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# Issue in Focus:

# Product Portfolio Management in a PLM Strategy

***Closing the Loop on Product Planning***

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## Introducing the Issue

As reported in Tech-Clarity's *Issue in Focus: The ROI of Product Portfolio Management*, effective portfolio management can improve both top-line performance and bottom-line profitability. For this reason, manufacturers are increasingly adopting Product Portfolio Management (PPM) solutions to help improve portfolio management and new product development (NPD) execution. A well developed PPM program consists of four primary processes (see Figure 1):

- Select and Maximize Product Portfolio
- Resource and Enable Pipeline
- Execute and Manage Projects
- Determine and Monitor Product Value


PPM offers value to any business that needs to align portfolios with business strategy and maximize the investment of limited resources to accomplish their goals. For a manufacturing business, that means developing profitable products. But there are differences even within the manufacturing industries. Most of what has been written is about PPM for consumer goods, but PPM takes on different meaning for other industries. For example, Sandia National Labs is a multi-program engineering and science laboratory operated by Sandia Corporation, a Lockheed Martin Company. "*For Sandia Labs, we need an integrated planning process,*" explains Sharon Trauth, a Principal Member of Technical Staff for Sandia National Labs. "*We need the ability to see what needs to be done, understand how that is funded, and then we need to take action.*"

In some industries, such as consumer packaged goods, the connection between the commercial and technical aspects of product development project can be very separate. For other manufacturing industries and companies like Sandia, the tie between the project and the underlying engineering efforts are tightly linked. This paper explores how engineering-centric businesses can take a more closed-loop approach between Product Portfolio Management (PPM) and Product Lifecycle Management (PLM) to extend their benefits by closing the loop between theoretical plans and actual progress and results.

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## First Things First – Get the Portfolio Right

Before considering a closed-loop planning cycle, let's make no mistake that the basics of PPM still apply. There is no sense enabling better execution if the portfolio itself isn't right. A key element of selecting the right mix of products is economic, but not everything is based purely on financial returns. Optimizing a portfolio must also ensure that the portfolio supports the business strategy. If great new products are developed for a market that the business is exiting, the potential value will be squandered. Portfolios must also be balanced on other factors such as risk versus reward, product line investment, or percent of products that are new to the market.

***PPM provides analytics and what-if capabilities to help companies optimize financial value.***

Of course financial value is the key factor. Understanding the value that each product can provide and the required investment in product development is critical to successful planning. PPM provides analytics and what-if capabilities to help companies optimize financial value. Manufacturers need the ability to adjust forecasts, costs, and schedules and compare portfolio mix options to achieve an optimal profit. They must also consider relationships and dependencies between requirements, products, and projects to determine the potential impact of decisions such as cutting a project.

An effective PPM process weighs both financial and non-financial factors in a standard process with consistent, clear decision criteria to increase objectivity and improve decision making. As Sandia Lab's Ms. Trauth explains, they look towards PPM to "*provide better visibility to rationales, and better insight into managing.*" This transparency of information is important to effective PPM. "*We have program managers, deputies, directors, and deputy directors,*" explains Trauth, "*A lot of people have to be involved to make sound decisions.*"

## Make it Feasible – Resource Planning

Getting the portfolio right is an important task, but it is only one element of an effective PPM process. Even the best portfolio is doomed to fail if it isn't resourced properly. Today's lean resources require manufacturers to get the most out of their investments. Understanding the level of effort and required skills for a project helps determine an ROI, but also helps make sure it is executed properly. A common problem for many companies is to have too many product development projects in the product pipeline. This can lead to "thrashing" where people switch their attention between too many projects and don't accomplish much on any of them. Proper resource loading helps to mitigate this risk.

***Capacity planning at a high level if important to ensure plans can be executed and reduce the need for midcourse changes that sub-optimize portfolios.***

Capacity planning at a high level if important to ensure plans can be executed and reduce the need for midcourse changes that sub-optimize portfolios. Portfolio plans must ensure that the appropriate resources are made available, or the product development pipeline will choke. Many companies adopt different levels of resource planning based on the stage of the decision making. Early plans require rough cut balancing between required resources and capacity, typically at a skill, role, and budget level as opposed to named resources. This high level resource alignment is critical to a smooth and productive product development pipeline. Project execution then follows on with a more granular approach.

## Make it Happen – Project Execution

Once project and resource plans are in place, NPD projects need to be managed to ensure on-time, on-budget results. Managing work breakdown structures, dependencies, and risks in a consistent way helps manufacturers get a clear picture of product development progress. Project status, progress, and deliverables should be monitored so mid-course corrections can be made before it is too late. Or, if necessary, a doomed project can be halted to make room for a higher value proposition before the low value project consumes scarce, valuable resources.

***By marrying in the project with the portfolio, the portfolio information remains valid and up-to-date so companies can optimize portfolios on an ongoing basis and make better portfolio decisions.***

By proactively assessing the health of the projects, decisions can include adding resources or killing a project based on how planning assumptions are turning out in reality. Stage-gate checkpoints can help make sure requirements and scope are being met, and planning assumptions are being validated. By marrying in the project with the

portfolio, the portfolio information remains valid and up-to-date so companies can optimize portfolios on an ongoing basis and make better portfolio decisions.

