Capgemini

Production Planning

Lesson 11 : Variant configuration

Lesson Objectives

Objectives -On successful completion of this training
module, you should have:

- Understood the basics of Variant Configuration

- What is Variant Configuration and Configurable Product

-

- Example and Process flow of Variant Configuration

2

Add instructor notes
here.

Training Agenda

- What is Variant Configuration

- What is Configurable Product

- Example For Variant Configuration

- Variant Configuration Industries
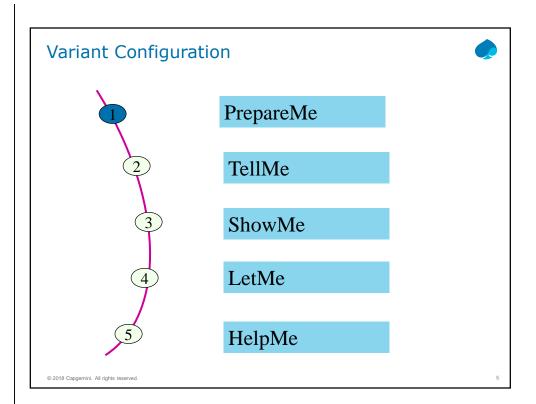
- Cross Module Integration

3

Add instructor notes
here.

Training Agenda
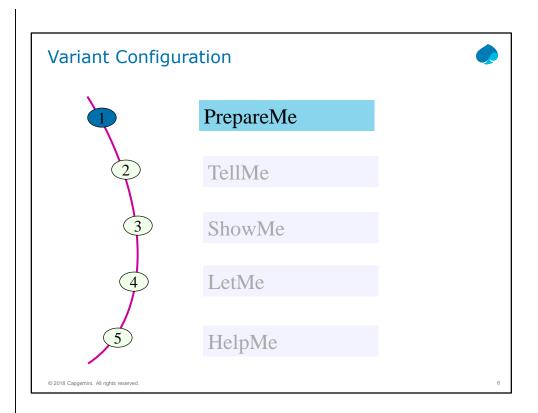
- Process Flow

- Environment

- Prerequisites of Variant Configuration

- Basic Terminology

- Master Data

- Configuration of Variant Configuration

4

Add instructor notes
here.

Variant Configuration

1 — PrepareMe

2 — TellMe

3 — ShowMe

4 — LetMe

5 — HelpMe

5

Variant Configuration

1. **PrepareMe**

2. TellMe

3. ShowMe

4. LetMe

5. HelpMe

6

Introduction

Variant configuration is useful if you have large number of combination of   parts that go into a product. It means different permutations and combinations of the parts of the same material

Example:

A Customer ordering a computer can choose different

combinations of monitor ,CPU, keyboard.

A customer ordering a car can choose different

combinations of accessories and colors.

7

What is Variant Configuration?

- Variant Configuration is a tool which improves information exchange between sales, engineering and production.
- Variant configuration helps sales person to put together specification for the product, so that product can be produced from these specifications.
- Variant configuration is for manufacturing complex product which contains various characteristics and variants

