



# Design of an ERP Software that Facilitates Easy Flow of a Process Change Order (PCO) Request in an Enterprise

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## Abstract:

Enterprise resource planning (ERP) is the integrated management of core business processes, often in real-time and mediated by software and technology. With intelligent Process Planning and Control solutions from such ERP tools, we can have the entire process on our screen. These state-of-the-art tools can meet the requirement for increasingly shorter throughput and delivery times. This allows businesses to respond more quickly and reliably to changes in delivery schedules. This article is aimed at describing how one can design a user-friendly ERP system with a category of business-management software—typically a suite of integrated applications—that an organization can use to collect, store, manage and interpret data from many business activities, including: product planning, purchase, manufacturing or service delivery. It clearly enumerates the flow of a Process Change Order (PCO) through an enterprise.

**Keywords:** ERP, Business process, Integrated activities, Process change order, Enterprise, Resource planning

## 1. INTRODUCTION

The sole purpose of this study is to design an efficient ERP software and to identify the tools needed to do so. The need to design a new ERP system for any enterprise arises due to the inflexibility and the lack of certain functions in already existing ERP packages. Configuring an ERP system is largely a matter of balancing the way the organization wants the system to work, with the way it is designed to work. It is imperative to have the ERP system include many settings that modify system operations.

A typical ERP system has the following characteristics: An integrated system that operates in (or near) real time without relying on periodic updates; A common database that supports all applications; A consistent look and feel across modules; Installation of the system with elaborate application/data integration by the Information Technology (IT) department provided the implementation is not done in small steps etc. The fundamental advantage of ERP is that the integration of myriad business processes saves time and expense. Management can make decisions faster and with fewer errors and data becomes visible across the organization.

### A few of its other advantages are:

ERP can improve quality and efficiency of the business. By keeping a company's internal business processes running smoothly, ERP can lead to better outputs that may benefit the company, such as in customer service and manufacturing; ERP supports upper level management by providing information for decision making; ERP creates a more agile company that adapts better to change.

It also makes a company more flexible and less rigidly structured so organization components operate more cohesively, enhancing the business—internally and externally; ERP can improve data security. A common control system,

such as the kind offered by ERP systems, allows organizations the ability to more easily ensure key company data is not compromised; ERP provides increased opportunities for collaboration. Data takes many forms in the modern enterprise. Documents, files, forms, audio and video, emails. Often, each data medium has its own mechanism for allowing collaboration.

ERP provides a collaborative platform that lets employees spend more time collaborating on content rather than mastering the learning curve of communicating in various formats across distributed systems. Based on these and more requirements of an organization, a new ERP system can be configured along with the already existing fundamental characteristics.

## 2. ERP USABILITY CONSIDERATION

The investment in ERP systems is essential for organizations to obtain competitive advantages in the globalized market. However, end-users are confronted with difficult to comprehend interfaces and poor usability of these systems. Victor Mittelstädt, Philipp Brauner, Matthias Blum, Martina Ziefle [1] examined the effects of information complexity and identified presentation as a key aspect of usability with consideration of human factors on decision quality.

By using alphanumeric tables of simulated ERP system data to make a decision, users' decision quality dropped with increasing information complexity and the use of a poor presentation. The findings show the significance of factual user studies in this field and provide several real implications. Especially, user-centered design processes can largely contribute to a successful implementation of complex information systems, such as ERP systems. Bearing this in mind, we've set out to configure the logic for our ERP system, such that it can be easily comprehended by the end user. The details of the logic are as described below.



#### 4. PCO PROCESS FLOW

Finally, based on the requirements set forth by the organization a Process Flow Chart is drafted to enumerate the flow of the PCO request. The process flow is a step by step process and is illustrated in Fig 3.

**4.1 Part Number Creation** Based on whether the part called for the PCO is already existing or not, a part number is either picked under “Tool Name” or a new part number is created using the part number allocation logic as shown in TABLE 2. The PCO request along with the part number will get automatically updated within the ERP system and will be visible to the various departments due to information integration among the various departments and quick and easy update.

**4.2 Routing** Routing is the process of selecting a path for the flow of the PCO request in a network, or between or across multiple networks. Routing can be either link or path. In link routing, a graphical map of the network is the fundamental data used at each department. To produce its map, each department floods the entire network with information about the other departments it can connect to. Each department then independently assembles this information into a map. Using this map, the system independently determines the least-cost path from itself to every other node using a standard shortest path algorithm. Path routing/Shortest path routing refers to the process of finding paths through a network that have a minimum of distance or other cost metric.

