DASSAULT SYSTEMES

PERFORMANCE-DRIVEN PROJECT MANAGEMENT WITH PLM ANALYTICS

ACTIONABLE INSIGHT: FROM TASK-BASED TO PERFORMANCE-DRIVEN PROJECT MANAGEMENT WITH PLM ANALYTICS

Like most business disciplines, project management relies primarily on past performance to predict future results. With Product Lifecycle Management (PLM) a vast amount of data is collected to help evaluate performance. But project managers still lack useful analysis and forward-looking capabilities to predict and ensure project success.

Enhancing project management with analytics creates ***project intelligence***, offering the opportunity to shift from a ***task-based*** activity to a ***performance-driven*** one. More broadly, it allows companies to significantly extend the value of their PLM investment and related data by using analytics to provide actionable insights that improve business performance.

Actionable Insight = Gaining valuable intelligence from evaluating data in context to make better and more informed decisions, coupled with the ability to act on the information to meaningfully improve quality, costs, and overall project performance.

PLM AND ANALYTICS BOOST BUSINESS VALUE

PLM and related analytics are essential enablers for the high-performing manufacturer. PLM allows companies to control, manage, and execute their business from product concept through design, manufacturing, and service. It keeps all product information in one place and provides transparency across the enterprise and the supply chain. PLM applications go beyond data management to streamline and ensure consistent product development processes to improve oversight, execution and productivity. PLM incorporating deliverables-based project management provides even greater value to companies by automatically capturing task status from engineers and other project team members in real-time as they do their work.

Big data analytics allows companies to understand, participate, and develop insights to make better business decisions. Data analytics applied to PLM helps companies unlock knowledge from their PLM data to improve business performance. Analytics uncovers hidden data relationships and brings better visibility of issues to PLM stakeholders and C-Level executives. Thus, companies improve execution by discovering the root cause of issues for resolution. For example, analysis may show that the majority of customer complaints are related to products with parts from a specific supplier or piece of production equipment. In this way, analytics helps manufacturers identify, narrow down, and solve problems.

Leveraging deliverables-based project management and analytics with PLM unlocks new insights and expands the business value of a PLM investment. This eBook shares practical advice to help companies leverage PLM, project portfolio management and analytics to improve business outcomes.

TODAY'S STATUS QUO - SPREADSHEET REPORTING: INEFFECTIVE AND INEFFICIENT

Reporting on PLM and PLM-related activities is typically accomplished with ad-hoc tools. Most companies use spreadsheets to report status information. Unfortunately, the manual process of data collection and reporting is error-prone: information can be manipulated; data quickly becomes outdated; multiple versions may exist; and data escapes the controlled/secure environment. With all of these shortcomings, it's not surprising how much non-value-added time is wasted simply collecting data and developing reports which are immediately out of date. Spreadsheets are simply not the right solution for enterprise-level reporting and effective decision-making.

These tools are also inherently shortsighted. They lack the ability to provide real insights or identify trends, and aren't capable of producing forward-looking information. Automated data collection, real-time project views and analytics offer more than a snapshot view of program status. These meaningful observations and interpretations help identify and address issues before they happen, and flag bad habits. When combined within a platform, these applications provide a true competitive advantage.

THE POWER OF A PLATFORM

The **3D**EXPERIENCE platform from Dassault Systèmes has powerful big-data capabilities to analyze data, integrate information from both internal and external sources, and provide dashboards that deliver actionable insights to all stakeholders in a secure and auditable manner.

Advanced algorithms process data, find meaningful trends and develop insights. For example, algorithms analyze customer feedback on social networks and provide insights into the factors contributing to the rate of adoption of a product.

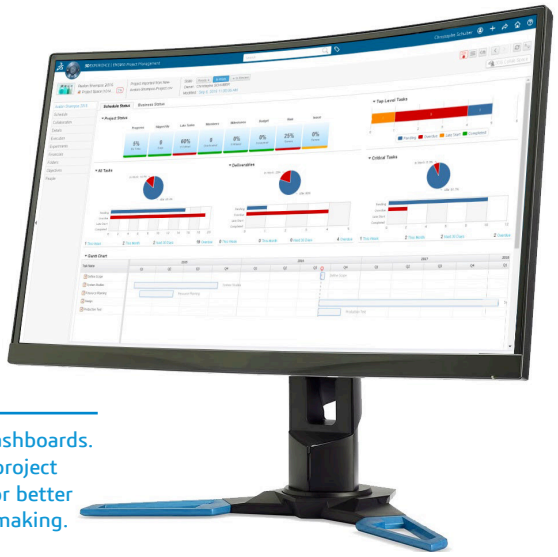
Often the data required for decision-making is located in disparate systems. For example, when an engineering change to address a major customer concern is considered, data relating to the weight, cost, manufacturing and supplier impact might be found in diverse systems. Manually collecting all the data and developing a meaningful analysis is tedious and time consuming. With a big-data approach, data in multiple systems is indexed; meaningful relationships between data are revealed; and an aggregate view is presented in a dashboard. In short, a data-driven decision-making capability is established at all levels of the organization.

