Risk Management in PLM

Abstract

The management of a project or a portfolio of projects also brings along with it the looming threat of risks that could cause an impediment to the smooth rolling out of the projects and the product lifecycle as well. Risks, if not identified at the early stages of the project itself, can lead to significant loss of time, resources and also deter the original objectives of the project. Project Managers and corporates are, as a result, having to chart out a plan to identify, analyse, and mitigate the probable risks before they threaten to slow down the lifecycle of the product/project. They also need a systematic plan to manage risks using a stored procedure or a process model (Mensing), which is not only transparent and easily accessible for the sake of enterprise-wide usability, but can also be easily reused and can be scaled up to meet any requirements.

This paper explores how PLM can give project management that added support to identify, analyse, and mitigate risks at an early stage as well give a clearly drafted process flow that can be reused whenever necessary.
Introduction

When we are reckon with risk or compliance at an enterprise/organization level, we think of the SOX, but when it comes to managing the project or product lifecycle, managers need to have the capability to measure, calculate and eventually mitigate the changes/risks that could make them stray from the initial plan. Previously, managers used techniques like the GPM that could measure the performance of a scheduled activity using float analysis techniques to study the CPM’s strategies and shortcomings (Leon, 2010). Managers deployed eight different float analysis techniques to gather the data and analyse for the changes that they needed to work with. But PLM has changed the name of the game and brought the entire management of the product lifecycle literally under one roof, right from conception, design, manufacturing to end-of-life. It can seamlessly integrate with cloud and on-site business systems in the organisation. It can identify risks early on and help create a process that can be easily deployed to mitigate the risk at every stage.

What is Risk Management?

In the world of business, risk management can be defined as the forecasting and evaluation of risk factors throughout the lifecycle of a product/project, together with the identification of procedures to avoid or minimize their impact (Risk management), as well as be in adherence to all the compliance requirements at all times. It is a continuous process of risk identification and mitigation and is closely linked to all the processes in the organization.

Figure 1: Risk Management

1. Sarbanes Oxley Act for Compliance
2. Graphical Path Method
3. Critical Path Method
Risk, if properly managed can be proactive rather than reactive and can help the organization stay in control of all implied future turn of events as well (Stanleigh). If properly managed, risk can not only predict all possible future events but also help in their soft landing, i.e., reduce the magnitude of their impact.

**Why do Organizations Need to Think about Managing Risk?**

For an organization to plan the lifecycle of their product, there needs to be a clear plan right from conceptualization, to design, to manufacturing, to after sales, to end-of-life. Several factors could hamper the realization of the objectives at every stage and ultimately translate into a loss of time, resources, compromise on quality parameters, and, of course, investment. For a product/project to have a well-oiled management, it is essential that every organization creates a plan for capturing, measuring, evaluating, and mitigating the risk and the earlier it is done the better.

![Product Lifecycle Management](image)

**Figure 2: Product Lifecycle Management**

**How can PLM help in Risk Management?**

Organizations already have a lot on their plate with governance and compliance regulations becoming increasingly stringent. Not only do these factors add on to the pressures on their operations and financial management, but they also have the added burden of managing
several risk factors that could drive them off track from their objectives. All organizations proclaim to have a risk management plan but they often manage risks in silos, which often leads to ineffective, untimely and poorly managed risk responsiveness. The best approach to manage risk is to perceive it as a lifecycle, where one step is a logical by-product of the other (The key stages of Risk Management Lifecycle, 2014).

Some of the advantages that PLM can infuse into the process of Risk management are (Expanding PLMs Purview - Quality and Risk Management, 2009):

- A comprehensive and structured plan that works on identifying, assessing, appropriately treating, monitoring, and reporting any possible risk factors that could impede the deliverables
- Correction of problems before they surface using techniques like FMEA\(^4\) or DFMEA\(^5\)
- Tying back of actual quality issues to the early phases in the lifecycle using processes like CAPA\(^6\)
- Added QLM\(^7\) capabilities that help close the loop from product design to the rest of the lifecycle
- Integration of PTC Windchill solutions that can also include criticality (FMECA\(^8\)) into FMEA among other added features and benefits
- Automatic tracking of compliance of governance regulations for the parts and processes
- Use of risk trackers, which are easy-to-use interfaces, to maintain control of the risk analysis process
- Engagement of cross-functional and collaborative buy-in into the risk management process

**Conclusion**

PLM can be viewed as a single source of truth, or in other words, a single source of information that can be easily accessed across the organization irrespective of disparate geographies, systems or teams. PLM Risk Management solutions can help the organization stay on schedule of its deliverables, and track the progress through milestones and help in easy achievement of the expected outcomes and ROI. It can be seamlessly integrated into all the on-site and off-site systems of the organization and maintain an issue tracker that keeps track of the actual progress of the project in accordance with the proposed plan. It proactively identifies, measures, evaluates, and formulates a plan to mitigate the risks before they actually occur, which helps the project to stay on track with their plan.

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4. Failure Mode and Effects Analysis
5. Specially Designed FMEA
6. Corrective and Preventive Action
7. Quality Lifecycle Management
8. Failure Mode, Effects and Criticality Analysis
9. Return On Investment
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