SAP's New PLM Roadmap

"Enabling Product and Service Leadership"

June 2008

A CIMdata Program Review

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SAP's New PLM Roadmap

"Enabling Product and Service Leadership"

SAP, one of the leading providers of enterprise software-based solutions, has publicly committed itself to a strategy focused on development of a number of specific value-added solutions. In order to support their business strategy-focused initiatives, SAP has reviewed the factors that can improve a company's competitiveness in the global marketplace. Product Lifecycle Management (PLM) has been recognized as the key enabling vehicle to address these issues. As a result, SAP has publicly declared a renewed focus and commitment to PLM and has initiated an aggressive, multi-year development roadmap to strengthen its PLM solutions. This paper reviews SAP's business strategy-based initiative approach, PLM's role in supporting those initiatives, and a detailed look at SAP's new PLM roadmap.

1. Introduction

Companies are under continuous pressure from today's highly-competitive global market place. New competitors, new products, and new markets constantly challenge their ability to remain competitive. Customers want new, more innovative products that are tailored to their specific needs. They also want service and support that is timely, cost-effective and focused to their needs. As always, reducing cost and improving quality require ongoing initiatives within every enterprise. Delivering higher value, whether within the supply/value chain to partners and OEMs or to the end user, has become more and more important.

In order to address these business pressures, companies of all sizes are demanding that their technology and application suppliers provide business-level solutions, not just applications and hardware that have new features and functions. Business investment decisions are being based on the overall value that the initiative will provide to the company—expanded market share, higher profitability, improved customer loyalty, and more efficient use of the company's resources and intellectual capital.

As a leading provider of enterprise solutions to companies in many industries across the world, SAP has determined that in order to increase the value that they provide to their clients, they need to become more of a value-added solution provider rather than primarily a supplier of technology solutions. SAP has publicly committed itself to this transition. In order to meet this objective, SAP has identified a select suite of Business Strategies to communicate the issues that they will address with specific value-added solutions. These Business Strategies will guide SAP's development of future products and services and clarify SAP's priorities to industry.

In order to support their business strategy-focused initiatives, SAP has reviewed the factors that can improve a company's competitiveness in the global marketplace where the need for agility, flexibility, and innovation of products, services, and operational processes are keys to success. Product Lifecycle Management (PLM) has been recognized as the key enabling vehicle to address these issues. As a result, SAP has publicly declared a renewed focus and commitment to PLM and has initiated an aggressive, multi-year development roadmap to strengthen its PLM solutions.

This paper will identify the challenges facing businesses today, SAP's approach to helping companies address these challenges through their business strategy-based initiatives, PLM's role in supporting those initiatives, and a detailed look at SAP's new PLM roadmap.

2. Business Challenges

In today's challenging global market, enterprises around the world are struggling to find ways to compete more effectively to survive and thrive. Global economies and competitive landscapes continue to evolve and transform rapidly. Figure 1 illustrates the kind of market pressures that companies face.

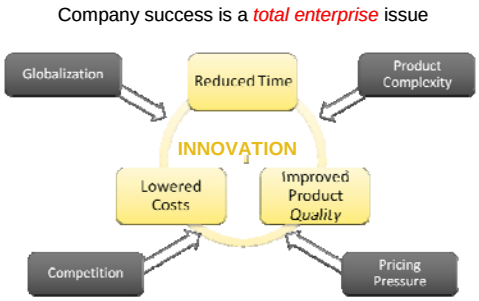

Figure 1—Today's Competitive Environment

Deregulation is opening up protected markets. Globalization has increased the entry of more, and potentially lower-cost, competition. Technology is enabling work to be rapidly transferred between both internal and external organizations. Commoditization has increased market consumption but challenged margins.

A primary business driver is the increasing level of product complexity and customization. Not only are mechanical configurations getting more intricate; products increasingly include complex electronics and software. In addition, customers want to have "their" product or plant configured to their individual specifications. The increase in product complexity, coupled with the desire for personalized configurations, requires an enhanced ability to quickly define new product variations and options, and to be able to manage the configurations being offered. Additionally, companies must manage the "entire" product or product family, integrating elements such as product recipes and packaging to meet regional requirements and regulations.

