IBM Industry Solutions

From ideas to competitive differentiators:

Aligning your business processes with product development

IBM

Overview

A decade into the 21st century, most industrial enterprises—including yours—operate on a global basis, addressing the needs and growing demand of emerging countries, as well as the globalization of design, manufacturing and supply chain operations. You, your suppliers and everyone along your value chain are involved in the development of complex products, from cars and trains, to aircraft, ships and electronic goods, which require ever-increasing levels of sophistication to meet market demands. Furthermore, your value chain itself has become increasingly interconnected and complex, with myriad systems and product development processes that rely on one another to bring a product to market and complete its lifecycle. How successfully you manage each phase of the product lifecycle process across the extensive ecosystem of participants in your value chain plays a key role in product quality, time to market and innovation.

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Because the processes involved in product lifecycle management (PLM) play such a critical role, they must be as efficient as possible to make your business as effective as possible. You need a way to automate and improve core business processes that helps improve product quality, shortens time to market and helps you to be more responsive in a changing business climate. IBM can help you transform your business processes by leveraging PLM to enhance your entire product and service value chain. The IBM Product and Service Industry Framework for the automotive, aerospace and electronics industries includes a core software offering, IBM WebSphere® Product Lifecycle Management Pack, which enables business process management (BPM) within the crucial design, development and service phases of PLM so you can manage product development more effectively and become a truly integrated global enterprise.

PLM: The enabler of product innovation

Product lifecycle management is a strategic capability to integrate systems, processes and data across the complete product lifecycle, in a way that enables the use of information to better conceive ideas and meet marketplace demands. PLM enables organizations to accurately transform ideas into products that can be produced, manufactured, supported and eventually retired. The latest view of PLM extends beyond just the initial design and engineering phases to include the full lifecycle of a product, and comprises these five phases:

- Design and develop
- Source and build
- Market and sell
- Service and support
- Retirement and disposal

PLM has proven its ability to manage and functionally validate product interrelationships across disciplines and can help companies innovate, develop new products and engineer those products more effectively.

High-stress areas of product development include:

- Engineering change orders
- Engineering change notice/release to manufacturing
- Collaborative design workflow/work packages
- Collaborative design review/digital mock-up
- Configuration management (perhaps incorporating the relationship hub approach)
- Requirements management (across engineering disciplines and enterprise boundaries)
- Systems engineering (requirements through validation across engineering disciplines and enterprise boundaries)
- Parts/software reuse
- Export control/intellectual property management
- Quality assurance/design quality notices
- Case/quote management (problem management to configuration management/quote)
- Configure/engineer-to-order
- Service bulletin management

IBM WebSphere Product Lifecycle Management Pack includes prebuilt, configurable assets to deliver a BPM implementation that addresses these issues.

Elevating PLM to a strategic business process

While many organizations have implemented PLM solutions, they have typically done so to address limited and obvious needs, such as mechanical design. Therefore, the move to PLM has been driven primarily by engineering departments, resulting in an implementation that is often isolated from the rest of the business.

PLM has proven ability to manage and functionally validate product interrelationships across disciplines, and it has shown great success in driving product innovation.

PLM technologies are quite capable of addressing the broader scope of product lifecycles, from initial product concept to disposal, but IT foundations have not necessarily supported full PLM capabilities, resulting in limited implementations of the technology. Companies have attempted to incorporate PLM within their extended enterprises to support real-world challenges. However, connecting the various business systems that often sit in functional silos has been difficult. In the attempt to execute in this environment, you can end up with a convoluted mess of hard-coded integrations and inflexible processes.

Yet PLM has the proven ability to manage and functionally validate product interrelationships across disciplines, and it has shown great success in driving product innovation through knowledge sharing and its inherent agility. The challenge is finding a way to transfer these efficiencies into a management process that can organize systems across your enterprise—including your partners and suppliers—to be viewed and managed from a single place.

Optimizing the design chain using BPM

IBM has found a way to apply the same technical- and engineering-oriented principles—and benefits—of PLM across your enterprise, delivering significant benefits throughout your value chain. Business process management (BPM) is the combining of software capabilities and business expertise to accelerate process improvements and facilitate business innovation. With the ability to align your business processes with your product development, you can streamline resources, make informed business decisions and deliver on a promise of innovation that goes beyond the product.

Because BPM implementations can quickly respond to change—they are designed to do so—they can fulfill an important role in PLM. Based on service-oriented architecture (SOA), BPM offers the ability to rapidly create, automate and restructure process-driven applications, as well as the means to tightly integrate the organization and value chain with its many discrete product development processes. SOA is a crucial foundation for BPM, supporting rapid assembly and orchestration of process services into larger, end-to-end processes. Businesses need to design flexible processes that are based on services that can be modified, without being fixed within the code structure of the application so that it becomes impossible to make changes later.