8

What is Configurable Product?
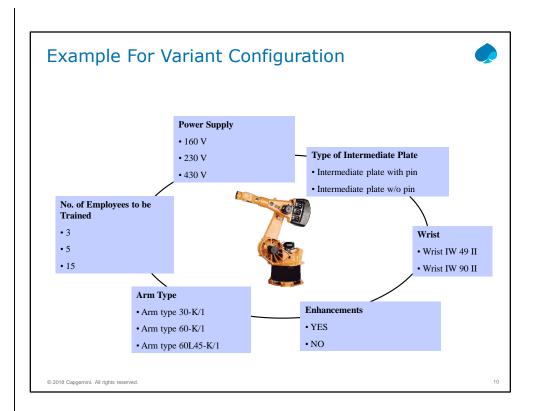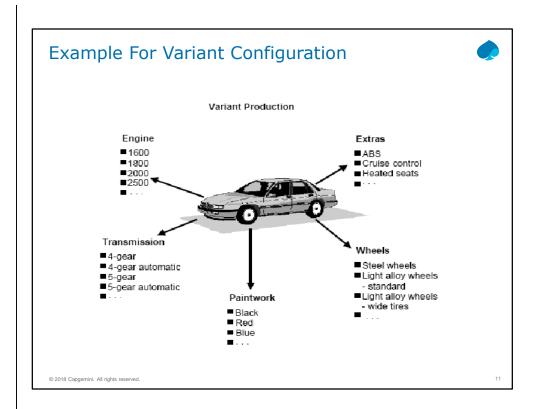
What is Configurable Product???
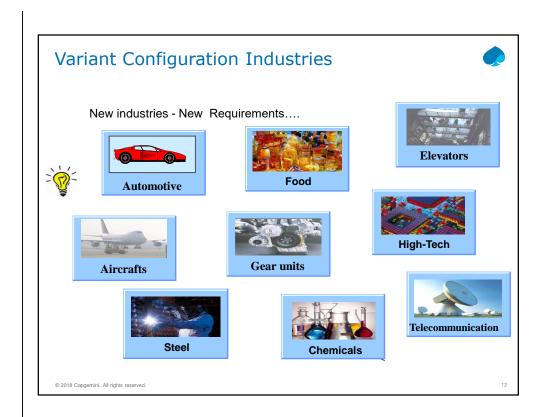
Products with...   **Colors**

Features   **Options**

Customer Choices

9

Example For Variant Configuration

Power Supply
- 160 V
- 230 V
- 430 V

Type of Intermediate Plate
- Intermediate plate with pin
- Intermediate plate w/o pin

No. of Employees to be Trained
- 3
- 5
- 15

Wrist
- Wrist IW 49 II
- Wrist IW 90 II

Arm Type
- Arm type 30-K/1
- Arm type 60-K/1
- Arm type 60L45-K/1

Enhancements
- YES
- NO

10

Example For Variant Configuration

Variant Production

Engine
- 1600
- 1800
- 2000
- 2500
- . . .

Extras
- ABS
- Cruise control
- Heated seats
- . . .

Transmission
- 4-gear
- 4-gear automatic
- 5-gear
- 5-gear automatic
- . . .

Paintwork
- Black
- Red
- Blue
- . . .

Wheels
- Steel wheels
- Light alloy wheels
  - standard
- Light alloy wheels
  - wide tires
- . . .

Variant Configuration Industries

New industries - New Requirements….

Automotive

Food

Elevators

Aircrafts

Gear units

High-Tech

Steel

Chemicals

Telecommunication

12

Cross Module Integration

Variant configuration is integrated with the following applications:

CA   Classification
LO   Material Master
PP   Bill of Material
PP   Routings
PP   Material Requirements Planning (MRP)
PP   Production Orders
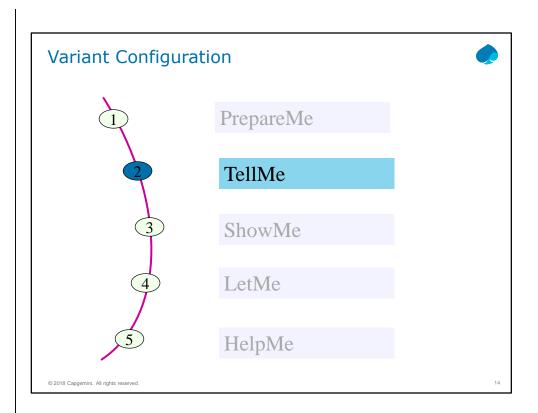PP–PI   Master Recipes
CO   Costing
SD   Sales
SD   Conditions
MM   Purchasing
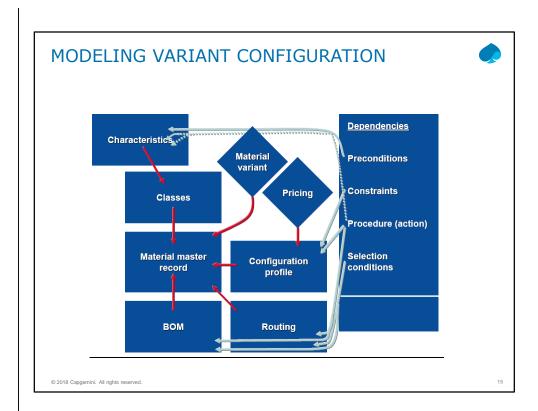
13

