



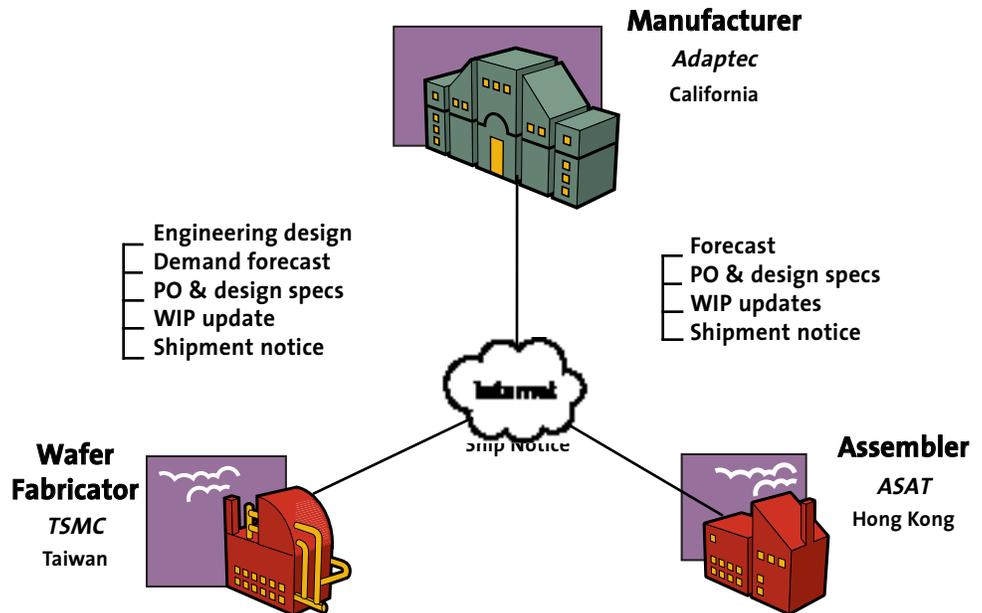
EXTRICITY™
S O F T W A R E

EXTRICITY SOFTWARE SOLUTIONS ADAPTEC'S VIRTUAL FACTORY

CASE STUDY

Adaptec, Inc. is a \$1 billion global manufacturer of network and I/O connectivity hardware and software products with headquarters in Milpitas, California and 3,500 employees around the globe. Adaptec competes in an environment of shrinking product lifecycles, increasing customer demands and decreasing margins. As a “fables” semiconductor company, Adaptec has an additional challenge of coordinating the production of their IC products through several contract-manufacturing partners in Asia. This manufacturing approach removes the need to invest \$1.2 billion in their own fabrication facility, but increases their need to interact seamlessly with their Asian partners. Adaptec’s previous methods of communication—fax, email, FTP and EDI—had inherent problems that caused delays and increased their lead-times, making them less competitive in the market.

In 1997, Adaptec chose Extricity™ Alliance software to fundamentally improve the way they interact with their partners and, in essence, implement a virtual factory. By automating a wide range of shared business processes—collaborative engineering, WIP updates and forecast sharing—Adaptec achieved significant measurable operational efficiencies. Manufacturing cycle times were cut by up to 50%, inventory was reduced by 25% and customer satisfaction was improved. Based on total project costs and quantifiable benefits, Adaptec predicts returns of 15 times their investment in just the first three years. The additional strategic benefits they have achieved in the marketplace are worth far more.



Extricity Alliance allows Adaptec to become a “fables” semiconductor company.

PROBLEM STATEMENT

To remain competitive, Adaptec must continuously match or beat the customer lead times (the time from order to delivery) offered by their competition; particularly, the vertically integrated competitors who have their own fabrication and assembly facilities. With this competitive imperative in mind, Adaptec undertook their "A2000 Project" with PricewaterhouseCoopers, an aggressive project with a primary goal of cutting manufacturing cycle times in half.

Adaptec's previous methods of communication included fax, email, FTP and EDI. These means of coordination, in combination with critical data being stored in multiple enterprise systems, led to the following issues and delays, contributing to unnecessarily long manufacturing cycle times:

- Time consuming manual extraction, manipulation and coordination of data with ERP, engineering and document control systems was required before interacting with suppliers
- Important information is stored in many Adaptec systems (ERP, engineering, document control, Web) requiring time-consuming manual extraction, manipulation and coordination before it is sent to suppliers
- The wide number of types of information to be communicated necessitated a variety of methods of transfer; design drawings were faxed, while purchase orders were sent via EDI. Quite often, several pieces of information were needed to initiate next steps in component production, and with uncoordinated information delivery through several modes, critical pieces of information were often delayed or lost resulting in delayed production
- Manipulating and transferring data was a long process, which required many person hours
- Communication methods were unreliable and prone to errors. Often, the data received by suppliers was unclear or incomplete, leading to misinterpretation, errors and delays. Phone communication was required to clarify details to organize a resend of the missing pieces of information. Time zone differences added further delays to this process
- Partners have their own heterogeneous systems and methods of doing business. Therefore, time was wasted when partners received Adaptec's information, as they needed to manipulate data and load or re-key information into their own systems

With these issues identified, Adaptec turned to a new solution to streamline interaction with their partners.

