

Chartered Cuts Time to Report a Bill of Materials from One Hour to Less Than One Minute



Chartered Semiconductor
Manufacturing Ltd
Singapore
www.charteredsemi.com

Industry:

High Technology

Annual Revenue:

US\$1.6 billion

Employees:

6,000

Oracle Products & Services:

Agile Product Lifecycle
Management
Product Portfolio Management
Product Collaboration
Quality Management
Enterprise Visualization

Implementor:

Oracle Consulting

“Oracle’s Agile Product Lifecycle Management is a useful tool that will help us drive improvements through the efficient and effective management of the product development lifecycle. We have greater visibility into the progress of product development and will be able to accelerate our time to market.” – Baskara Rao, Vice President and Chief Information Officer, Chartered Semiconductor Manufacturing

Singapore-based Chartered Semiconductor Manufacturing is one of the world’s top dedicated semiconductor foundries. It owns or has an interest in six fabrication facilities, including a 300-millimeter (mm) fabrication facility and five 200mm facilities. The company, listed on the Singapore Stock Exchange and NASDAQ, had a reported revenue of approximately US\$1.6 billion for the 2008 financial year.

The ability to respond quickly to customer requests is a significant competitive advantage and more important than ever in challenging economic times. However, the use of suboptimal systems to track and manage critical intellectual property (IP) and process attributes was hampering Chartered’s ability to react quickly to design opportunities. Staff members had to search across different data stores to find relevant information, an inaccurate and time-consuming process that tied up resources and impeded timely customer responses.

To improve productivity, provide better visibility of the development lifecycle, and assist customers with production-ready standardized products, Chartered engaged Oracle Consulting to implement Oracle’s Agile Product Lifecycle Management, the first deployment of the solution for a semiconductor foundry in Asia Pacific. Oracle Consulting played a critical role in helping the company understand the capabilities of the product, define best-practice workflows, migrate data, and train end users.

The Agile Product Lifecycle Management solution has enabled Chartered to consolidate a diverse collection of product

Key Benefits:

- Enhanced the accuracy and currency of information by consolidating IP and process flow data in a central database
- Facilitated faster response times to customer requests as staff no longer have to search multiple spreadsheets to find IP or process flow information
- Cut the time needed to generate a report of a bill of materials from one hour to under one minute
- Improved revenue-earning ability by minimizing the number of lost sales opportunities
- Gained a better understanding of the solution's capabilities and industry best practice by engaging experienced consultants to provide advice and training
- Ensured a disruption-free transition by investing time in defining workflows and preparing the data prior to rollout
- Alleviated frustrations associated with the adoption of new systems by providing a team to answer queries from users in near real time

information associated with IP and process flows in a central database that is available companywide. This has made it easier for staff to search for, update, and manage data and shortened the time needed to generate a report of a bill of materials (BOM) from one hour to under one minute. Once a BOM has been saved in Agile as a bookmark, it only takes a few clicks to retrieve the content of that BOM, and all real-time status and attributes are available instantaneously. Previously, each BOM component required an individual search, with every change or update requiring searching time.

“Oracle’s Agile Product Lifecycle Management enables active collaboration across various groups involved in different phases of the product lifecycle,” said Baskara Rao, vice president and chief information officer at Chartered. “It helps us establish best practices in project management and product development by implementing the right processes and deploying the enterprise technology required to enable them.”

The Need to Improve Efficiency

Chartered’s product portfolio has expanded significantly in recent years. However, as its business grew in size and complexity, the company struggled to manage the vast amounts of information stored in different databases and in its enterprise resource planning (ERP), customer relationship management (CRM), and management information systems. These systems were connected, but it was difficult and time-consuming to check the accuracy and currency of data.

Staff members had resorted to using a few independent data stores to track IP status. Because the information was disconnected, it was time-consuming for staff to maintain and update the status of the IP, so there was always second-guessing as to the accuracy of the information provided.

Chartered was tracking around 500 IP blocks simultaneously, and navigating the data to update the blocks took four to five minutes for each. The resource-intensive process meant the frequency of updates was extremely restricted, and resources that could be better allocated for management had to be allocated to data entry. In addition, as a file-based system, the updated information could not be linked to the company’s databases and ERP, CRM, and MIS systems, which made it difficult to share information with other systems.

“The use of nonintegral systems was hampering our ability to get an accurate picture of our IP readiness,” said King Ou, deputy director, product marketing at Chartered. “Without proper IP visibility and the ability to quickly search for information, our ability to respond quickly to customers was severely limited. The inability of staff members to access IP was singled out as a key impediment to securing new design opportunities. When our IP portfolio numbered in the tens, it was manageable. When it expanded into the hundreds, we had to find a more efficient way of managing our IP portfolio.”