Variant Configuration

1

2

3

4

5

PrepareMe

TellMe

ShowMe

LetMe

HelpMe

14

MODELING VARIANT CONFIGURATION
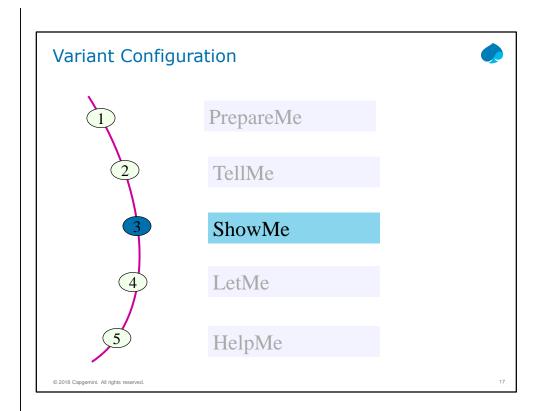
Process Flow

1 Creating Sales Order

2 Checking Requirements using MRP

3 Requirements Planning

4 Converting the planed order into a Production order

5 Confirming the production order

6 Checking the production order settlement

7 Creating the delivery

8 Creating the billing document

16

Variant Configuration

1

2

3

4

5

PrepareMe

TellMe

ShowMe

LetMe

HelpMe

17

Show Me….

- Environment
- Prerequisites of Variant Configuration
- Basic Terminologies used in Variant Configuration & their Definitions
- Master Data
- Customizing

18

Show Me….

Environment

The Environment in which Variant Configuration runs is SAP R/3 under PP module.

19

Show Me….

Prerequisites of Variant Configuration

➤Master data like
    a. Material Master
    b. Super BOM and Routing
    c. Class and Characteristics
    d. Object Dependency and Configuration Profile
    e. SD Condition Records

20

Show Me….

Basic Terminology used in
Variant Configuration &
their Definitions

- Super BOM
- Super Routing
- Dependencies
- Configuration Profile
- Planning Material
- Material Variant

21

Show Me….

Definitions…

Super BOM
It is a BOM Contains all the components for producing configurable
product. It contains both variant as well as non-variant parts
required for producing configurable product.

Super Routing
A configurable routing describes the production process for all
variants of a product. Instead of creating a routing for each variant
of a product, you can create operations for one routing, or a
"super" routing.

22

Show Me….

Definitions...

Dependencies
Dependencies restricts the combinations of options i.e. characteristic that are not allowed. It also select exactly the right BOM components and operations to produce a variant.

Configuration Profile
The configuration profile for a material controls the configuration process in sales order. Configurable profile also used to define central settings for configuring the object. Using this profile it is possible to hide some of the characteristic value defined during characteristic creation. We can assign any number profile for a configurable material in which selection is based on either priority or manual selection during configuration.

23

Show Me….

Definitions…

Planning Material
Planning Material is a material, which contains all the non-variant parts.
By using planning material all non-variants are procured / produced before
sales order.
It is also possible for Planning the Planning Materials without reference to
any sales requirement.

Material Variant
Material Variant is an material that can arises from individual Configuration
of a configurable product and can be kept in stock.
For variants that are required frequently, we can create material variants,
which can be produced without a sales order and kept in stock.

24

Show Me….

