

Chipping Away... Using Enterprise Data Management to better manage products and supply chain

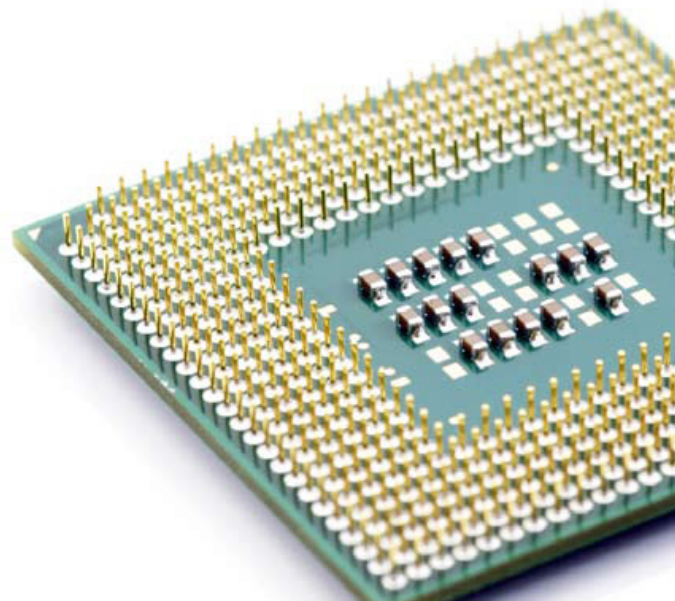
A large semiconductor manufacturer faced major problems with supply chain integration, visibility, and operational efficiency. Every functional area had its own unique systems, processes, and data standards, making it virtually impossible to coordinate activities and operate an efficient supply chain. A major acquisition amplified the problem by adding yet another layer of incompatible data architecture, systems, processes, and operating model – as well as an entirely different business model and corporate culture. To address these end-to-end lifecycle processes, operations, and data integration challenges, the company needed to rethink its data management practices and solution. With Deloitte's help, they completed a comprehensive assessment and solution blueprinting and prioritized product data management for high value business enablement.

Challenges

The company's data problems led to a variety of supply chain headaches, including missed orders, long lead times, and excessive inventory – creating a significant drag on the company's overall performance. Major problems included:

- **No single source of truth.** Every function had its own systems and processes, and there was no consistent process for managing product and materials data across the enterprise. As data grew out of control, the lack of integrated, consistent processes and controls only made the situation worse. This resulted in an inconsistent bill of materials (BOM), data structures, and product nomenclature.

- **Lack of flexibility.** With Intelligent Part numbering, every digit in a part number had a coded meaning, which meant that any internal change to the product required a new part number – even if the product's external form and function were exactly the same as before. This created a lot of extra work, including redundant part creation even if there was no change in its form, fit, or function, and made it hard to track a part's revision history.
- **Mismatched supply and demand.** Account managers created individual forecasts using spreadsheets, then all of their forecasts were manually consolidated into a common database. Unfortunately, the product categories used for forecasting didn't match the categories used for manufacturing, which made it nearly impossible to align supply with demand, and resulted in unnecessary fire drills, workload spikes, missed orders, and last-minute batch data processing.



- **Cultural obstacles.** In an industry widely known for its cutthroat, rapid-fire competitive environment, implementing a strategic data management solution presented a major cultural challenge. With the entire company sharing a single-minded focus on the next chip release, and with ever-tightening yield improvement standards and pressure to innovate, change management would be critical.
- **Merger challenges.** A major merger only added to the company's data problems. Unlike the existing business, which had extensive in-house manufacturing operations, the newly acquired business outsourced all of its manufacturing and supply chain integration activities with external parties. The acquired business also had completely different systems and data structures for managing products and materials.

Solution

Why was Product Data Management (PDM) considered enabling and foundational? Product data is the lifeblood of any engineering, manufacturing, and product-driven enterprise. Therefore, without successfully addressing PDM, the overall supply chain transformation benefits and business intelligence can't be realized. This company recognized that no matter what improvements they made to other parts of the supply chain, their product data had to be in order to keep the whole system running smoothly. To address these challenges, the company needed a new solution for Enterprise Product Data Management.

Effective enterprise product data management isn't just a technology challenge – it's a business challenge that requires a comprehensive approach. Key elements of the solution included:

- **Harmonized BOM.** A single product detail model was created to ensure that all product data systems relied on the same attribute-based product data structure – not on some secret code in the product number.
- **Standardized processes.** The new end-to-end lifecycle based process definition featured centralized control, with a clearly defined workflow for creating new product numbers and managing product data throughout the product lifecycle. The process itself will be CM2 compliant.
- **Integrated architecture.** The new architecture is built around process integration middleware and uses a publish-subscribe model. Major supply chain systems subscribe to product data from the central PDM system, and then push it to other downstream systems as needed.
- **Standardized governance and change control.** A global team of 20 to 25 people was created to provide centralized governance and control over all aspects of product data, including creation, updating, management, and reporting. Responsibility for product data is clearly assigned, with a data governance council in place to oversee all data quality management and standards definition efforts.

Approach

Deloitte helped the company in all phases of the project, from developing an Enterprise PDM strategy to integration and implementation. The effort was closely coordinated with the company's supply chain transformation effort.

Key Deloitte activities included:

- Working with senior executives to help them develop a vision, strategy, and multi-year roadmap for enterprise data management.

- Facilitating workshops with more than 120 critical knowledge workers across the enterprise to help the company thoroughly understand the challenges.
- Helping the company design and build systems, processes, and team structures for data management and governance. Focus areas included: product data architecture, BOM redesign, standards and policies, operational and analytical reporting, and metrics.
- Helping the company create a single trusted source for product information and integrate the new system with all of the company's engineering and supply chain systems.
- Helping the company conduct merger integration activities related to product lifecycle management and data management. Focus areas included systems, processes, data architecture, organization structures, and governance.

Results

The first phase of this global PDM deployment is focused on product and materials data, and is scheduled for completion by January 2009. Upcoming phases will extend the solution to address customer-facing product data as well as improvements to the engineering lifecycle.

Over the first four years, the company expects to save \$20 million through reduced inventory and improved demand planning. The company's CIO has already recognized this initiative as the best-performing IT initiative in recent years. Expected benefits include:

- **Reduced complexity.** SKU sets will be reduced by more than 40%, reducing the cost and complexity of managing products and data, and making it easier to align supply with demand.
- **Shorter lead times.** The average lead time for finished goods is expected to drop from 16 weeks to two weeks (not including shipping time).
- **Lower inventory costs.** Cycle stock reduction is expected to reduce inventory costs significantly with PDM as enabling its realization.
- **Increased collaboration.** Different functions – including those in the newly acquired business – will be able to coordinate their efforts and work together more effectively.

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