**4.3 Is a Drawing required?** If a drawing is not required, move to step 4.3. If a drawing is required, the software checks whether a new drawing is required or whether a drawing already exists. If a drawing exists, it is moved into the PCO request folder from the released folder in the Data Management System (DMS). Based on the changes required, the drawing is modified and the new drawing is replaced with the old one in the PCO folder in the DMS. Then, move to step 4.3. If a new drawing is needed, a drawing based on the part number is created and then moved into the respective PCO folder in the DMS. Then, move to step 4.3.

**4.4 Creation of BOM** After having created or made changes to the drawing, the Bill of Materials (BOM) for the part and all of its components is created.

**4.5 Is IBPL updation required?** The Information Bulletin and Part List (IBPL) is the information that is visible to the customer regarding the part that is being manufactured. In this regard, during a PCO request, it is checked whether the IBPL needs to be updated and then, PCO details become automatically visible to the After-Market department for any changes to be made and then, the flow continues. If no changes are needed, move to the next step.

**4.6 Are changes in specification required?** If there are no changes to be made, go to step 4.6. If changes are to be made, the PCO details get automatically updated and become visible to the Marketing Department, where the changes are made and then sent for approval.

**4.7 Engineering Approval** After the required changes are made, the PCO request is sent to the Engineering Department for approval. A pop-up box message is created to alert the Engineering department for approval. Based on the drawing,

the department approves or rejects the PCO. If rejected, the design department gets notified within the ERP tool about the modifications to be made. If approved, a pop-up message is created for the originator of the PCO request for further action. The pop-up messages are a convenient way to obtain a quick response from the concerned department/personnel.

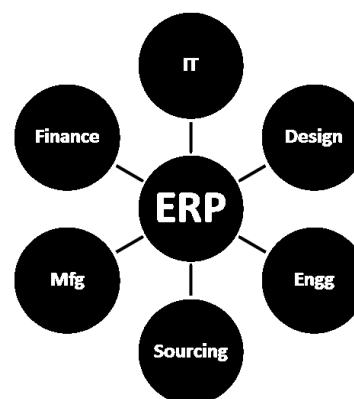
**4.8** The new or revised drawings along with the PCO details are then moved into the released folder and the PCO folder in the Data Management System (DMS) is then deleted. That is to say, the PCO request has been approved and released to by the Engineering Department to make the necessary changes. The PCO is released for distribution. A pop-up message is then generated, for cross-functional approval.

**4.8.1 Sourcing Approval** The sourcing department reviews the PCO request and goes about finding, evaluating and engaging suppliers for acquiring goods and services for the required PCO request. The process also includes item planning, price updation, verification of the Engineering Change Number (ECN) etc. If rejected, the PCO is sent back to the design department to make the necessary modifications and if approved, the PCO is sent to the finance department for approval.

**4.8.2 Manufacturing Approval** The manufacturing department assesses the PCO to ascertain the tools required, review the entire manufacturing process and conduct requirement planning. If the PCO is rejected, it is sent back to the design department to make the necessary modifications and if approved, the PCO is sent to the finance department for approval.

**4.9 Finance Approval** After verifying the basic cost planning parameters, vendor costs and details and other miscellaneous costs, the finance department will make cost changes if required and then approve the PCO request. This again generates a pop-up message for the originator of the PCO request for further action.

**4.10** Once the PCO gets approved by the finance department, the last step would be to implement the Process Change Order and then, PCO Request flow through the various departments ends until, a new PCO request is raised and the process repeats itself. The entire process of flow of the PCO request happens quickly with little or no delay. Due to information integration and quick and reliable updation of the information, the data is transferred smoothly across the various departments. This is illustrated in Fig 4 as shown below. ERP packages are hence reliable, quick and provide accurate results.