Master Data

- Super BOM
- Super Routing
- Characteristic and Values
- Classification
- Object Dependency
- Configurable Profile
- Configuration stimulation
- SD Condition Records

25

Show Me…

Configuration of Variant Configuration

- Create a Material - KMAT type with Item category (002)
- Create characteristics
- Assign Characteristics to class
- Assign the class to material master
- Creating a configuration profile
- Configuration stimulation
- Assign object dependences

26

Show Me….
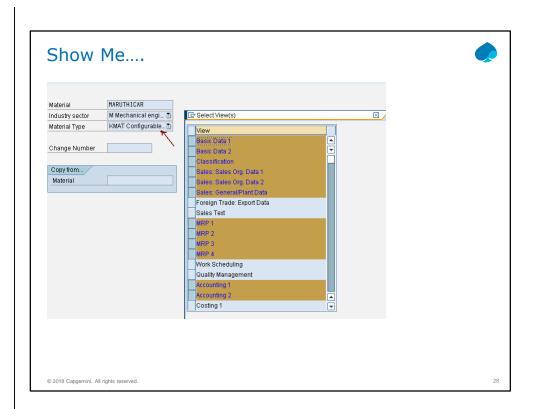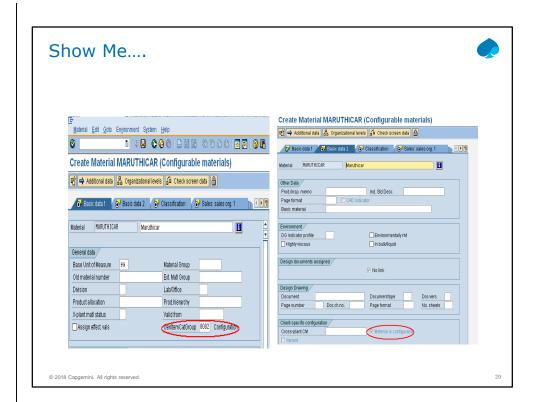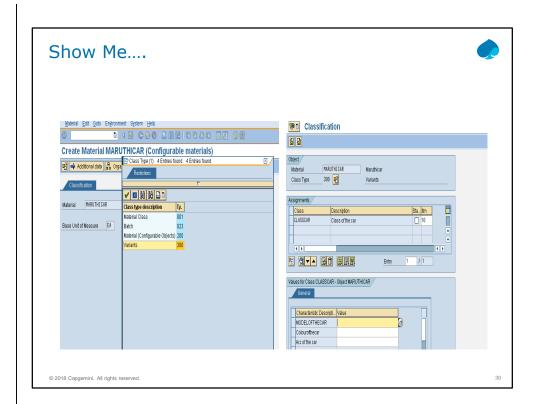
Master Data Settings
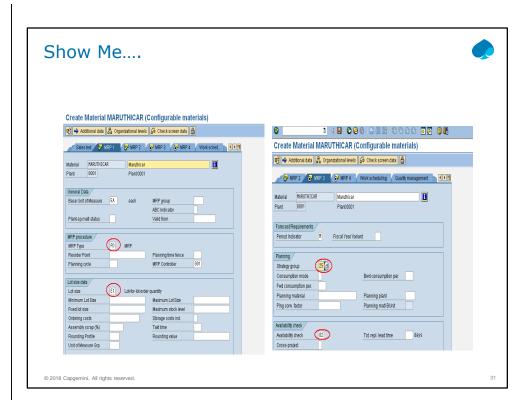
- Master data settings:

- Basic data 2 : Set Material is Configurable indicator

- To determine item category TAC in sales order, maintain the suitable item category such as 0002

- MRP 2 View: set Procurement type E

- MRP 3 View :Set strategy group 25: Make to order for configuration

- MRP3 :set Availability check 02 ;Individual Requirement

- Class view ; Attach the variant class

27

Show Me….

Material	MARUTHICAR
Industry sector	M Mechanical engi...
Material Type	KMAT Configurable...

Change Number

Copy from...