DELIVERABLES-BASED PROJECT MANAGEMENT

The **3D**EXPERIENCE platform provides the underpinning apps and services that enable the transformation to a digital, data-driven environment. Roles can be added on the platform to provide discipline-level capabilities. ENOVIA offers technical and business roles for companies to plan and execute their definition of success.

ENOVIA's project management roles connect resources, tasks and deliverables through deliverable-based project management. Project tasks can be associated directly with deliverables. As team members progress on their deliverables the task status in the project is updated, providing real-time project information to decision-makers.

This approach provides "invisible governance" as deliverable status is automatically updated in the project timeline without requiring project managers to manually collect status from every team member. Accurate, real-time information without manual effort improves product development productivity and results in better decision-making.



Project dashboards. Intuitive project metrics for better decision-making.

ANALYTICS - THE ACTIONABLE INSIGHT IMPERATIVE

EXALEAD provides analytics solutions on the **3D**EXPERIENCE platform, including PLM Analytics, an important way to extend the value companies realize from PLM-enabled processes. PLM Analytics displays instantaneous, dynamic dashboards that can be configured to provide the insights people need to run their business. It serves up real-time product and project intelligence to give meaningful insights to schedules, changes, issues, costs, and much more.

With PLM Analytics, companies gain more compelling diagnostics and KPIs to help improve their business. There are countless ways for companies to leverage PLM Analytics to drive business value using **3D**EXPERIENCE platform data and additional data sources like ERP, CRM, and others.

PLM Analytics is designed to understand the intricacies of product data. It can quickly roll up values through bills of material (BOMs) and CAD product structures to show target values versus actuals. This information can be shared in dashboards, but also directly in the context of the product. For example, engineers can look at cost or weight trends visually in a three-dimensional product mockup to show convergence on targets during the design cycle. PLM Analytics also identifies missing data and makes it clear which data is calculated versus declared to understand how much confidence engineers should have in the information. Further, the information isn't simply a snapshot in time. Companies can easily uncover trends, hidden correlations, and relationships in product and program data, then interpret and act on them immediately to drive higher performance.

PROJECT MANAGEMENT WITH ANALYTICS IMPROVES PERFORMANCE

The **3D**EXPERIENCE platform has the data companies need to make better decisions. ENOVIA Project Management and EXALEAD PLM Analytics each have valuable roles to play to improve project results. Project Management helps companies plan and control their projects by managing project tasks, phases, gates, costs, and budgets. It provides for governance of the project and enables project team members to know what they should be working on and when.

A platform approach brings the best of PLM and analytics together to put the single source of truth into product and project context. A single platform combining PLM and big data analytics gives companies the ability to not only gain insights quickly, but to immediately drill down to further investigate or act on the underlying information because it is all located in one place. PLM Analytics has the power to turn vast amounts of data into usable information.

Track task completion progress.

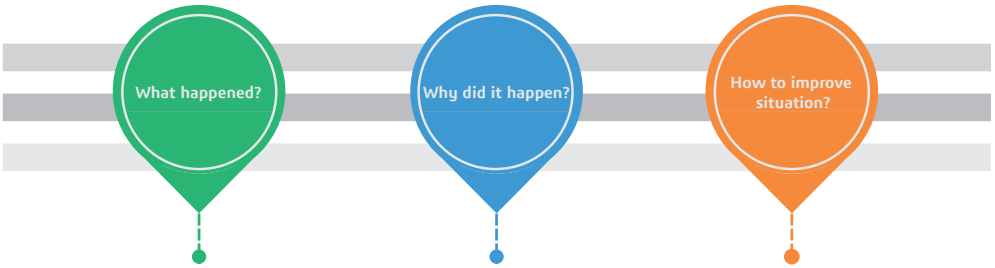
PROJECT INTELLIGENCE

As we discussed, PLM with project management apps on a single platform improves project governance and success rates. Adding PLM Analytics allows people to make more proactive decisions and focus on the right things.

Let's look at a case study. An automotive company recently found they had no clear visibility to their overall project schedules. Project information was stored in multiple silos, and personnel spent a lot of time and significant manual effort gathering information for status meetings. By the time the data was collected and gathered into reports, it was already out of date. Unfortunately, this is a common scenario in manufacturing today.

This company leveraged Project Management and PLM Analytics on the **3D**EXPERIENCE platform. The solution provides a central program dashboard to display status. It allows the company to look across different types of projects, tasks, and related information using flexible dashboards. They can now see their work breakdown structure in context with their product, and see vital information at different levels. They can analyze portfolio, project, task, issue, and engineering data and quickly traverse from level to level. They are also able to document scope changes to clearly show how requirements have evolved.