Achieving product leadership focuses on sustaining revenue generation from a steady stream of innovative, industry/market-leading new products. Today, enterprises must bring these innovative products to market more effectively and more quickly to maximize customer interest and sales. The pressures to reduce time, improve product quality, and lower costs have not gone away; they are being reaffirmed and folded into programs that focus on delivering the "right" product. In order to continue to expand, product leadership companies must continue to enter new markets with innovative products. This requires leveraging and reusing the product-related intellectual capital created by both a company and its business partners, working collaboratively across the extended enterprise value chain.

Globalization is an overarching reality that spans each of these business drivers. To be successful in global markets, organizations must develop and apply a diverse set of skills and business processes. Global enterprises must:

- Make effective use of a widely-distributed worldwide organization, creating a virtual value chain with no time, distance, or organizational boundaries
- Ensure that corporate acquisitions and mergers work together
- Create and enable virtual product teams composed of people that are spread around the world
- Leverage the intellectual assets in these dispersed teams and organizations
- Enable intelligent innovation in an open, distributed environment
- Enable 24 x 7 development and product support using global teams

Drivers such as these and others are putting increasing pressure on organizations to invest in solutions that include technologies, methodologies, and best practices that can help them improve their ability to focus on product innovation, leverage business partners, and compete more effectively in the global marketplace.

Success in today's globalized, competitive market requires companies to focus on agility and innovation in order to better respond to changing market demands and competition. They must better collaborate among internal groups and with their partners and customers, and they must continually provide increased end user value to their customers through their products and services.

Sustaining business success requires companies to become more innovative and to create environments that enable continuous improvement and innovation. However, being an innovative business does not simply mean creating innovative products. It also means improving the processes a company uses to both produce and support its products using innovative approaches to the complete product lifecycle. Today, collaborative innovation is recognized as a critical component for a business to maintain its competitiveness in the marketplace. Innovation must be achieved while reducing overall product-related costs across development, production, and service and sustaining operational excellence.

During the 1980s, companies used customized implementations of functional-focused applications to address specific issues, e.g., CAD file management. In the 1990s, companies deployed domain-focused applications such as change management. Today, enterprises of all sizes are demanding solutions to business-level issues such as new product development and introduction. They expect

these solutions to incorporate business best practices and be industry- as well as domain-focused. Investment decisions include an evaluation of the overall business Return on Investment (ROI) and impact on both the top and bottom lines.

3. SAP's Business Strategies

In order to meet the demand for business-focused value and to better help its customers be more competitive, SAP is positioning itself as a supplier of business solutions rather than primarily a technology supplier. In order to deliver more effective business solutions, SAP has reviewed the market pressures on today's enterprises and developed a set of Business Strategies that identify areas a company needs to address in order to improve and maintain its competiveness in today's global economy. SAP has identified a select set of Strategies (also called Themes) that are drivers of differentiation to enable their customers to successfully compete in their respective markets.

The Business Strategies upon which SAP has chosen to focus are shown in Figure 2, which SAP uses to identify and clarify those Strategies.

Figure 2—SAP Business Strategies

As stated by SAP, a Strategy is a Value Generation Model which represents a primary dimension on which companies differentiate themselves. Strategies are not industry-specific, and various companies in one industry can have different Value Generation Models upon which they focus in order to differentiate themselves and compete successfully. Strategies span multiple applications. SAP applications are relevant in multiple Strategies.

For each Strategy, SAP defines a set of appropriate market drivers that impact the business, and a value proposition and potential benefits associated with addressing and solving the associated business issues. The Strategies shown on the outer ring in Figure 2 are focused on business network transformation. These Strategies and the definitions that SAP uses to describe them are:

- Product and Service Leadership — Optimize the return on the product and brand over their entire life cycles (product introduction, market penetration, and enhancement with services)
- Operational Excellence — Differentiate the company based on the ability to profitably deliver on promises to customers on price, quality, quantity, date, and location.
- Superior Customer Value — Maximize the return on customer relationships by enhancing the direct business value or by enabling partners to improve support to the customer.
- High-Performing Assets — Maximize utilization and profit from large long-term investments in assets that need to be up and running in a compliant and cost effective manner.
- Responsive Supply Networks — Provide visibility across the supply network to sense fluctuations in supply and demand early and to minimize inventory and stock.

