COMMENTARY

CIMdata

Connecting Innovation and Execution:

How SAP's Solution Strategy for PLM Extends the Digital Thread Across the Enterprise

Takeaways

SAP positions its solutions for PLM and the SAP Business Suite as providing the system of record for product data, ensuring seamless execution across the enterprise. This enables companies to connect design, supply chain, and service data in one integrated business platform.

SAP's solutions for PLM create and manage the product data backbone required to drive efficiencies throughout the supply chain.

SAP's solutions for PLM address the needs of businesses in both discrete and process industries.

By embedding data, applications, and AI into a digital thread, SAP helps manufacturers accelerate time to market, reduce risks, and deliver value more quickly from product innovation to operations, and beyond.

SAP's solution strategy emphasizes openness and integration, with integrations to leading third-party PLM and CAD solutions, protecting customer investments while enabling cross-enterprise collaboration.

SAP's solution strategy is flexible, scalable, and resilient, positioning it to help enterprises succeed in today's fast-changing markets.

Introduction

Across discrete manufacturing and process industries, enterprises are under unrelenting pressure to innovate faster, design smarter, and operate more sustainably. Many organizations, however, still wrestle with fragmented systems and disjointed data, where product information is often scattered across engineering, manufacturing, sourcing, and service domains. This fragmentation slows decision-making, increases cost, and prevents businesses from achieving a truly connected digital enterprise.[1]

SAP's solution portfolio features complementary native capabilities within SAP S/4HANA, which establishes a robust product data foundation, alongside cloud-native PLM capabilities developed on the SAP Business Technology Platform. This combination provides a platform that evolves with customers, reduces costs, and accelerates their PLM journey. As illustrated in Figure 1, overall, SAP supports process

[1] Research for this paper was partially supported by SAP.

and discrete industries in defining, developing, and delivering innovative and sustainable products through an integrated collaborative environment powered by artificial intelligence (AI).

By connecting data from design to manufacturing, sourcing, delivery, and service, SAP enables organizations across many industries to operate from a single source of truth. This commentary explores how SAP's solution strategy, anchored in openness, intelligence, and integration, forms a cohesive digital backbone linking innovation to execution. It reviews how SAP's solutions for PLM can be used to enable discrete and process manufacturers to bring products to market faster, reduce risk, and achieve sustainability at scale.

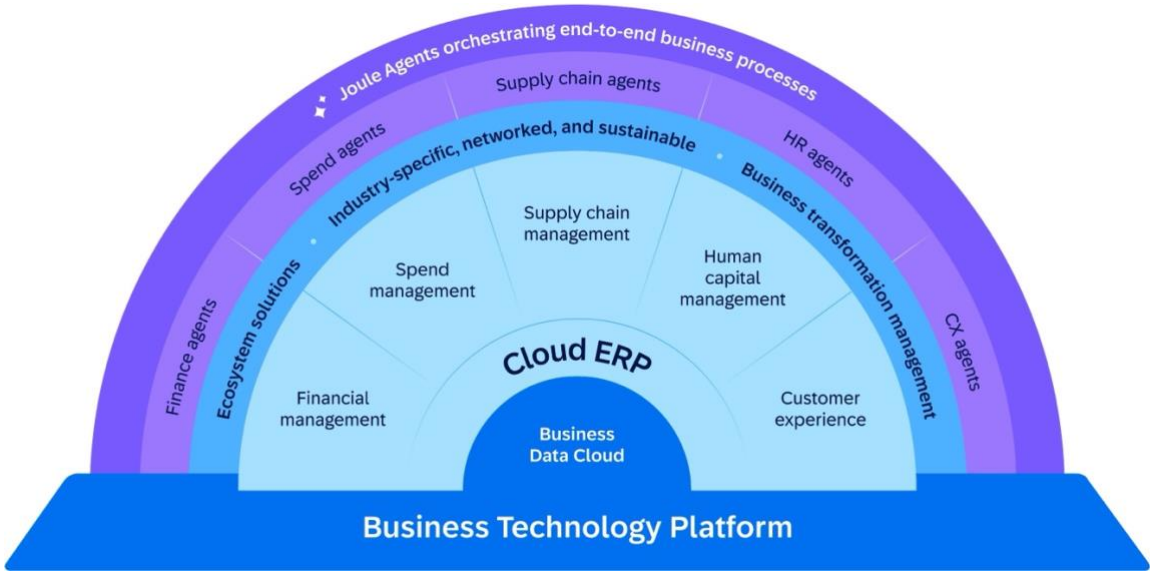

Figure 1—SAP Business Suite
(Courtesy of SAP)