Beyond increasing the accuracy and timeliness of information, this solution allowed them to change the way they do business. They transitioned their project management approach from managing tasks and due dates to a performance-based approach. They are now able to analyze issues, costs, and risk to find the issues that will have the greatest business impact. This lets them address the most valuable items first, shifting priorities based on business value versus predefined schedule.



Leverage all PLM IP to have single version of truth

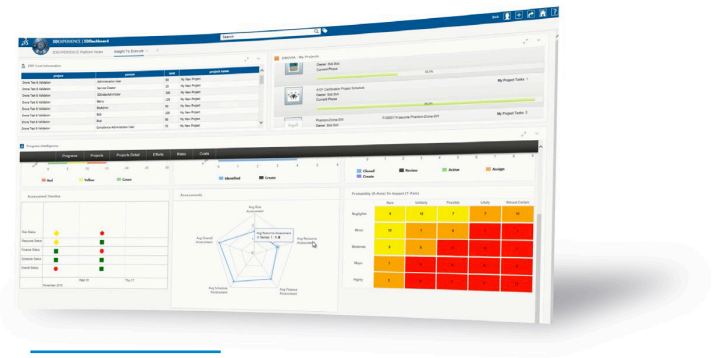
Deep dive analysis to every stakeholder

From insight to action in one click

7 PRACTICAL POINTERS TO GAIN ACTIONABLE INSIGHT

The **3D**EXPERIENCE platform with deliverables-based Project Management and PLM Analytics provides crucial capabilities to allow companies to:

- **Dashboard it.** Consolidate information and make data visually compelling, for example color-coding, flagging, heat maps, spider diagrams, dependency wheels, gap-to-target analyses, etc.
- **Make analytics "drillable".** Don't disconnect the insights from the actions needed to investigate and address them! The next step for further analysis or action should be at your fingertips.
- **Ensure current data.** Move toward real-time information and don't rely on data exported at some previous time. Decisions on outdated data are bad decisions.
- **Tap multiple sources.** Valuable data comes from different sources, internally and externally. It should be easy to connect to various data sources, even if they're not well organized. Mashing up information frequently leads to real learning.
- **Make insights visually contextual.** Overlay information in 3D context, in a digital mockup, leveraging the 3D models, making analytics come to life in the design.
- **Offer self-service.** Let decision-makers explore on their own without having to submit and wait on an IT request. Give them the ability to take iterative approaches to gaining insight, to enable "what-ifs" and exploration to aid creative problem-solving.
- **Ensure security.** Don't forget the importance of access control. **3D**EXPERIENCE platform data retains its security and access control in PLM analytics.



Monitor project risks.

A **practical example** that shows the power of PLM Analytics on the **3D**EXPERIENCE platform is identifying a trending issue from external data. Public recall information from the NHTSA (National Highway Transportation Safety Administration) database was used to uncover a growing issue in the automotive industry. PLM Analytics applied semantic and clustering algorithms to identify commonalities across reported issues and found 46 similar issues reported related to "dash melting". Despite different ways of describing the issues, machine learning coupled with an algorithm that extracts semantic meaning from text identified a growing trend from a large volume of dissimilar data. This kind of information can be used proactively to identify and mitigate issues and risk.

TALKING TECHNICALLY

Business Intelligence (BI) solutions have been around for a long time and have been applied successfully to numerical and transactional systems such as ERP and CRM. But they've fallen short with less hierarchical, more complex, and unstructured data sources like PLM. There are tangible, technical reasons behind BI shortcomings. Here is a summary:

- Engineering data is complex. It's made up of varied configurations, geometric data and multi-discipline data. This data isn't simple or hierarchical. It has inherent, networked relationships. Traditional BI systems are not designed to accommodate these types of relationships.
- The PLM data structure is multi-dimensional. Configurations and product structure data are not suited to traditional "data cubes". They are much more suited to nodes in a graph database. Graph data analysis isn't compatible with conventional BI tools.
- Need to unlock information from text. Semantics help unlock meaning from text, translating input from multiple systems, including documents and social media, into usable data. PLM analytics uses semantic and clustering algorithms, leveraging machine learning to unlock hidden trends, knowledge, and insights.
- Performance is critical. Developing BI cubes is inefficient. They become very difficult to change after the fact and they take too long to rebuild. PLM analytics satisfies new information demands in seconds instead of hours or days by analyzing indexed data, enabling iterative, "what-if" analysis.
- Geometry is complex. PLM analytics understands information in the context of an assembly and 3D space. It provides information graphically with appropriate 3D renderings. Analytics must be 3D model/CAD/product structure aware.
- PLM analytics includes more advanced techniques such as clustering data and predictive analytics including machine learning.

LEARN HOW TO PUT PROJECT INTELLIGENCE TO WORK FOR YOUR COMPANY

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