The core SAP Business Strategy is Collaborative Innovation, which enables businesses to leverage the network of expertise and experience by bringing together the right people, with the right information, at the right time—in the context of the business—so that execution is improved through the harnessing of social power and knowledge.

For each Strategy, SAP has identified a set of business drivers, key performance indicators (KPIs), and a set of Value Scenarios that describe the Theme. A Value Scenario is an extended end-to-end business scenario spanning multiple organizations and functions across an enterprise and its value chain.

SAP's goal in developing the Business Strategies is to clarify the main opportunities for customers to differentiate themselves and to focus SAP's efforts to better support customers by delivering value around customer objectives (Strategies). The Strategies are intended to be used to guide SAP R&D and to align SAP's products and services around

these high-value customer objectives, thus helping to ensure that SAP delivers maximum value to its customers.

4. PLM and Business Strategies

SAP has reviewed the needs of enterprises across multiple industries and determined that Product Lifecycle management (PLM) is a major factor in their future success and a critical facilitator for several of their focused Strategies. CIMdata defines PLM as a strategic business approach that applies a consistent set of business solutions in support of the collaborative creation, management, dissemination, and use of product definition information across the extended enterprise from concept to end of life—integrating people, processes, business systems, and information.

PLM does not just define a set of technologies—it is a business strategy to more effectively support the full lifecycle of a company's products with processes that enable collaboration along the full lifecycle and across partner networks, technologies that support product and process development, and processes that foster innovation at all stages. By increasing an enterprise's flexibility and agility to respond swiftly to changing market pressures and competitors, PLM helps companies:

- Deliver more innovative products and services
- Reduce costs, improve quality, and shorten time to market, while achieving the targeted ROI
- Establish more comprehensive, collaborative, and improved relationships with their customers, suppliers, and business partners

Several of SAP's Strategies are enabled by PLM. The foremost is Product and Service Leadership. Other Strategies that are supported by PLM are Superior Customer Value and Operational Excellence.

For enterprises of all sizes, providing product leadership means delivering innovative, leading-edge products and solutions tailored to customer needs. Achieving superior customer value requires establishing and maintaining customer intimacy by understanding and responding quickly to current and potential customers' needs for innovative products and cost effective services. It also requires establishing effective relationships with them and providing consist, long-term customer value. Achieving operational excellence requires enterprises to focus on operating efficiently, effectively, and flexibly working with their partners and suppliers in a collaborative manner to reduce the cost and time necessary to deliver high-quality products that meet their customers' requirements in a timely manner.

Product and Service Leadership is a framework which combines all product-related processes and product representations to establish a flexible, dynamic, and effective global network. It enables companies to break down the walls between marketing, research and development, procurement, manufacturing, logistics, and service and strive to deliver profitable, market leading products and services. The Product and Service Leadership business drivers are:

- The need to differentiate in your markets
- Shortening product lifecycles and continuous margin pressure
- The need to comply with global and local regulations

These drivers lead to the following key performance indicators:

- Time to market, right on time
- Return on Investment (R&D vs. revenue, profitability)
- Market share by product category
- Percent of revenue from new products (< 1yr on market)
- CONQ (cost of non quality, non compliance
- Reduced time of supplier integration

SAP states that the objectives of Product and Service Leadership are to deliver value to the enterprise by fostering innovation for competitive differentiation and company growth and to improve product development efficiency. This should enable companies to launch the right products at the right time at lower costs and help ensure product quality and regulatory compliance. Improved product development efficiency and delivery of more innovative products can help a company maintain and/or improve its profitability and market competitiveness. In order to deliver Product and Service Leadership, SAP has developed four Value Scenarios (illustrated in Figure 3):

- Continuous product innovation
- Integrated product development
- Product delivered as a service
- Embedded product compliance

