time.
- Examples of the type of conditions:
  - ✓ Temperature as measurement points
  - ✓ Flow rate as counters
  - ✓ Operating hours as counters
- The measuring point or counter defines the location and the specific condition to be recorded for the technical object.
- Each measuring point or counter will have its own ID number.

Measuring Points

- A technical object can have multiple measuring points and counters.

Use of Measuring points

- Measuring points can be used for condition monitoring of a piece of equipment.
- Upper and lower limits can be set for a measuring point.
- corrective maintenance notification is automatically created, If a measurement reading is outside the tolerance limit.

Counter Measuring Points

- A counter is used to record continuous values. (e.g accumulative values, run time hours)
- Counters can be used in maintenance plans to schedule preventive maintenance.
- An annual estimate is entered for a counter.

Transaction code tips

IK04 – Create Measuring Point for Object

IK05 – Change Measuring Point for Object

IK08 – Change Measuring Points using List Editing

IK31 – Create Measurement Reading Entry List

Summary

- Understood the concepts of following:
  - ✓ Functional Locations
  - ✓ Equipment
  - ✓ Fleet Objects
  - ✓ Production Resource Tools
  - ✓ Serial Numbering
  - ✓ Warranties
  - ✓ Counters and Measuring points
- Should be able to create Technical objects hierarchy and Manage Technical Objects