Material

Select View(s)

View
Basic Data 1
Basic Data 2
Classification
Sales: Sales Org. Data 1
Sales: Sales Org. Data 2
Sales: General/Plant Data
Foreign Trade: Export Data
Sales Text
MRP 1
MRP 2
MRP 3
MRP 4
Work Scheduling
Quality Management
Accounting 1
Accounting 2
Costing 1

28

Show Me….

29

Show Me….

Show Me….

Create Material MARUTHICAR (Configurable materials)

Sales text | MRP 1 | MRP 2 | MRP 3 | MRP 4 | Work sched...

Material: MARUTHICAR — Maruthicar
Plant: 0001 — Plant 0001

General Data
Base Unit of Measure: EA — each
MRP group:
ABC Indicator:
Plant-sp.matl status: — Valid from:

MRP procedure
MRP Type: PD — MRP
Reorder Point: — Planning time fence:
Planning cycle: — MRP Controller: 001

Lot size data
Lot size: EX — Lot-for-lot order quantity
Minimum Lot Size: — Maximum Lot Size:
Fixed lot size: — Maximum stock level:
Ordering costs: — Storage costs ind.:
Assembly scrap (%): — Takt time:
Rounding Profile: — Rounding value:
Unit of Measure Grp:

Create Material MARUTHICAR (Configurable materials)

MRP 2 | MRP 3 | MRP 4 | Work scheduling | Quality management

Material: MARUTHICAR — Maruthicar
Plant: 0001 — Plant 0001

Forecast Requirements
Period Indicator: M — Fiscal Year Variant:

Planning
Strategy group: 25
Consumption mode: — Bwd consumption per.:
Fwd consumption per.:
Planning material: — Planning plant:
Plng conv. factor: — Planning matl BUnit:

Availability check
Availability check: 02 — Tot. repl. lead time: days
Cross-project:

31

Show Me….

Create Material MARUTHICAR (Configurable materials)

| 🗃 | → Additional data | 🔀 Organizational levels | 🔃 Check screen data | 🔒 |

| 🕏 MRP 3 | 🕏 MRP 4 | Work scheduling | Quality management | 🕏 Account... | ◄ ► 🗐 |

Material	MARUTHICAR	Maruthicar	ℹ️
Plant	0001	Plant 0001
Stor. Loc.	0001	Location 0001

BOM explosion/dependent requirements

Selection method		Component scrap (%)	
Individual/coll.	1	Requirements group	
☐ Version Indicator	🔁 ProdVersions	MRP dep.requirements	

Discontinued parts

| Discontin. ind. | | Eff.-out | | Follow-up matl | |

Repetitive manufacturing / assembly / deployment strategy

| ☐ Repetitive mfg | REM profile | | Action control | |

| Material memo | ☐ Material memo exists |

32

Show Me….