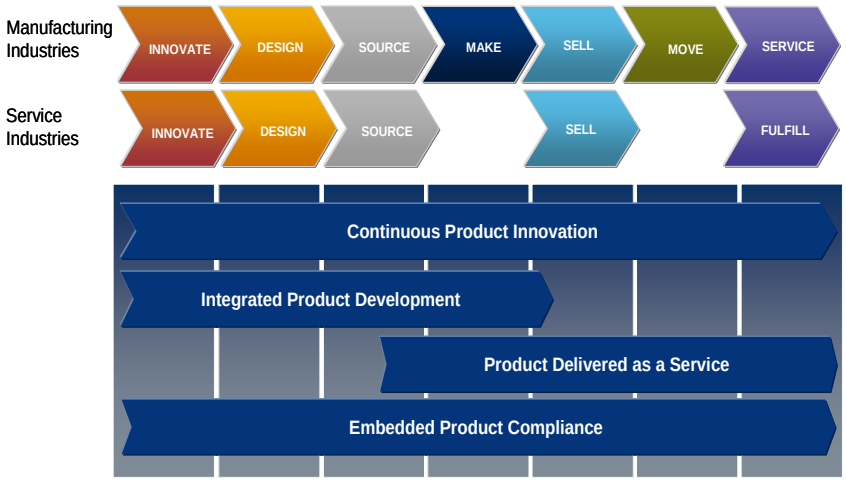

Figure 3—Product and Service Leadership; Value Scenarios

Continuous product innovation addresses the idea that managing innovation is more than tracking a portfolio of projects. From corporate strategy, product road mapping, idea and concept management, and feasibility assessment, through a phase-gated product development process and market launch—all aspects need to be actively managed to drive success. By leveraging the collective intelligence of the entire business network (the company and its business partners), continuous product innovation can help improve a company's product and market competitiveness, profitability, and its perception in the market place. Further, SAP states that using a systematic approach in identifying, managing, and measuring return on innovation will better enable companies to focus on key innovation opportunities.

Integrated product development represents the core product definition and production ramp-up process, when the product design and structure gets defined, tested, and validated. It is intended to enable a company to reduce its new product time-to-market, and increase product profitability and customer satisfaction. Improving collaboration among design, procurement, manufacturing, and service can reduce the number of design cycles, increase the reuse of components, support a faster ramp-up to volume production, and help service personnel deliver better customer service**.**

Many manufacturers of classical products have started to make the benefits of their products available to the end user through a service agreement. This changes the business model from 'customer' to 'solution provider'. Products delivered as a service can help companies drive new revenue streams for a company's products. Companies can offer existing and new products with service agreements, which provide another vehicle for differentiating themselves in the marketplace.

Embedded product compliance addresses the business issue that regulations focused on safety, environmental, or other aspects of products are gaining increasing importance. In order to comply with these regulations, companies must take them into account during design, manufacturing, shipment, servicing, and end-of-life of their products. Embedded product compliance can help minimize non-compliance risk (thereby protecting product revenue and a company's brands).The company will be better able to design and build compliant products, as well as maintain product compliance throughout each product's lifecycle,. This is enabled by operational controls and compliance visibility within a single comprehensive compliance framework across the entire product lifecycle.

5. SAP and PLM

5.1 SAP's PLM Evolution

SAP has participated in the PLM market for several years. Their earliest involvement came with the introduction of their initial Product Data Management (PDM) initiative in the mid-1990s.

Throughout its evolution at SAP, PLM has been supported as an overall initiative by utilizing capabilities that were provided through a variety of different modules of the overall SAP system. PLM has not been developed or supported as a separate module, but rather as a concept that is supported through appropriate use of appropriate capabilities provided by the overall system.

This approach leveraged the overall SAP environment and the robust functionality developed by SAP across all business areas of the enterprise. Companies could incrementally adopt/add PLM functionality as required. However, early releases of SAP PLM had a more difficult-to-use interface when compared to leading PLM competitors. In order to strengthen its PLM competitive position, SAP responded to these issues by creating new methods of interaction, such as cFolders, cProjects, and various Composit applications.