EXTRICITY SELECTION

After detailed analysis of a variety of business solutions, Adaptec selected Extricity Software as their technology partner, to create a "virtual factory" with their Asian contract-manufacturing partners. Extricity Alliance allowed Adaptec to integrate with their partners at the business-interaction level and to automate a variety of shared processes directly between their enterprise systems and those of their partners. Extricity provided Adaptec with the functionality they were looking for:

- Automated manual processes
- Enabled cycle time reductions
- Extends Adaptec's enterprise systems and those of their partners
- Expandable solution for future extension and growth
- Offers secure communications

EDI was not chosen because of its document-centric (rather than process-centric) structure, its inability to handle object-oriented materials and its lack of scope for future, cost-effective growth.

THE EXTRICITY ALLIANCE SOLUTION

The first phase of the Alliance installation linked Adaptec to TSMC in Taiwan and ASAT in Hong Kong, and included the automation of a variety of processes between several existing enterprise systems.

BUSINESS TO BUSINESS PROCESSES

The first set of processes defined and automated with Alliance were:

- **Engineering design:** Adaptec sends prototype specifications to the contract manufacturers. The contract manufacturer tests the prototype and sends the test results to Adaptec, who modifies the design accordingly. This process repeats itself until the prototype passes all tests
- **Demand forecast:** Adaptec sends a six-month production forecast to their partners on a monthly basis
- **Purchase order/acknowledgment:** POs are sent automatically from Adaptec's SAP® database to the suppliers' order management systems. As appropriate, design drawings and/or manufacturing specification are extracted from Adaptec's engineering and PDM systems and bundled with these POs. Acknowledgment of receipt or request for additional information is automatically sent back to Adaptec from the suppliers
- **WIP update:** Detailed WIP data is sent frequently to Adaptec and placed into their systems in the format they need, providing ongoing visibility of manufacturing status
- **Ship notification:** TSMC notifies Adaptec about products that have completed production and are shipped to their assembly partner, ASAT. Based on the information, Adaptec notifies ASAT that a shipment of products is on its way

Extricity Alliance runs on Windows NT® and Microsoft® SQL Server. Existing enterprise systems that were integrated into Adaptec's and their partners' implementations of the Alliance system included: SAP, an engineering (CAD) system, a PDM system, a BPICS legacy system, a legacy system built on Oracle® architecture and an intranet application. The average Alliance implementation time with each partner was 12 weeks with three to four full-time equivalent resources.

BENEFITS AND ROI

The benefits Adaptec has achieved from their Alliance solution have been significant. Taking into account only the quantified benefits below, the calculated return is 15 times the investment in just the first three years. This is equivalent to a one-month payback, or an ROI, of 1500%.

The benefits were:

- **Reduced cycle times up to 50%:** Automating processes along Adaptec's supply chain led to a reduction in total manufacturing cycle time from 12 weeks down to eight, or 30% on average. Some product groups experienced cycle time improvements of up to 50%. Cycle time reduction was achieved by removing the delays, errors and manual processing described earlier. For example, the Alliance process that delivers a PO and its associated design drawing and manufacturing specs was reduced in duration from days down to minutes with Alliance.
- **Reduced inventory levels:** With shorter cycle times, Adaptec reduced their inventory levels. The resulting savings to Adaptec were:
 - One-time savings by reducing the average inventory level of 25%
 - Ongoing bottom-line savings of \$2 million per year, due to lower inventory carrying, obsolescence and administrative costs
 - Improved ability to react to changes in the market due to lower inventory levels and shorter cycle times
- **Increased visibility to manufacturing processes:** Alliance allows Adaptec to receive reliable and frequent WIP and other data updates. This information increases visibility into their outsourced manufacturing processes, and can be used to identify problems and delays immediately so that action can be taken to meet their customers order requirements in a cost-effective way
- **Improved on-time delivery:** With shorter lead times and improved coordination along Adaptec's supply chain, the chances of being out of stock are reduced and the percentage of on-time delivery is increased
- **Improved new product introductions:** With earlier and increased sharing of test and quality data during the prototype period, new products can be introduced more quickly and their quality can be increased. This time reduction results from engineers correcting design problems faster due to earlier test results, and ramp-up manufacturing reaching stable yields earlier due to improved up-front testing. This is extremely important for semiconductor products, with their short life cycles
- **Increased customer satisfaction:** Alliance enabled Adaptec to reduce order lead times, provide customers with updates regarding manufacturing order progress and increase their on-time delivery. These factors, which are critical for Adaptec's customers, combined to increase overall customer satisfaction

Adaptec was able to achieve the results they needed from their Extricity Alliance solution in a matter of weeks. Today, they continue to expand the solution to include additional processes and trading partners.

FOR MORE INFORMATION

Discover how the Extricity Software solution can benefit your company by contacting Extricity Software at **800.497.6883**, emailing info@extricity.com or visiting www.extricity.com on the World Wide Web.



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