This flexible, rules-based approach to managing business processes lets you define the processes that you want to operate and the level of collaboration you need to get through each point in the process to the end. You can automate activities, transactions and processes and customize actions based on situational context, enabling you to more effectively govern the design process and value chain. While BPM links together these processes as services within your enterprise, they can also be decoupled and recombined, so you can rapidly change them as circumstances require.

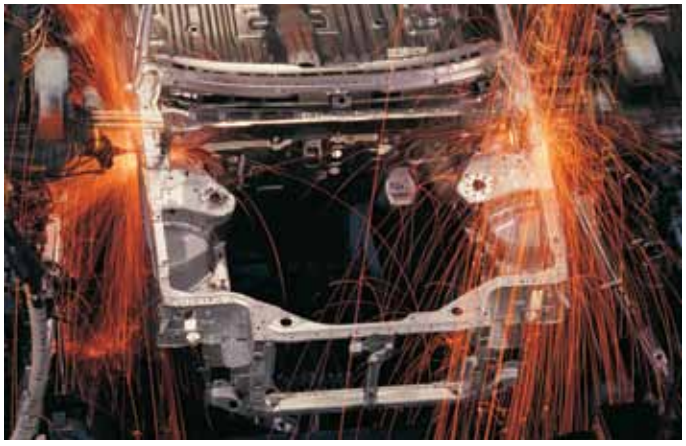
Benefits of an SOA-driven BPM implementation:

- Leverages existing applications
- Integrates initiatives across the enterprise
- Speeds delivery of process capabilities
- Helps lower risk and cost of implementation
- Enables business and IT to partner across the solution lifecycle

Getting started

It can be a challenge to develop a framework for BPM implementation that is flexible enough to meet changing business needs yet at the same time ensures that the framework is consistently applied. Long analysis and design cycles to properly decompose the business into functional areas and specify services may add risk and cost with each new application.

IBM is in a unique position to help you leverage your existing PLM investments by applying new and complementary capabilities that can extend the value of PLM throughout your enterprise by using BPM. The IBM WebSphere Product Lifecycle Management Pack helps you get started quickly in delivering a BPM implementation, integrated with your legacy systems, so you can sooner see improvements in business processes and efficiencies.



This configurable software platform consists of a rich, extensible set of prebuilt assets for BPM solution scenarios, product data management and supplier collaboration. Based on leading PLM standards and a governing customization framework, WebSphere Product Lifecycle Management Pack is designed to deliver BPM implementations in areas such as product data management, engineering change management, bill of material management and supplier collaboration. The tools in this pack are particularly designed to support the automotive, electronics, aerospace and defense and industrial sectors.

WebSphere Product Lifecycle Management Pack is extensible and configurable to support your specific needs but offers specific PLM content, including industry standards and process templates, business transformation assets and business rules, to help you create a viable BPM application quickly by:

- Accelerating delivery of PLM composite business applications using precertified and pretested assets
- Helping ensure reuse by delivering industry standards-based assets
- Facilitating referential alignment across PLM standards and customer- or vendor-specific models
- Enabling consistency of process, services and data definitions across multiple processes thereby helping reduce the maintenance costs of PLM business services
- Extending and transforming siloed PLM processes to accelerate the deployment of new products and services

WebSphere Product Lifecycle Management Pack includes the following assets to help you automate and establish common processes across the lifecycle:

- **Capabilities models** to align your business strategy with process execution
- **Process models** to measure and simulate human workflows and automate processes
- **Service models**, which facilitate creation and assembly of process implementations
- **Common components** to enable interoperability with the application ecosystem
- **Business vocabulary**, a repository of business concepts, terms and relationships, to help ensure consistency
- **Business object models**, or conceptual data models, to provide a foundation for information management
- **Solution scenarios** for product data exchange and engineering change request, including user interface forms, dashboards and process implementation

The WebSphere Product Lifecycle Management Pack includes prebuilt assets that are derived from IBM best practices and the following industry standards to help you better manage compliance:

- American Productivity & Quality Center Process Classification Framework (APQC PCF) models
- Object Management Group Product Lifecycle Management (OMG PLM) Services 2.0
- Verband der Automobilindustrie (VDA) 4965
- Open Applications Group Integration Specification (OAGIS) 9.2 Models

Why IBM?

IBM is ready to help you get started. We offer a single point of entry and flexible offerings that enable you to work in one area and build out as you acquire additional funding. We can help you develop customized solutions to better manage the entire product lifecycle from concept to design to manufacturing. Our global network of IBM PLM Centers of Excellence are designed to help you find the right skills, resources, technologies and methodologies—at a location near you—to solve both business and technical challenges.

For more information

To learn more about IBM Product and Service Framework solutions, please contact your IBM sales representative or IBM Business Partner, or visit: **ibm.com**/software/industry.

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