## Make it worth the Investment – Assess and Monitor Value

A frequently overlooked aspect of portfolio decision making is assessing and monitoring the potential financial return of a product as it changes over time. Product value at the beginning of a product development project is speculative. Companies often develop a "net present value" that discounts the market opportunity based on commercial and technical assumptions and risk. If done correctly, this results in a range of potential values for the project depending on which risks are overcome and which are experienced.

***Over the course of an NPD project, as projections and risk are replaced by experience and results, manufacturers should monitor value to ensure the project is still offering an ROI in an attractive range.***

Over the course of an NPD project, as projections and risk are replaced by experience and results, manufacturers should monitor value to ensure the project is still offering an ROI in an attractive range. It is very important at this point to keep an eye on changes outside of the project's control, such as market conditions or competitive moves, which can drastically change the potential value. Too often these external factors are ignored as the project "succeeds" internally. These outside influences should be managed as project risks across the project lifecycle.

## Close the Loop between Planning and Reality

These PPM basics are critical to managing profitable product portfolios. But, PPM is often disconnected from other product development and engineering processes. What additional value can be achieved through a tighter integration between PPM and PLM, and from closing the gap between product planning and the reality of the underlying design and development efforts?

***PPM is often disconnected from other product development and engineering processes.***

From a planning perspective, closing the loop ensures that the product strategy is carried through to the final product. Real information can be compared to future forecasts, including PLM information but also execution data from strategic sourcing and ERP solutions. As projects progress, early assumptions can be replaced with actual results such as real costs to make planning more accurate and timely. This is important as product development cycles shrink, because companies need to make more real-time

decisions. In addition, tighter linkages encourage planning of future and existing products in a cohesive planning process.

***As projects progress, early assumptions can be replaced with actual results such as real costs to make planning more accurate and timely.***

In resource planning, real names and real resources can be tracked from a bottoms-up perspective. Actual, updated project plans and tasks provide a much clearer view of actual resources, allowing for better midcourse corrections to keep projects on track. Resources utilization can also be compared bottoms-up versus top-down projections, and actual usage can be fed back to provide a current picture of the project. These results can also help improve estimates for future projects.

Perhaps project execution is the most likely aspect of PPM to be aligned with PLM. In fact, many companies already use PLM to manage their NPD initiatives. Project tracking is critical to bringing projects in on-time and on-budget. By monitor progress at a granular level, including planned deliverables, project status can be based on real progress. This allows stage-gate reviews to have the right information to make good business decisions. Another benefit is that associated planning documents can be kept with the project so requirements are visible to engineers and product developers throughout the life of the project. "*We have contracts, budget documents, and scheduling documents explaining what is expected to be delivered that the project team needs to understand,*" explains Sharon Trauth of Sandia Labs.

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*Sharon Trauth, Principal Member of Technical Staff, Sandia National Labs*

Finally, closer ties between PLM and PPM offers opportunities to ensure projects achieve their expected value. High level requirements at the beginning of the project impact the assumptions made to predict value. These requirements can be exploded to a lower level, creating a requirements tree. These requirements can then be tracked throughout the project, and associated with the deliverables that meet the requirements. This can eliminate late surprises and help meet market and strategy requirements from the bottom-up as well as top-down.

## Conclusion

First, get the basics of portfolio management right. Profitable portfolios require companies to effectively select and optimize their portfolio, properly resource the product development pipeline, execute projects efficiently, and manage product development for economic value. Beyond this, manufacturers should look for opportunities to close the loop by including PPM in their PLM strategy. Of course manufacturers shouldn't integrate because they can, they should find the right areas of value to focus in across the four core PPM processes.

***Manufacturers should look for opportunities to close the loop by including PPM in their PLM strategy.***

## Recommendations

Based on industry experience and research for this report, Tech-Clarity offers the following recommendations:

- Optimize portfolios with standard processes and decision-making criteria
- Balance resources with project requirements on a top-down basis
- Manage execution of product development projects to catch problems early and deliver on-time and on-budget
- Monitor the potential value of projects as market conditions and risks change through the course of the product development process
- Integrate portfolio planning with resource management and project execution
- Consider integrating PPM to PLM (and potentially ERP) to include a realistic view of existing products and projects – closing the loop between planning and reality

## About the Author

Jim Brown is the President of Tech-Clarity, an independent research and consulting firm that specializes in analyzing the true business value of software technology and services. Jim has over 20 years of experience in software for the manufacturing industries, with a broad background including roles in industry, management consulting, the software industry, and research. His experience spans enterprise applications including PLM, ERP, PPM, quality management, service, manufacturing, and others. Jim is passionate about improving product innovation, product development, and engineering performance through the use of software technology and social computing techniques.

Jim is an experienced researcher, author, and public speaker and enjoys the opportunity to speak at conferences or anywhere that he can engage with people that are passionate about improving business performance through software technology.

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