PLM is all about process support enabled by technologies. A key is to identify the critical business processes that impact success and then apply technology, best practices, and methodology to address those processes. In the early

2000's SAP shifted from a functional approach to a process-oriented approach and established a New Product Development and Introduction program. This program focused on a critical business process which supported the process steps to drive a product from a new idea until market launch. SAP has now extended this program to provide an overall strategy covering all processes from first idea until end of life of the product. SAP PLM plays a major role in supporting this strategy, which is embedded and supported by all other applications of the SAP Suite.

SAP PLM's leading role in supporting its Theme strategy, the PLM market evolution, competitive pressures, and increasing acceptance of PLM as "business critical" by industrial companies has motivated SAP to take a clear look at PLM and determine that PLM must be a prioritized program. To that end, SAP has defined a PLM roadmap that will enhance their PLM functionality, address current weaknesses and establish a stronger, more competitive offering. This new program has the commitment of SAP senior management and considerable resources have been allocated to it to ensure success.

As part of its PLM program, SAP has defined the following vision statement: "We believe the true vision and greatest value of PLM lies in its ability to drive "Product and Service Leadership." To achieve their vision, SAP has developed the following mission statement to guide its PLM-related development activities: "Deliver the best integrated end-to-end process support to our customers along the product lifecycle driving profitability and growth through innovation**."** These vision and mission statements are in support of the Business Strategies driving the future of SAP PLM.

5.2 SAP PLM's Industry Focus

As PLM has evolved, the most effective solutions have been demonstrated to be those that are developed to deliver solutions to targeted industry-specific situations and problems. These "industry-focused solutions" provide the kind of value that is demanded by companies today. SAP has developed industry-focused solutions that incorporate the terminology, best practices, business tasks, and user roles/personas of each industry.

SAP PLM components are in use in almost all discrete and process industries that the SAP Suite supports. The following industries are key drivers for industry-specific solutions:

- Aerospace and Defense
- Automotive
- High-Tech
- Industrial Machinery and Components
- Consumer Products
- Chemicals

Additional industry-focused PLM solutions are available and will be extended over time according to priorities and market demand.

6. Future SAP PLM Roadmap

To enhance their ability to support the major Strategies of their customer-focused solutions, SAP has developed a plan for development of either new or expanded PLM functionality in their system. SAP's specific plan, including major deliverables and schedules, is called their PLM Roadmap. This PLM Roadmap was initially introduced publicly in July 2007, with the first deliverables of this plan released in late 2007, and subsequent deliverables scheduled yearly through 2010. SAP's PLM Roadmap has been structured around five major priority areas for development. These are:

- Simplicity and usability
- Product and portfolio planning
- Product development and manufacturing definition
- Product and process synchronization
- Product intelligence

Planned developments in each of these areas are substantial and reflect the commitment that CIMdata believes SAP is applying to this effort. SAP's clear intent is for the PLM Roadmap development efforts to yield significant improvements to both the depth and breadth of their overall PLM solution offerings, and position them to more effectively compete in the PLM industry. Further details of capabilities that are planned for development in each of the major improvement areas are described in the following sections.

6.1 Simplicity and Usability

This development project is intended to change the way users interact with the system and provide SAP PLM customers with an easy-to-deploy and easy-to-use user interface. The approach used is intended to foster efficiency and productivity for both power and occasional users. As a part of the user interface, SAP is building a search capability that leverages the new ease-of-use approach of the systems and provides more robust capabilities than previously included. The user interface is based on the SAP's NetWeaver Business Client and includes an enhanced PLM dashboard and analytics.

The usability of SAP's PLM systems has historically been one of its weakest aspects, so a prioritized focus to convert this previous weakness into a strength is very encouraging. Success by SAP in this area would result in a system that is flexible and adaptable for changing user demands, resulting in increased productivity and user acceptance, and reduced costs associated with education, deployment, and maintenance.

6.2 Product and Portfolio Planning

This development project substantially extends existing capabilities in SAP's PLM offering. It is intended to provide support for innovation management, and SAP is including extended practices for idea/concept and requirements management, portfolio management, strategic and operational resource management, and project management. SAP reports that specific development efforts are being focused on delivering applications that provide:

- Decision flow management
- Simplicity and integration
- Process enhancements
- Change management
- Service enablement
- Risk management

A key aspect of these development efforts is to support fact-based decision making with the pervasive use of business and product knowledge. The potential benefits of this development project are substantial.