**Figure.2. Information integration among the various departments.**

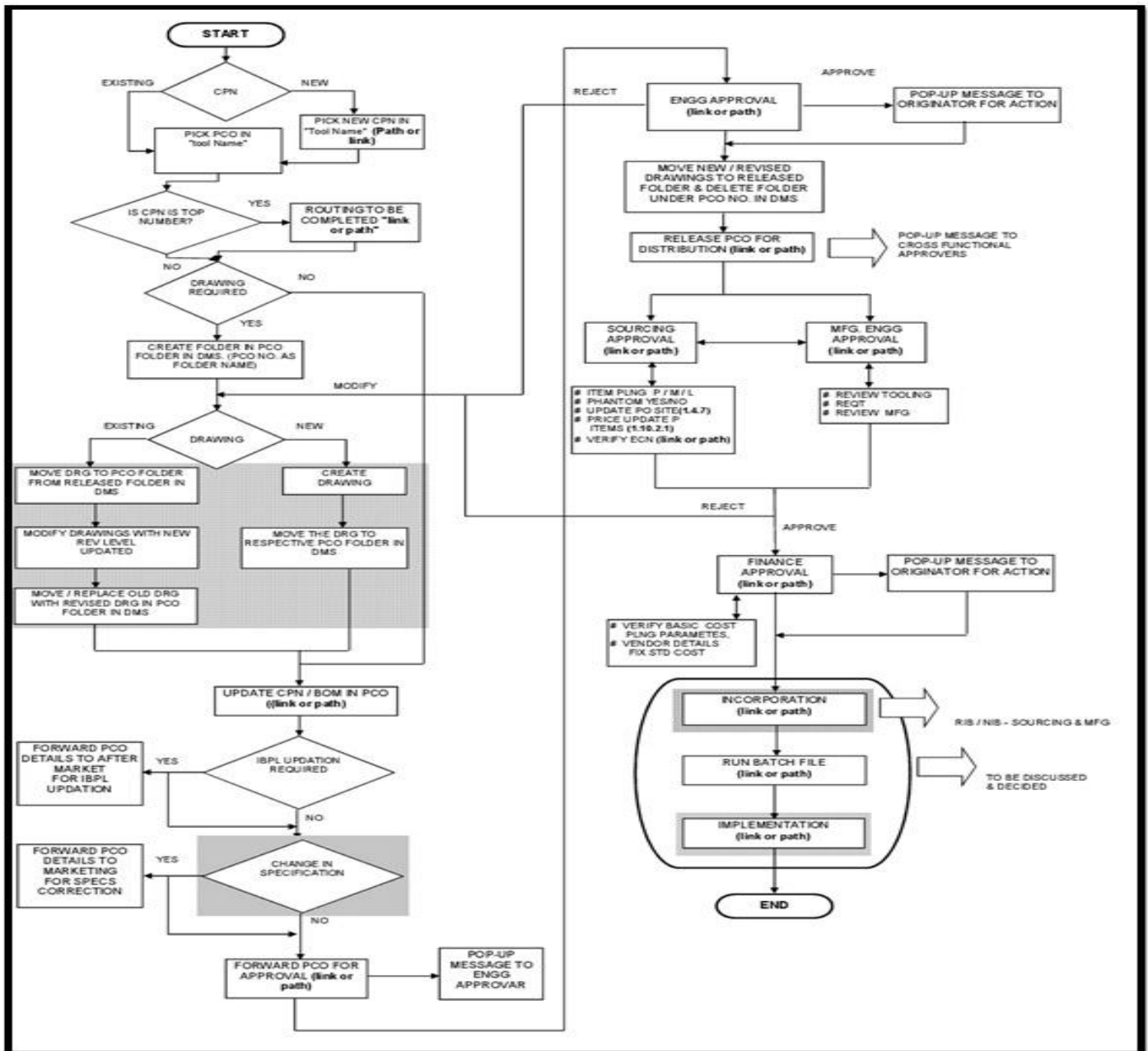


Figure.3. PCO Process Flow Chart

## 5. CONCLUSION

This study, in its entirety, was conducted to arrive at an easy to use customizable ERP Design based on the requirements of a certain enterprise. After having designed the logic for the ERP Package, the next step is to forward the design logic to the IT team, which programs the final ERP Software that can be used by the end user (enterprise). Though the study is not completely conclusive in arriving at a perfect ERP Package, certain ideas and methods which were discussed above, can be adopted into the design/configuration of other ERP Packages. The ERP package developed is designed not only to standardize the existing business processes of the implementing organization, but also to bring in some of the best practices of the industry. Evaluating the effectiveness of redid ERP bundles is fundamental for seat checking best customization rehearses. The efficiency of customized ERP packages is examined using Data Envelopment Analysis and additionally analyzed the connection between the level of customization of ERP bundles and their effectiveness. A similar efficiency study can be done, once an ERP Package has been implemented. This will ensure that the ERP package is under control and produces the desired results.

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