

# MAPPING BUSINESS PROCESS BY NOVEL WORKFLOW DESIGN IN AUTOMOTIVE INDUSTRIES

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**Abstract:** In this paper discussed case study of automotive industries they manufacturers of sheet metal components, metal forming and fabrication of automotive components, such as Auto-Rickshaw bodies, Light & Heavy Tooling manufacturing, welded sub assemblies etc and they manage product date in PLM software. These automobile components and dies are designed in CAD software of solid edge and NX integrated which integrated with in Teamcenter. But they were facing some of the challenges on engineering process management because engineering process management plays a vital role across the various stages of product development lifecycle. Mapping and automating the complex business process is important to achieve the organization goal efficiently for this purpose we made novel workflow to fulfill their requirement.

**Keywords:** Workflow Business Process Considerations, Organization Configuration, Item Configuration, Workflow Configuration, Implemented workflow Design

## 1. INTRODUCTION

Workflow is the automation of the business processes. Using Workflow, documents, information, and tasks are passed between participants during the completion of a particular process. Workflow processes, allocate resources, and manage data according to business rules. Users will utilize the Inbox to accomplish workflow tasks.

Teamcenter Engineering provides three applications used to accomplish Workflow objectives

- ❖ **Workflow Designer:** is a graphical Workflow Designer application. System Administrators use Workflow Designer to graphically create process templates which end users can then use to initiate Workflow processes.
- ❖ **Inbox:** allows you to perform and track tasks that have been either assigned to you or were created by you. Inbox provides you with a list of all the tasks that you are responsible for, and allows you to complete those tasks.
- ❖ **Workflow Viewer:** allows end users to view the progress of a Workflow process, even if they are not a participating member of that particular process.

## 2. OBJECTIVES OF MAPPING BUSINESS PROCESS

- Mapping business process efficiently and effectively
- Collaborative decision making

- Maintaining data security during the process
- Automation of the activities during the process
- Check sample material availability for pilot and sample lot preparation
- Prototype sample preparation,
- Organization structure approval workflow
- Identify States of Life-cycle

### 2.1 Scope

Scope of implementation of workflow is from receipt of enquiry to handover tooling to Production. According to following requirements.

## 3. WORKFLOW BUSINESS PROCESS CONSIDERATIONS

- Any department, who receives an enquiry will generate ENQUIRY item against that enquiry to manage data and will initiate the RFQ\_PROCESS process.
- If the order loss then over all process completed for this ENQUIRY item revision.
- If the order has some modifications then concern department will create new revision and initiate the RFQ\_PROCESS with this revision.
- If order win then respective department will communicate to ME department for the coordinate further activities for ENQUIRY Item Revision
- ME department will generate PROJECT item for each order win status ENQUIRY item revision.
- ME department will copy, paste order above item revision in Enquiry\_Data pseudo folder.
- ME department will initiate Design\_Request workflow for PROJECT Item Revision.
- Design head will internally co ordinate to get design released (through DESIGN\_RELEASE) and copy released data in PROJECT item revision in Design\_Data pseudo folder.
- ME department will initiate Tool\_Request workflow for above design released PROJECT Item Revision.
- Tool Room head will internally co ordinate to get Tool Released (through TOOL\_PART\_RELEASE and TOOLROOM\_RELEASE) and copy released data in PROJECT item revision in ToolRoom\_Data pseudo folder
- Business need.
- Technological advance.
- Increased PLM system performance

### 3.1 Organization Configuration Methodology

Following departments configured in TC by using organization application

By using organization application can make organization structure digitally there we can provide authentic access to each department which is shown in below and there configured the department such as management, marketing, development, design and tool Room