Chartered’s custom in-house system for managing the process portfolio had limited scalability and flexibility. In addition, product issues were tracked using five different systems, which resulted in duplication and redundant data.

“Our prior approach limited the benefits of enterprisewide collaboration,” said Rao. “It was also expensive to maintain, with labor, system, and maintenance costs starting to rack up.”

Chartered believed the missing link was a product lifecycle management (PLM) system that could help manage different types of products and their lifecycles.

“Our key implementation goals included improving productivity by enabling cross-functional program management; shortening the process development lifecycle and accelerating time-to-market for new products; and reducing the number of errors,” said Rao. “We also wanted to improve management of product-related issues; enhance decision-making through better reporting and analysis; and increase revenue by minimizing the number of missed opportunities.”

While an Oracle customer for more than 10 years, Chartered evaluated several leading PLM products and considered full-custom development for the mission-critical infrastructure change. After weighing various options, the company decided to implement Oracle’s Agile Product Lifecycle Management solution based on its merits, strategic vendor relationship, and the acceptance of the user community.

Oracle Consulting a Trusted Partner

Because Agile Product Lifecycle Management was a new product for Chartered, the company needed to know how it would help strengthen its business. That’s where Oracle Consulting stepped in.

“The reason for engaging Oracle Consulting was to gain a better understanding of Agile Product Lifecycle Management’s capabilities and how best to apply the solution for maximum benefit,” said Rao. “More importantly, we wanted to have a dialog with the consultants. We didn’t want someone who would just come in and take our order—we wanted someone who would challenge us, engage in a debate, and open our eyes to new ways of working. It was important to incorporate best practices into our business and be able to explain to users how life can be different, because often they are unaware of alternatives.

“Oracle Consulting certainly did a good job in this regard,” Rao continued. “The consultants not only had a deep knowledge of the product, but a strong understanding of the industry and extensive implementation experience. They guided us through the product and helped optimize our understanding of the solution and its applications.”

Prior to implementing Agile Product Lifecycle Management, Chartered spent two months reviewing the way it managed business data. The Agile PLM solution offered greater flexibility and a wide range of functionalities that the company had not previously considered. Now that it had these capabilities, Ou said the organization had to “think about how we should do things differently.

“Oracle Consulting played a key role during this stage,” he said. “Our primary consultant at the time did a good job in helping us navigate the different features and limitations in Agile Product Lifecycle Management. The first two or three months were about exploring what we could and could not do, and what we should and should not do.

“We also spent time understanding our internal practices. Being a large company, every department has a different way of doing things,” Ou added. “We had to ensure everyone was involved in the decision-making. In the past, other programs failed because the usability wasn’t there or there wasn’t enough buy-in from senior management and the different business units.”

According to Ou, Oracle Consulting became a trusted partner during the course of the engagement. “The team was there during the entire process, not just the rollout. They helped us define the workflows and explained the different trade-offs we had to make to get from point A to point B. The team was heavily involved in

the final product at the end of the day. We came to trust and depend on them as an integral part of the team.”

User Training Eases Transition

One of the implementation goals was to provide users with a system that they could configure without calling on the IT department. Agile Product Lifecycle Management offered this capability, but to ensure users had the knowledge to use the system when it went live, Oracle Consulting provided user training and assistance.

“If the training is too technical, then you will lose your users,” said Rao. “Oracle Consulting helped develop content that was easy for users to understand and engage with.”

The Oracle team was also available to help individuals navigate the Agile system and resolve issues in near real time.

“Someone will send an e-mail at 8:00 a.m. asking about a specific button or a specific problem, and they will get a response back in 30 minutes,” said Ou. “Having a strong support team to answer users’ problems and issues in real time alleviates a lot of frustration.”

Disruption-Free Cutover

“The transition from the old to the new system was very quick,” said Ou. “From a consulting standpoint, the time we spent preparing the data, defining the workflows, undertaking preliminary training, and generally getting people across the business involved was worth it.

“We went offline on the previous system on a Friday and came back online with Agile on Monday. We were able to view and add new products in the system on that day,” he said. “Yes, we still had to field questions and help people through the process, but we didn’t experience a halt in the business.”

Faster Customer Response Times

The Agile PLM system will make it much faster and easier for Chartered to respond to customer requests. This ensures the company does not lose opportunities because it could not respond to customers in a timely fashion.