Industry Challenges: The Innovation Imperative

Today, companies face an innovation paradox. Market pressures demand faster product development, greater customization, and stronger sustainability performance, yet the very systems intended to support innovation often slow it down. Additionally, product data, whether in discrete or process industries, typically exists in silos—spread across CAD tools, paper binders, recipe books, word documents, spreadsheets, shared drives, PLM instances, and various execution systems. As a result, design teams, supply chain managers, and service departments rarely share a single authoritative view of product information. This fragmentation leads to redundant work, errors in handoff, and delays in bringing products to market.

Compounding the problem, global supply chains have become increasingly distributed and complex. Companies must coordinate with contract manufacturers, design partners, and suppliers who often use different software environments. Navigating this ecosystem manually is time-consuming and error-prone—limiting collaboration and innovation.

Regulatory demands are also increasing—especially around product safety, traceability, and sustainability. This requires manufacturers to maintain transparency across the entire product lifecycle. This includes tracking materials, energy usage, and carbon emissions. Without integrated data and processes, compliance can become a costly and reactive exercise rather than a proactive differentiator.

Competition in both discrete and process industries requires continuous innovation and frequent product updates. Without seamless integration between engineering and execution, organizations will continue to struggle to meet customer expectations while maintaining profitability and efficiency.

These challenges make clear that success now depends on establishing a product data backbone—a connected, intelligent foundation that links all functions and partners across the value chain.

Best Practices: The Path to PLM Excellence

CIMdata's experience indicates that top-performing organizations achieve PLM excellence by focusing on three core capabilities: a unified digital thread, deep collaboration, and closed-loop integration with the enterprise.

The digital thread, enabled by a PLM platform, provides a continuous flow of product data from concept and design through manufacturing, logistics, and service. It ensures every stakeholder—internal and external—works from the same current and validated data.

Effective PLM strategies and enabling solutions foster collaboration across the extended enterprise. This means enabling secure, role-based access to product data for design partners, suppliers, and customers. Rather than relying on email exchanges or manual uploads, collaboration becomes embedded within an enterprise's digital platform.

A third hallmark of maturity is open integration. Most organizations use multiple CAD and product data management (PDM) solutions across different business units or product lines. Instead of forcing standardization, the best solutions connect these heterogeneous environments to a common execution layer—ensuring interoperability while protecting existing investments.

In process industries, the best PLM practice includes capabilities such as specification management, formulation development, recipe management, and compliance tracking, all of which must connect directly to sourcing and production.

The most advanced companies close the loop between product and business data, turning product lifecycle information into actionable insights for continuous improvement. This is increasingly being achieved through embedded analytics and AI—areas where SAP is making significant investments.

SAP's Solution: Integrated Innovation for the Digital Enterprise

SAP's solutions for PLM deliver on these best practices through a holistic, enterprise-level approach that combines integration, intelligence, and openness. Rooted in customer choice, this approach enables organizations to manage product data directly in SAP or seamlessly bring it in from other systems, ensuring the SAP Business Suite (Figure 1) drives consistent efficiency across the enterprise, as shown in Figure 2.

The SAP Business Suite as the System of Record

At the center of this strategy is the SAP Business Suite, which serves as the system of record for product data and work processes. With PLM capabilities embedded natively in the suite, SAP provides engineering, supply chain, manufacturing, and service operations with a unified, authoritative view of product information. This clean digital core minimizes redundancy, speeds decision-making and collaboration, and provides seamless end-to-end traceability across the lifecycle.