Bill of Material

T.Code-CS01

| ▦▦ | ▣🗗 👤 Subitems | New entries 🗑 | 🗗 ℹ Header 🝙 Validity |

Material   MARUTHICAR   Maruthicar
Plant   0001 Plant 0001
Alternative BOM   1

| Material | Document | Class | General |

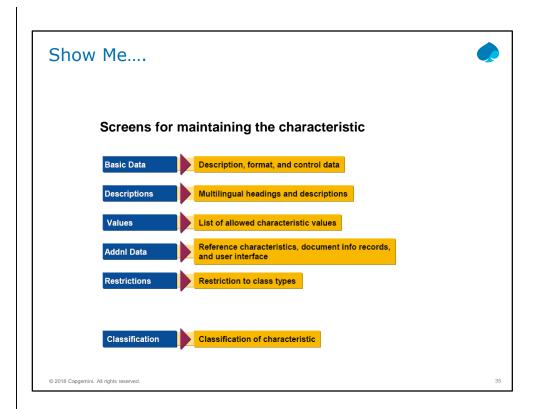| Item	ICt	Component	Component description	Quantity	Un	OD	A...	Sls	Valid From	Valid to	Change No.	F
0010	L	ZENX	ZENX	1	EA	☐	☐	☐	04.08.2008	31.12.9999		
0020	L	ZENPRE	ZENPRE	1	EA	☐	☐	☐	05.08.2008	31.12.9999		
0030	L	POWERLOCK	POWERLOCK	1	EA	☐	☐	☐	05.08.2008	31.12.9999		
0040	L	SEATCOVERS	SEATCOVERS	1	EA	☐	☐	☐	05.08.2008	31.12.9999		
0050	L	AC	AC	1	EA	☐	☐	☐	05.08.2008	31.12.9999		
0060	L	MUSIC SYSTEM	MUSIC SYSTEM	1	EA	☐	☐	☐	05.08.2008	31.12.9999		
0070	L	RED	red	1	EA	☐	☐	☐	05.08.2008	31.12.9999		
0080	L	GREEN	green	1	EA	☐	☐	☐	05.08.2008	31.12.9999		
0090	L	YELLOW	YELLOW	1	EA	☐	☐	☐	05.08.2008	31.12.9999		
0100						☐	☐	☐				
0110						☐	☐	☐				

Show Me….

Characteristic and Values

- Characteristics describe the properties of objects.

- The values of a characteristic specify these properties.

- Example

Material	-	PC
Characteristic	-	Values
RAM	-	256 MB,512 MB, 1 GB
Hard Disk	-	80 GB,120 GB,160 GB

- Characteristic Value can be Numeric ,Characters, Date and Time and Currency format.

- It can be single or multi value or restrict value.

34

Show Me….

Screens for maintaining the characteristic

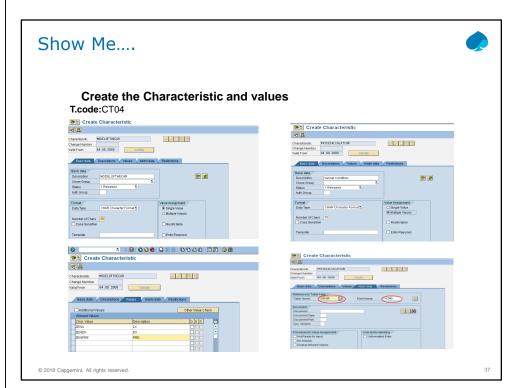| Basic Data | Description, format, and control data |
Descriptions	Multilingual headings and descriptions
Values	List of allowed characteristic values
Addnl Data	Reference characteristics, document info records, and user interface
Restrictions	Restriction to class types
Classification	Classification of characteristic

Show Me….

Reference Characteristics

- Reference characteristics are characteristics that refers to tables &fields
- Tables and structures whose fields values can be changed by dependencies
- SDCOM-Communication between the SD and Variant configuration
- VCSD_UPDATE: Table for updating sales documents from the configuration

36

Show Me….

Create the Characteristic and values
T.code:CT04
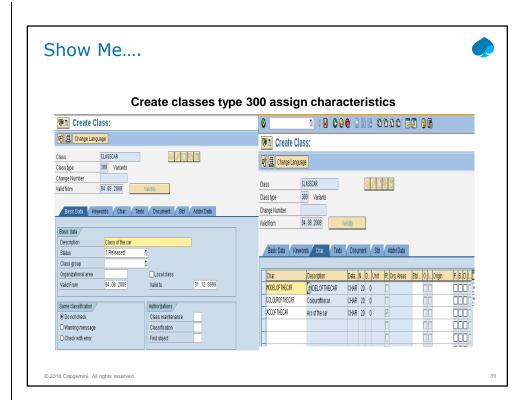
Show Me….