6.3 Product Development and Manufacturing Definition

This development project is focused on the creation of new and expanded SAP PLM functionality intended to support the complete product development process, including integration into both "up-stream" innovation and "downstream" service processes. The primary focus of these capabilities is to more strongly support product design and engineering activities, as well as provide a tight integration to "downstream" processes. SAP reports that capabilities are being developed to facilitate various business strategies, such as make-to-stock or engineer-to-order.

This development project is quite substantial in scope and SAP reports that it includes a focus on a wide range of functionality that is fundamental to PLM success including:

- Product structure management
- Change process support
- Product standardization concepts
- Enhanced variant configuration
- Life cycle management
- Manufacturing integration
- Digital manufacturing support
- Innovate to realize
- Product services

The functionality being supported through this new development project are central to high-quality PLM solutions and implementations. SAP has previously provided some solutions targeted at these areas. However, the new PLM Roadmap development efforts should provide substantially improved capabilities that will be much more effective in supporting engineering-focused PLM implementations. When these new capabilities are combined with completion of the "simplicity and usability" development project (described previously), SAP's PLM solutions should be significantly more attractive and successful in a wider range of companies across the industry.

Recognized weaknesses of the previous versions of SAP's PLM offerings have been their lack of flexibility, and limited scope of product development capabilities. SAP's Roadmap development efforts are intended to address both of these issues. The result should be a suite of PLM capabilities that are flexible and adaptable to the needs of different manufacturing organizations and market requirements of different industries. Additionally, the expanded PLM Roadmap capabilities should facilitate increased productivity and quality in product development activities.

In addition to extending their capabilities in many traditional areas, SAP has specifically recognized the importance of the emerging demand for Digital Manufacturing support, a market expansion that is currently being driven by a few of the traditional engineering-based PLM suppliers. SAP reports that they do not intend to pursue development of the highly-sophisticated manufacturing process simulation technologies, but rather focus on development of substantial support for process definition activities with integration to third-party manufacturing process simulation technologies available in the industry.

6.4 Product and Process Synchronization

This development project is focused on both expansion of existing PLM-related process creation and management capabilities as well as development of new capabilities that

will integrate these processes much more effectively with the product definition information. Synchronization includes the product infrastructure and cross-enabler capabilities that provide the foundation for all PLM business processes. A broad set of new and improved cross-capabilities is intended to allow customers to manage their integrated PLM processes from first idea to retirement. SAP reports that this overall development project includes specific functionality to address areas that are fundamental to PLM success, including:

- Workflow
- Digital-mock-up viewer
- Collaboration support
- Service enablement
- Analytics
- PLM browser/object navigator
- Workbench framework

The objectives of this development effort are to provide increased support for creation and management of product development processes, with a seamless flow of information that spans departmental and organizational boundaries, including suppliers and customers within the PLM value chain.

6.5 Product Intelligence

SAP supports the concepts that intelligence includes the capabilities to provide easy access to comprehensive and extended product content and context—to support a variety of analytic and decision support applications and processes—enabling cross-functional innovation and performance management across all stages of product life cycles. SAP reports that the development scope of this project includes deliverables in each of the following areas:

- Flexible, extensible product taxonomies
- Multi-dimensional, product-centered definition
- Comprehensive SAP context (360° view)
- Extended product context (720° view)
- Real-world awareness context (1080° view)

The value that is anticipated from these development efforts is for SAP's PLM clients to have substantial capabilities that can be used to identify areas of improvement, such as cost (booth internal and external costs for material, energy, and other resources), quality, compliance, serviceability, etc.

SAP has publicly released a development schedule to communicate timeframes for the release of commercially-available solutions which deliver on the various components of the overall SAP PLM Roadmap program (shown in Figure 4).