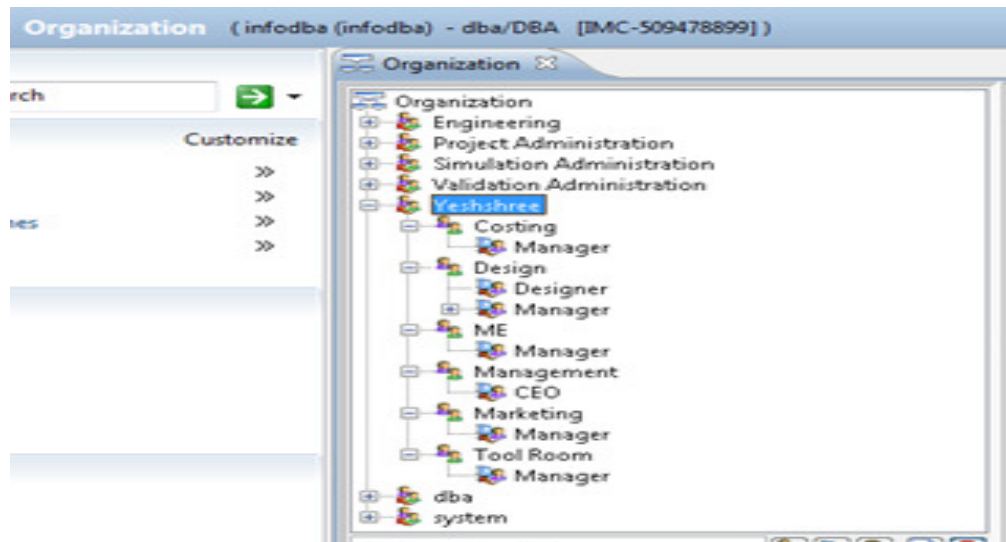


Figure: 1 Organization Configuration Process

### 3.2 Item Configuration Methodology

Following item types are configured in TC to mapping overall business process and product related data in TC for this purpose configured different item for different process

#### 1. Enquiry

**Purpose:** this item will collect all the information start from customer interaction to receipt of the order

#### 2. Project

**Purpose:** this item will collect all the information related to the project i.e information right from enquiry up to tooling, so that all the information related to the project will be available at central item.

#### 3. Design

**Purpose:** this item will collect all the information related to the parent design i.e. master assembly

#### 4. Design part

**Purpose:** this item will collect all the information related to the child node of design i.e. parts or sub-assemblies

#### 5. Toolroom

**Purpose:** this item will collect all the information related to the parent tooling i.e. master tool e.g. n09100010 which is generated for the design

## 6. Tool room part

**Purpose:** this item will collect all the information related to the child tooling i.e. top plate, bottom plate, and punch etc. which is generated for the design part

### 3.3 Workflow Configuration Methodology

To achieve the goal of company following workflow process configured in TC

#### 1. Rfq process -

User generates an enquiry item attaches all the documents related to the enquiry and initiates an enquiry process.

#### 2. Design request –

This workflow will be initiated by the me – development department after receipt of order win communication from respective department. The input of this workflow will be the project item revision which is containing enquiry item revision with order win status design

#### 3. Tool room request –

This workflow will be initiated by the me – development department after receipt release design from design department. The input of this workflow will be the project item revision which is containing enquiry item revision with order win status & design item revision with release status

#### 4. Design release -

This workflow will be initiated by the design department (designer) after receipt envelop / instruction from design head. The input of this workflow will be the design item revision / design part item revision. This workflow will be used to release concept as well as regular drawings (assembly & part drawings)

#### 5. Tool part release –

This workflow will be initiated by the tool room department after receipt tooling request from me – development. The input of this workflow will be the tool room part item revision. This workflow will be used to release the tool room part individually.

#### 6. Tool room release-

This workflow will be initiated by the tool room department after receipt tooling request from me – development & after releasing all the tool room parts. the input of this workflow will be the toolroom item revision.

## 4. IMPLEMENTED WORKFLOW DESIGN SAMPLE

This workflow will be initiated by the Design department (Designer) after receipt envelop / instruction from Design Head. The Input of this workflow will be the Design Item Revision / Design part Item Revision. This workflow will be used to release concept as well as regular drawings (assembly & Part drawings) by this method we digitally map product related information from enquiry to ultimate disposal in figure no 2 and 3 are shown the flowchart and template sample of a mapping business process which is configured in TC .