Class and Class type

A Class is used to hold the characteristics that describe about configurable material.
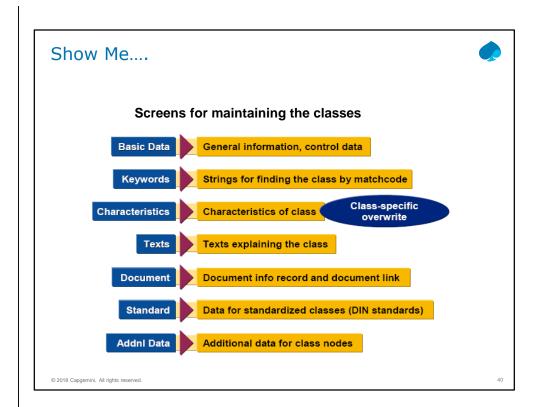
Class type used to determines which object types can be classified.
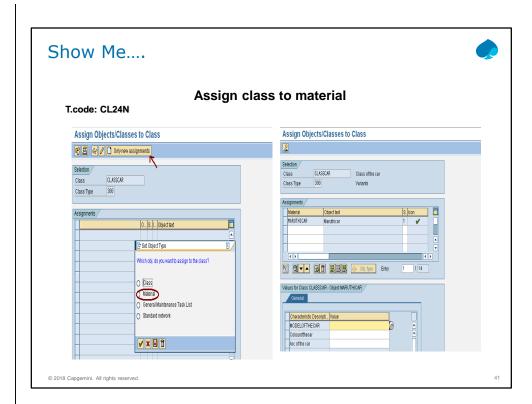
Class types 200 and 300 are defined for material which are used in variant configuration/Classification

38

Show Me….

Create classes type 300 assign characteristics

39

Show Me….

Screens for maintaining the classes

Basic Data	General information, control data
Keywords	Strings for finding the class by matchcode
Characteristics	Characteristics of class

Class-specific overwrite

Texts	Texts explaining the class
Document	Document info record and document link
Standard	Data for standardized classes (DIN standards)
Addnl Data	Additional data for class nodes

40

Show Me….

Assign class to material

T.code: CL24N
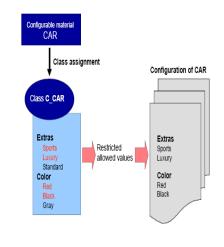
Show Me….

Configuration Profile

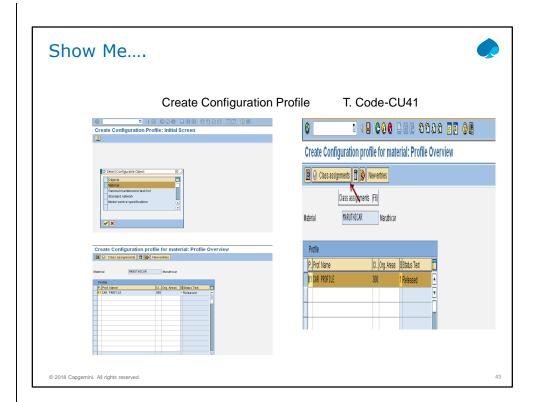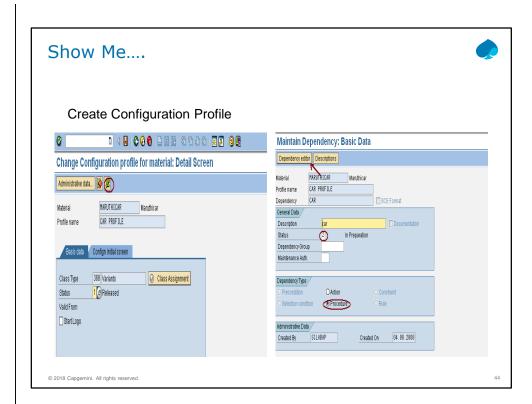- Configurable Profile is used for assigning one or more variant classes to configurable material.

- A configurable material has several profiles. Profile is selected during configuration or according to priority.

- It also possible to define central settings for Configurable Object.

42

Show Me….

Create Configuration Profile   T. Code-CU41

Show Me….

Create Configuration Profile

Show Me….

