Flexing the supply chain

Xoriant helps a niche materials and processes company re-architect the entire supply chain and shop-floor environment.

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Background

Our client is a Silicon Valley based provider of advanced materials, process technology, and manufacturing systems for next-generation wireless devices, including cell phones, notebook PCs, and consumer electronics. These processes and products are based on unique and proprietary semiconductor and optical process technologies. This proprietary technology allows controlled and precise application of single or multiple material film layers. This technology will be incorporated into next-generation devices and consumer electronics.

Due to the extreme high-end and specialized nature of the technologies, processes and equipment offered by our client, the customers demanded highly customized solutions, based on their unique business needs. This resulted in our client providing highly flexible offerings, comprising either or combination of:

- Custom development of specific materials and process technologies
- Licensing of proprietary technology
- Sale of the process equipment
- Sale of end-user semiconductor or optical products

Over the last few years, our client has demonstrated the effectiveness of its technology as well as the business model. Now our client is in the process of scaling the business.

Customer Challenges

The flexibility of the offerings, while very attractive to the client's customers, has caused multiple variables in the manufacturing logistics, including shop floor management, manufacturing processes, inventory management and supply chain management. This has resulted in increasing the complexity and hence the cost of the operation. Many of the shop

floor operations, including visibility and measurement have been manual, thus causing delays in the manufacturing process and errors in the resulting products.

It was very clear that the manual processes and information systems that were used in the prototype mode were on the verge of breaking down as the volumes increased and markets matured, thus bringing down prices and increasing the quality expectations. The client was looking for a comprehensive solution comprising both business process and IT systems. Due to Xoriant's proven track record in developing enterprise class manufacturing/supply chain applications, its expertise in both Microsoft and UNIX/Java technologies and its dual-shore delivery model, Xoriant was assigned the task of developing and maintaining the information systems.

Our client wanted a system that would help the plant manager remotely take stock of the production process and movement of raw materials. The client also wanted to change the manufacturing operation, so as to be able to change the flow of the production line depending on the load. Real-time visibility of different aspects of the manufacturing workflow was the main objective.

Some of the current challenges were:

1. Delay in delivery due to manual allocation to production lines
2. Lack of automated alerts in case of a problem in the production line
3. Lack of automated scheduling and rescheduling of the production process through software
4. Ineffective utilization of time due to frequent visits to the shop floor
5. Delays and errors due to manual report generation through consolidation of multiple excel sheets

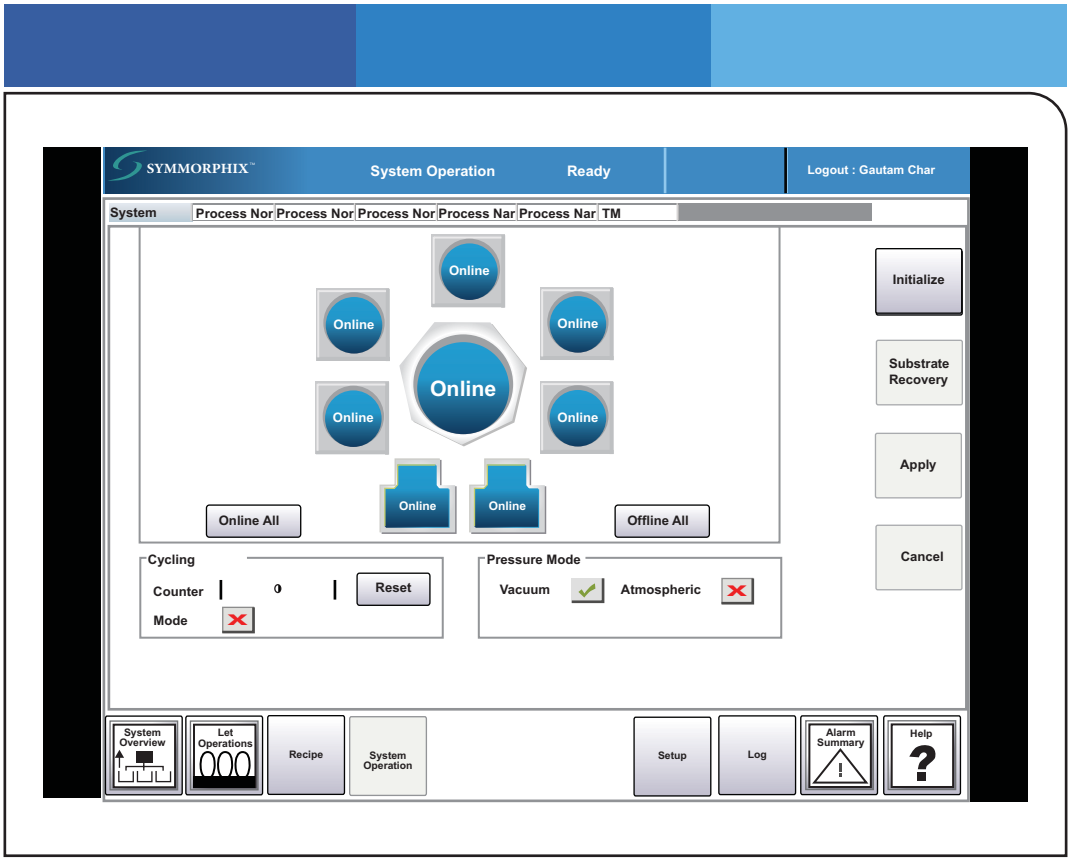
Xoriant Participation

Xoriant was able to assemble a team comprising an architect who had experience in architecting and designing manufacturing and supply chain enterprise class systems and two developers, with collective background in developing databases, applications interfaces and graphical user interfaces. To keep within budgets, the team worked completely in Xoriant's Mumbai facility. During the analysis phase, the Xoriant team members as well as the client counterparts made sure that their times overlap enough to have sufficient interaction.

To achieve real-time visibility, the Xoriant team members created a simple architecture to ensure connectivity and data exchange between the different client systems. Due to the budget constraints open source EAI software from JBoss was used. To make the user interface totally flexible, Xoriant developed a GUI system, with touch screen capabilities, independent of the database.

To give shop floor control capability to the plant manager, Xoriant developed a touch screen based application on Microsoft .Net that helped the manager plan and execute the shop floor operations. The system displayed the real time data of the various components being processed, leading to an effective control on the resources, material and the production lines. Animated interfaces showed the live process with real time data. The system also helped in the archiving of data using a scheduler. The application used four different colors to indicate the status of a job without making frequent queries or looking at complex reports. Process name, color and update frequency etc could be configured. The system implemented role base security at control level, where the user can use a keypad for editing data. The keyboard tabs could be configured depending on role-based user privileges. The user could remotely control each process module with the substrate recovery option. Shared memory class using IPC was used to ensure data distribution across all the modules. An event handler was designed to read

values based on the update frequency into the system. Locking mechanism implemented using memory-mapped cache addressed the security aspect. A background program for archiving was developed. This ensured that the normal process continued uninterrupted.



Plant Manager Console - Built by Xoriant Team

Client Benefits

Comprehensive data integration across multiple systems and real-time visibility provided our client with the much needed information systems platform to automate the manual processes for manufacturing, shop floor management and supply chain management. The graphical user interface showed the real-time status of the process, inventory and logistics in highly visible colors and patterns, using which the operator and plant manager could take quick and informed actions. The touch screen let the plant manager manage the complete shop floor operations from his/her place thus saving time. The system generated an alarm upon any outage. The system gave the plant operator a facility to re-route the manufacturing activity to any other machine from anywhere using a browser based interface.