As an example, a customer who is interested in manufacturing a specific process will speak to a Chartered staff member to identify the attributes they require. Through a search against the process

attributes, the staff member is able to hone in on that specific process and have visibility to all the associated collateral required for that process. Items such as physical design kits, design manuals, and technology files are tagged to the process ID so that they are easily available. In the past, collateral information was stored in separate systems, which meant staff members had to login to different databases to look up each individual item.

“With Agile, we can consolidate all the information associated with process IDs in a central database,” said Ou. “We now have the means to categorize various types of IPs, so it will be much quicker for staff members to find the information they need. Ultimately, it means the response time back to the customer will be significantly improved, and there is less risk that we will miss a sales opportunity.”

Ou added that the time needed to generate a BOM will be reduced. “Let’s say a bill of materials consists of nine parts,” he explained. “In the past, we would spend an average of about six minutes looking up each part in a different system. That’s 54 minutes to create one bill of materials. With Agile, we hope to finish the same process in just five or six mouse clicks. By creating the BOM once and bookmarking it, it will be available again when staff members login to the system and, more importantly, the information will be updated real time.”

Chartered will also be able to create accurate product catalogs for distribution to customers. Previously, the company had to recreate information from spreadsheets to produce product catalogs. “With Agile, the premise is that we can print catalogs using information that is currently in the system,” said Ou. “This ensures that the information is accurate and correlated.”

In the future, Chartered hopes to extend the data from the Agile PLM system to customers so they can self-serve their requests for product information. This would require data to be organized in a simple and more meaningful way.

Aiming for End-to-End Automation

Chartered is extending the system to meet the automation requirements for all business processes associated with PLM. This will allow the company to migrate and retire some of its existing systems.

Chartered is also in the processes of deploying the Agile PLM solution across its tape-out operations (the final stage of the

design cycle and the point at which the description of a circuit is sent for manufacture) using a custom-built user interface. Other applications being considered for Agile PLM integration include the document management system and the Quality Management module.

Why Oracle?

“We evaluated a range of PLM products but ultimately selected Oracle’s Agile Product Lifecycle Management because it offered portfolio management capabilities, in addition to the core product’s collaboration functionality,” said Rao. “The decision was also in line with our strategy to invest in a solution that closely integrated with our back-end Oracle enterprise resource planning system.”

According to Ou, Agile Product Lifecycle Management caught his attention for a number of reasons.

“One feature I particularly liked was the centralized database,” he said. “Our information is distributed across various systems. The ability to tie those systems together so we can search for data without logging in and out of different applications was very attractive.”

Ou also liked the fact that Product Lifecycle Management would empower the user. In the past, if the product team needed to add an attribute to an existing program, staff members would have to contact the IT department for assistance.

“Sometimes one little tweak—which should ideally take one week to do—could take three months because we had to sit down with the IT team, explain what we wanted, and scope out the solution,” explained Ou. “It would be much faster if the product team could make the change themselves. Agile Product Lifecycle Management provided the capabilities for user administrators to update attributes that they need in the databases themselves.”

The Agile PLM solution also offered a number of functionalities and workflows that Chartered had not considered. “Agile provided the capability to support a number of workflows that we were doing manually,” said Ou. “Many of our workflows are documented in Word documents, and it requires extensive study to memorize these workflows, especially ones that cross multiple departments. With Agile Product Lifecycle Management, we have the option of coding the workflow into the system and allowing the system to manage the workflow for us.”

Implementation Process

Chartered undertook extensive preplanning to define its preferred product lifecycle management landscape. A number of stakeholders across the product development lifecycle business domains were invited to give their feedback, including the technology development, product marketing, customer engineering, tape-out, quality management, and manufacturing groups. Once the company had formulated its ideal environment and business objectives, it began the technical evaluation for a solution that met its requirements.

Chartered and Oracle Consulting divided the project into three phases: Phase 0 focused on feasibility and solution design (November 2008 to February 2009); Phase 1 involved rolling out the Agile PLM solution to manage IP (February 2009 to May 2009); and Phase 3 involved rolling out the solution to manage process automation (May 2009 to July 2009).

“The project was professionally executed and delivered on most of the key performance indicators,” said Rao.

Advice from Chartered

- Ensure you have the support of senior management when implementing a system that will change the way staff members work. If they can see that the organization from the top down is committed to the change, they will put in the effort to move the business forward.
- Communicate your IT proposition in a ‘language’ that management and business users can understand. Explain how the changes will impact the overall organization and specific business units and how they will benefit from adopting a new process or system.
- Provide training for staff members before the go-live date and create a support team that can answer users’ problems in near real time. This will alleviate the inevitable frustrations that occur when a new system is introduced.
- Be ready for resistance and stay committed. Having strong user champions who are passionate about the changes is necessary when problems or issues arise.

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