Assign Dependencies

Edit Dependency

[icons] Continue Replace | Concatenate | Split

Procedure	CAR	car
Material	MARUTHICAR	Maruthicar
Profile name	CAR PROFILE	

```
....+....1....+....2....+....3....+....4....+....5....+....6....+....7..
```

SourceCde
000010 $SELF.PRICECALCULATION='ZENDX' IF (MODELOFTHECAR ='ZENDX'),
000020 $SELF.PRICECALCULATION= 'ZENPRE' IF (MODELOFTHECAR ='ZENPRE'),
000030 $self.pricecalculation='zenx' if (modelofthecar='zenx')

45

Show Me....

Create Variant Keys with any Name and Description
T Code- VK30

New Entries: Overview of Added Entries

Variant	Description
ZENDX	ZENDX
ZENLX	ZENLX
ZENPRE	ZENPRE

Show Me….

Create Variant Condition with Variant Price
T. Code- VK11

Create Condition Records

Condition   Edit   Goto   Extras   Environment   System   Help

Condition Information | Key Combination

Condition type   VA00

Change Variant Price Condition (VA00) : Overview

Sales Organization	0001	Sales Org. 001
Distribution Channel	01	Distribtn Channel 01
Material	MARUTHICAR	Maruthicar
Valid On	04.08.2008	

Variants

Variant	Description	Amount	Unit	per	U...	C.	S.	Valid From	Valid to
AC		10 000,00 INR		1	EA	C		04.08.2008	31.12.9999
GREEN		1 230,00 INR		1	EA	C		04.08.2008	31.12.9999
MUSIC SYSTEM		3 200,00 INR		1	EA	C		04.08.2008	31.12.9999
POWER LOCK		2 300,00 INR		1	EA	C		04.08.2008	31.12.9999
RED		1 000,00 INR		1	EA	C		04.08.2008	31.12.9999
SEAT COVERS		5 200,00 INR		1	EA	C		04.08.2008	31.12.9999
YELLOW		1 103,00 INR		1	EA	C		04.08.2008	31.12.9999
ZENDX	ZENDX	150 000,00 INR		1	EA	C		04.08.2008	31.12.9999
ZENLX		100 000,00 INR		1	EA	C		04.08.2008	31.12.9999
ZENPRE	ZENPRE	200 000,00 INR		1	EA	C		04.08.2008	31.12.9999
ZENX	ZENX	130 000,00 INR		1	EA	C		04.08.2008	31.12.9999

Variant Configuration

1

2

3

4

5

PrepareMe

TellMe

ShowMe

LetMe

HelpMe

48

Let Me….

- Understand the Basic Business scenario of Variant Configuration

- Use of Master Data.

49

References
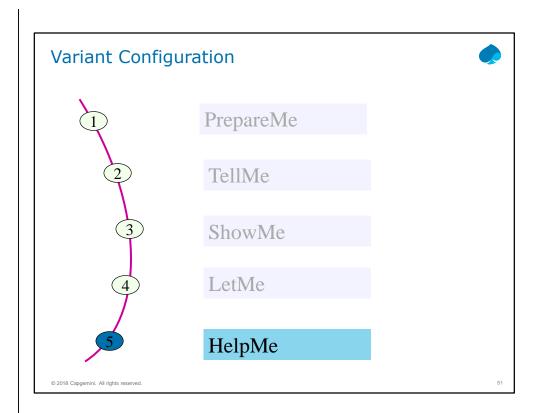
- Tips and Tricks

- Additional Info

50

Variant Configuration

1

2

3

4

5

PrepareMe

TellMe

ShowMe

LetMe

HelpMe

51

Add instructor notes
here.

Help Me...

SAP Library link:

https://help.sap.com/saphelp_46c/helpdata/en/92/58c0
9b417011d189ec0000e81ddfac/content.htm?frameset=/
en/d8/fa9bd49ede11d1903b0000e8a49aad/frameset.ht
m&current_toc=/en/92/58d455417011d189ec0000e81d
dfac/plain.htm&node_id=4

52

Add the notes here.