

Product Data Management Implementation

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Abstract — *The research described in this paper is to enforce the benefits in the manufacturing industry. This particular case the implementation took place in a manufacturing company of sheet metal by implementing Product Data Management (PDM) systems. The company was facing problems with the lack of data management and data control access. The process of the implementation was smooth since the company is practically small and only have one computer-aided design (CAD) system. Three different stages were establish to have the control of the implementation. The first stage was driven by the installation of the software, the second, the migration of data that still in progress and the third, the end user training that will be completed ones the data migration is complete. The implementation process had a great feedback and support by the employees. As a long term goal the company will be able to put in the market new products in less time, reduce design cycles and improve the product quality. After the last stage of implementation, the engineering team will be able to improve the efficiency significantly in the department.*

Key Terms — *product data management; computer-aided design; PDM implementation; documentation process.*

INTRODUCTION

Most product developers know that implementing modern tools of computer-aided design (CAD) not only improves productivity, but also accelerates the release to market their products and reduce design cycles and improve well the product quality. Increasing the productivity in a

manufacturing company through an automation process could be very challenging. The development process of a product can face a number of challenges, including managing, control and share the data product design. The aim of this PDM implementation in a manufacturing company of sheet metal is to improve the management of the data by taking the company to a next level of automated design. Leading the organization to improve effectiveness, product quality, reduce cycle time, data organization and so many others that we can add to the list of benefits. As target, the mission is to help the engineering team members to easily find and repurpose files, drawings, and parts; share design information; and automate workflows to make sure planners and manufacturing always has the right version of the product.

BACKGROUND

A product data management (PDM) is a software that will serves as the central knowledge for the process and product history of a design. “A PDM system is used: to store and retrieve product design data in electronic form (called vaulting); to keep track of all possible product configurations (product structure management); to control the release of engineering information (workflow management); and to record a detailed bill of material of every product shipped; known as configuration management” [1]. PDM is not limited only to the manufacturing industry it also supports non-engineering sectors for instance software development, financial services and publishing or any other industry where

needs to have better control and process of documentation.

In fact, one of the objectives that companies want to accomplish is to be able to supply and support the products that customer required, at a specific time established by the customer. To meet this requirement means that the engineering department will have the pressure to meet the deadline including to improve the product quality and reduce the lead time. So far there are two ways to accomplish both goals. One way is to increase the productivity by using a computer-aided design. An alternative way is to improve the coordination between activities. Therefore, the product data management supports both of these approaches.

What kind of benefits can be obtained from the PDM? The main benefit is not only to control the data in the company, but also to have the potential to provide an accurate and well-timed data to any user inside or outside the company. "The advantages of implementing this program are the following:

(1) Improved effectiveness for users: speedier access to and quicker searching among a single source of consistent product information.

(2) Improved collaboration among users.

(3) Improved change management: better work processes and good access to product data reduce expensive and late changes.

(4) Faster time-to-market: arising from speedier working and electronic communications, and can result in larger market share.

(5) Better product quality: arises from using consistent and up-to-date data, better checking and fewer errors and better opportunities to re-use data and designs.

(6) Improved speed and flexibility: speed comes from being able to call-up CAD files, flexibility comes from being able to re-use concepts and core models from old designs in order to overcome time factors on current projects" [1].

"Manufacturers must focus engineering systems strategies on

supporting their business strategy. Whether a company chooses to compete as an innovator, a fast-follower, a low cost provider, or an alternative strategy, their engineering software must help them achieve that position. PDM is a critical element of any engineering strategy and can help companies realize their targeted market position" [2].

ANALYSIS APPROACH

The process of the implementation is driven by the business goal and the support of the management. The role of the management plays a big part of the system implementation. Having the commitment of the management will impel an incredible and successful implementation. This will lead the company to have an active management willing to implement changes and prioritize goals.

In order to have the implementation the company must consider the business goals to simplify the process of selection for the PDM system. An evaluation of the computer-aided design system will be the simplest way to determine what kind of program will be taken in consideration. For example, if the company is using a single CAD system, a bundle of the same provider is the best option.

In these cases the company only has one CAD system. That means, the PDM will be implemented by the provider of the main design software. As an advantage for the company; that means, the implementation will be simple and less expensive.

The process of this implementation was divided into three stages. The first stage is the installation of the software in the structured query language (SQL) which was completed successfully. The selection of the software was based on the main CAD system, Solidworks. The second stage is the migration of data which is in progress. The data migration will be an extensive process since every design needs to be evaluated, corrected and approved to be able to migrate the master design. The last stage is the end user training which will be

completed as soon the data migration is complete. This training will educate the user on how work with the vault, which is a secure location in the server to save all CAD data, do smart search of parts or assembly designs, and the most important the process of documentation and control access to the vault.

OUTCOME OF THE PDM

Gaining control of the product data helps manufactures improve efficiency and reduce mistakes. With a successful application this type of system with help to prepare the organization to growth.

The results so far have been very successful, but the completion of the integration of PDM in the company is still in progress. Having part of the progress of the implementation completed, the managers are able to develop different models of work flows to minimize the administrative work, control access to specific engineering data and project information through secure access, distributed the access between mechanical and electrical designs.

The PDM provides many opportunities for improving processes for managing data once the second stage is completed. Every step is a learning curve can be substantial and management must be willing to accept this. As result of the implementation, it needs to demonstrate the beneficial tools acquired for the development of a product by reducing the design cycle and comparing that to the previous methodology.

After the completion of the last stage, as a long term goal the company will be reducing around 35% in the time-to-market and 25% improving the speed and flexibility. Letting them to deliver a design in a short period of time. The engineering team will easily start finding parts, models, and drawings making their life easier to improve the design time. As a final impression this type of system must be able to shown the benefits and compare them to the previous methodology to demonstrated

the tremendous advantage and potential that it has.

CONCLUSION

This paper shows that the integration of the PDM will support and benefit the engineering department to optimize the process of product development. The idea is to manage the product configuration data in the PDM system during the product development process. Having part of the implementation completed, engineer managers have the facility of controlling the access of the project information, automate and control product process by customizing workflows. Also, engineers are able to classify and determine master models to be migrated to the new system and avoid previous issues of selecting defective models.

In the near future the company must be able to find files faster, automatically create files in common formats, increase productivity, quality and approval process. PDM helps the company to gain control of product information, improve efficiency and the most important time to market. From the perspective of the company the major concern is to improve the engineering performance, to accomplish such inquired the company needs to give them all the tools they need. One of the tools is the PDM that will help to reduce the product development time incredibly. Not only that, but also a major customer satisfaction with an improved quality.

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