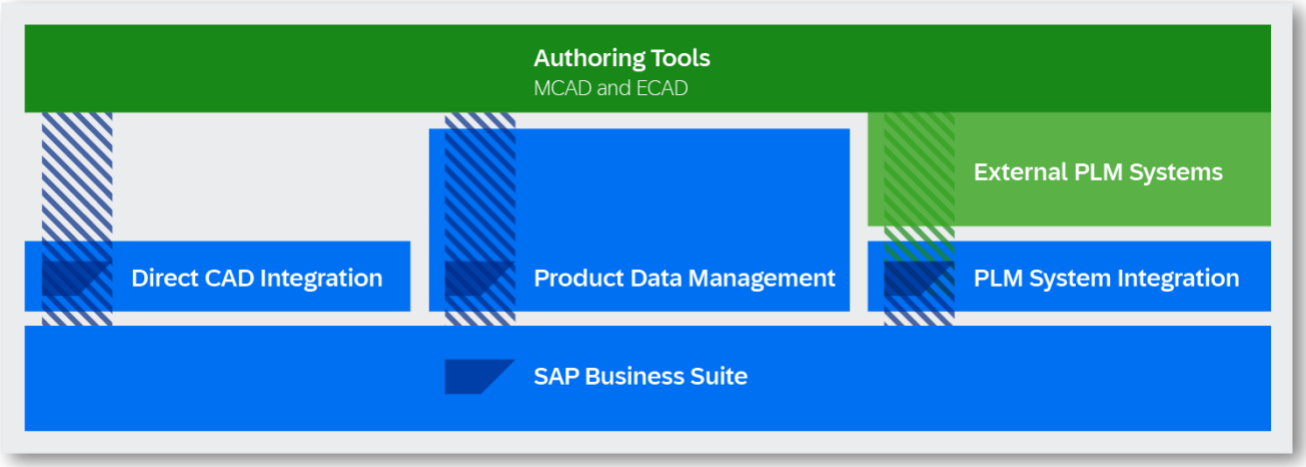

Figure 2—SAP solutions for Product Lifecycle Management
(Courtesy of SAP)

Product information flows seamlessly from design to execution, enabling enterprises to align new product introduction processes with sourcing, logistics, and service. The result is a more agile organization, capable of adapting quickly to customer demand, regulatory shifts, and sustainability goals.

Solutions for Discrete Industries

In discrete manufacturing industries—such as automotive, aerospace, industrial machinery, and high tech—SAP's capabilities for PLM empower engineering and production teams to work from the same foundation of trusted data.

SAP supports secure document management, product structure control, and visualization of CAD models. It integrates design collaboration directly into sourcing and manufacturing, enabling product personnel and suppliers to participate earlier in the design cycle. This early involvement reduces costs and shortens time-to-market.

SAP's integrated change management processes ensure that every revision is traceable, reducing the risk of manufacturing and supplier errors, as well as ensuring compliance. The seamless handover from engineering to manufacturing and the supply chain keeps operations aligned with their design intent, while visualization tools enhance communication across the enterprise.

Additionally, SAP's solutions for PLM for discrete industries help companies realize a clean digital thread, ensuring product definitions evolve consistently from concept through production and service.

Solutions for Process Industries

SAP also serves organizations in process industry sectors (e.g., chemicals, food and beverage, consumer products, and pharmaceuticals). These industries require robust governance of specifications, ingredients, formulations, and recipes—domains in which SAP offers mature and integrated functionality.

SAP's solutions for PLM in process industries provide specification management, formulation and recipe management, and handover to manufacturing functionality. By connecting research and development (R&D), sourcing, and manufacturing through a unified data model, companies can scale new formulations faster and more accurately. This integration ensures that recipe definitions approved in development can flow directly to production within the SAP Business Suite. The outcome is faster commercialization, fewer errors in scale-up, and stronger quality assurance. At the same time, built-in collaboration features allow global teams to share data securely, reducing duplication and improving compliance with international regulatory standards. These capabilities are important as companies balance innovation speed with sustainability and consumer safety expectations.

Integration with Third-Party PLM Solutions

SAP also understands that many organizations in discrete manufacturing depend on specialized engineering or PLM systems. Its external integration approach is therefore centered on these discrete-product workflows, ensuring strong connectivity between CAD, PLM, and SAP's digital core. Instead of requiring platform consolidation, SAP supports open integration so manufacturers can keep their existing tools. Rather than forcing migration, SAP emphasizes openness and integration.