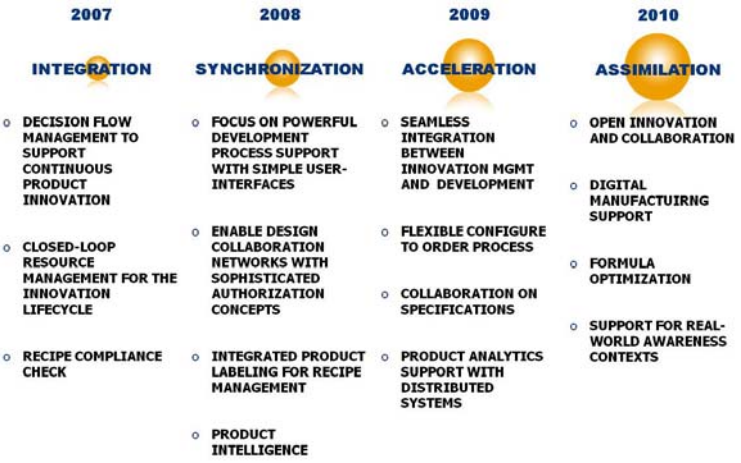

Figure 4—SAP PLM Roadmap Program and Timeline

The public release of SAP's PLM Roadmap schedule is impressive. The Roadmap schedule provides increased credibility to the PLM Roadmap development efforts, and provides yet another view of SAP's priorities and the importance that they are applying to their PLM solution.

7. Summary and Concluding Comments

SAP, as a leading supplier of enterprise solutions, has launched a program to transform itself from primarily supplying technology solutions to becoming a value-added solution provider. To support this objective, SAP has identified a select suite of Business Strategies to communicate the issues that they will address with specific value-added solutions. The Strategies are intended to be used to guide SAP R&D and to align SAP's products and services around these high-value customer objectives, thus helping to ensure that SAP delivers maximum value to its customers. CIMdata believes that this is a good approach for SAP.

In order to support their business strategy-focused initiatives, SAP has identified PLM as a key enabling vehicle to address several of their Business Strategies, including Product and Service Leadership, Superior Customer Value, and Operational Excellence. As a result, SAP has publicly declared a renewed focus and commitment to PLM and has initiated an aggressive, multi-year development roadmap to strengthen its PLM solutions.

SAP's approach to their new PLM Roadmap is quite reasonable and appears focused in the proper direction. Reactions that we have seen from industrial companies to the Roadmap have been positive. The new PLM product development priorities address SAP's most significant weaknesses in its previous PLM program, and provide a very solid direction for development—this all looks very positive.

CIMdata believes that SAP's Roadmap schedule provides a definitive statement to the industry that SAP's perspective on PLM has evolved over the past few years and that PLM is viewed by SAP as a critical component of their future solutions. SAP PLM Roadmap demonstrates a clear understanding of how SAP defines PLM and will deliver on that definition for its customers.

These strategies should provide customers an increased confidence that SAP has a better understanding of the role of PLM and that SAP can deliver it. This is a critical aspect of the program. As SAP develops and releases deliverables consistent with the Roadmap schedule, their market credibility will increase and their competitive position will improve.

The schedule of the SAP PLM Roadmap deliverables is impressive, and should result in their being able to support the major areas of PLM solutions within the next two years. Further, SAP should become much more competitive in their focused industries with the successful development and release of the new and enhanced capabilities identified in the PLM Roadmap.

About CIMdata

CIMdata, an independent worldwide firm, provides strategic consulting to maximize an enterprise's ability to design and deliver innovative products and services through the application of Product Lifecycle Management (PLM) solutions. CIMdata offers world-class knowledge, expertise, and best-practice methods on PLM solutions. These solutions incorporate both business processes and a wide-ranging set of PLM enabling technologies.

CIMdata works with both industrial organizations and suppliers of technologies and services seeking competitive advantage in the global economy by providing world-class knowledge, expertise, and best-practice methods on PLM solutions.

In addition to consulting, CIMdata conducts research, provides PLM-focused subscription services, and produces several commercial publications. The company also provides industry education through international conferences in the US, Europe, and Japan that focus on PLM. CIMdata serves clients worldwide from locations in North America, Europe, and Asia Pacific.

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