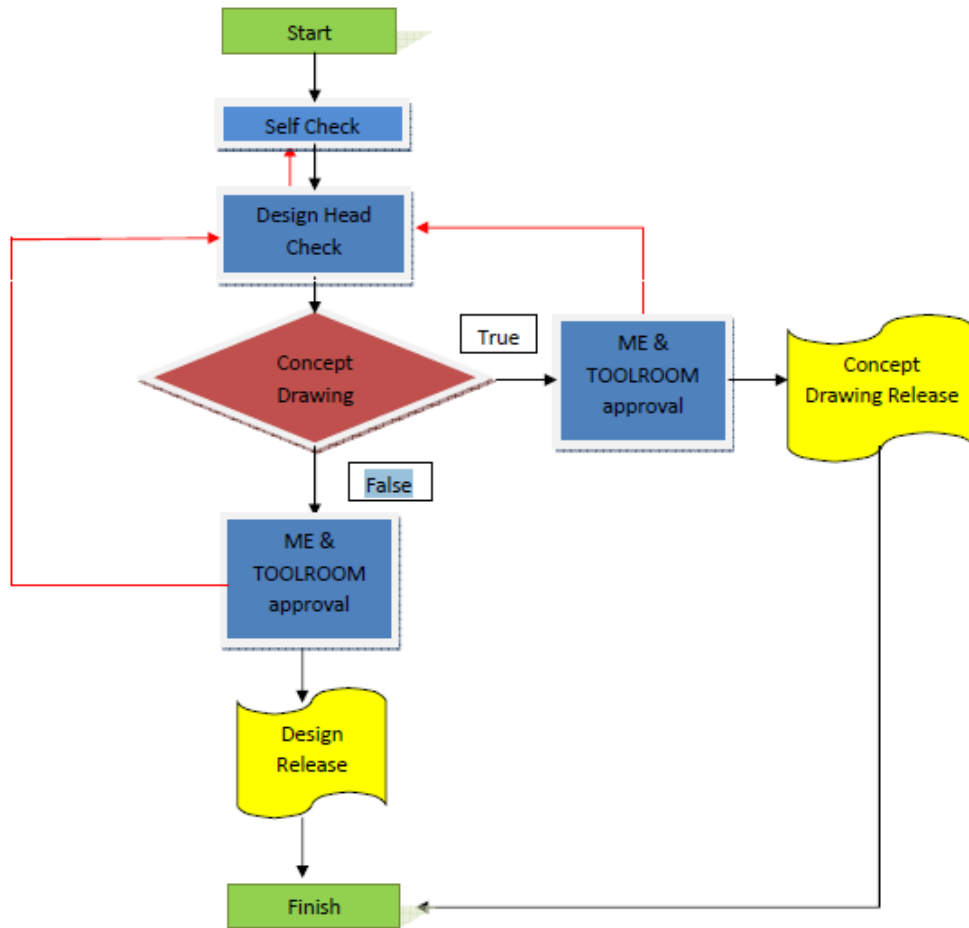


Figure. 2. Design Release Process Flowchart

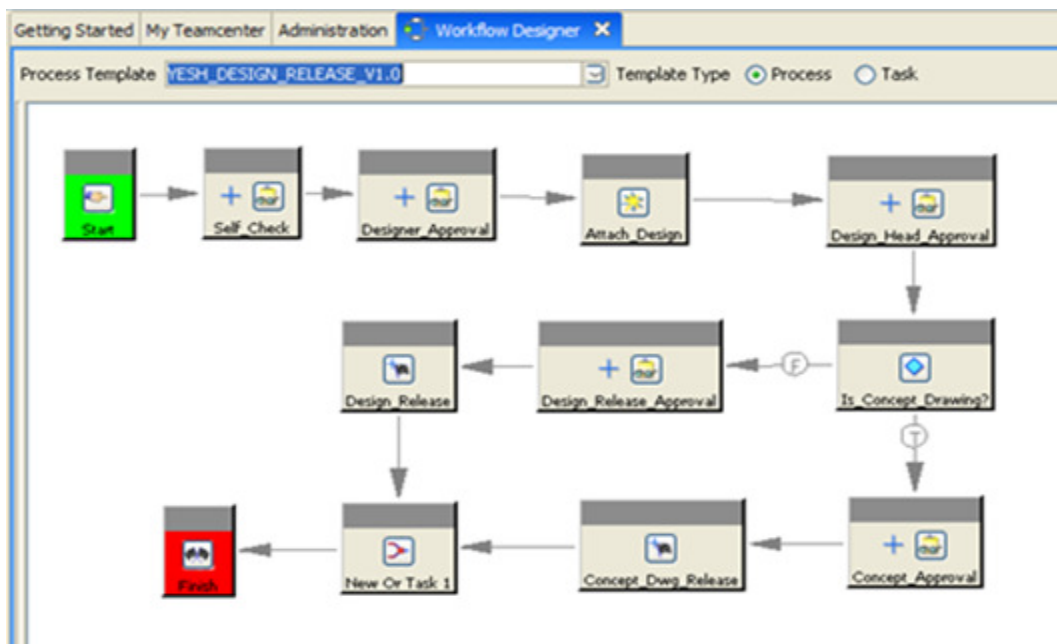


Figure. 3 Design release process template

## CONCLUSION

This thesis proposed novel workflow design to reduce the work of organization by Mapping business process efficiently And effectively and achieved some benefits from automation business process, data security during the process, Collaborative decision making, Automation of the activities during the process, Identify States of Life-Cycle.

A case study is conducted to verify the feasibility of our method. The promising result of the case study gives rise to the potential and possibility to derive further research based on this work

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