Technical adapters connect SAP Business Suite with leading third-party PLM environments—including Siemens Teamcenter, PTC Windchill, Dassault Systèmes **3D**EXPERIENCE platform, and Autodesk Vault. Through these integrations, product data created in external systems flows directly into SAP's business environment, streamlining design-to-operate processes. This approach provides several key advantages. Customers can preserve prior PLM investments, accelerate time-to-value through standard connectors, and reduce the risk associated with custom integrations. It also ensures future-proof interoperability as both SAP and partner solutions evolve.

By linking diverse PLM tools into a unified enterprise backbone, SAP enables a complete digital thread that spans design ecosystems and operational systems alike.

Artificial Intelligence and Automation

SAP embeds AI across its solutions for PLM to accelerate product development and reduce time-to-market. Joule, SAP's generative AI (genAI) assistant, delivers contextual insights directly within applications. It enables users to retrieve product and process information efficiently, enhances the effectiveness of documentation, and minimizes the time required to navigate intricate systems. In parallel, intelligent automation simplifies engineering processes, such as tagging master data to 3D visualization objects, while streamlining repetitive tasks and enabling employees to focus on higher-value work. Additional AI capabilities are planned, including automated BOM and change-impact analysis, AI-assisted requirements validation, proactive data-quality detection, and intelligent recommendations that guide users through complex PLM and ERP workflows. These capabilities expand the value of Joule and lay the foundation for a broader portfolio of embedded AI services across the SAP Business Suite.

Together, Joule's genAI capabilities, including its Agents and Assistants, extend SAP's solutions for PLM—offering measurable productivity improvements, faster innovation cycles, and better decision-making across the entire product lifecycle.

Conclusion

SAP's solution strategy represents a comprehensive and forward-looking approach to connecting product and process innovation with execution. By positioning the SAP Business Suite as the system of record for product and process data, SAP provides the unified foundation needed to synchronize design, sourcing, manufacturing, and service within a single source of truth. This product data backbone enhances visibility, collaboration, and efficiency across global operations.

SAP's solutions for PLM serve both discrete and process industries, enabling companies to manage complex designs, recipes, and specifications with equal rigor. In discrete industry sectors, SAP integrates CAD data, BOMs, and change management directly into execution systems. In process manufacturing, they streamline recipe formulation and specification control, ensuring compliance and accelerating commercialization. These solutions support end-to-end product lifecycle management across diverse business environments.

By embedding data, applications, and AI into one digital thread, SAP enables faster innovation and shorter time-to-market. AI-powered insights and automation, including Joule, simplify engineering work, strengthen decisions, and help teams focus on higher-value innovation.

SAP's solutions for PLM emphasize openness and integration, linking seamlessly with major third-party PLM and CAD solutions. This interoperability protects customer investment, productivity, and fosters collaboration across global value chains.

CIMdata is impressed with SAP's solutions for PLM, which are flexible, scalable, and resilient, allowing companies to advance their digital capabilities at their own pace. They help organizations improve productivity today while preparing for sustainability, traceability, and intelligent automation tomorrow.

CIMdata encourages current SAP customers to evaluate how SAP's evolving solutions for PLM can extend the value of their existing investments. By adopting SAP's clean-core architecture, embedded AI capabilities, and open integration framework, organizations can better unify product data, streamline design-to-execution processes, and accelerate innovation within their established enterprise environment. For companies outside the SAP ecosystem, these developments also illustrate how SAP continues to expand its solution portfolio to address the growing needs for connected, data-driven product development.

About CIMdata

CIMdata, a global strategic management consulting firm, provides services designed to maximize an enterprise's ability to design, deliver, and support innovative products and services. For more than forty years, CIMdata has provided industrial organizations, providers of digital technologies and services, and investment firms with world-class insight, expertise, and best-practice methods on a broad set of product lifecycle management (PLM) topics and the digital transformation they enable. CIMdata also offers research, subscription services, publications, and education through certificate programs and international conferences. To learn more, visit www.CIMdata.com or email info@CIMdata.com.