Analog Devices: Part II

Sharing of Process Knowledge can result in gains in Product Development

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With globalization, Process Knowledge-sharing (PK) has become of particular importance in the New Product Development (NPD) process. This is because effective use of PK can help companies more effectively leverage R&D investments—and avoid reinventing the wheel. In the second part of this series, the authors expand their discussion of the use of PK at Analog Devices B.V.

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In our first article in July *Visions*[1], we explained the details of how Process Knowledge (PK) can be used effectively in the New Product Development (NPD) process to achieve a number of savings. Exhibit 1 on this page illustrates some of those savings, which were achieved when developing Product Y for an Asian manufacturer of IC testers. In the second part of this two-part series, we will provide additional examples of the effectiveness of Process Knowledge-sharing at Analog Devices B.V., a subsidiary of Analog Devices Inc. (ADI).

Two examples

The two business cases we will explore are very different. What is common to both is that during project planning, ADI recognized that leveraging pertinent knowledge within the organization could facilitate attainment of project goals.

Off-shore test transfer

In the first example, ADI wanted to transfer all test operations for the entire company to an off-shore location. Centralizing all test operations in this off-shore facility was a strategic decision made in fiscal year 2001. This move represented a significant cross-functional challenge involving the worldwide manufacturing organization and all of the product lines. One ADI Product Line (PL) was particularly hard hit by this decision since their products are very different from the products this off-shore facility had traditionally handled. The engineers at the off-shore site needed to develop new expertise with the processes, packages, and equipment to handle this Product Line.

Recognizing these challenges, an off-shore planning team was formed. The team began by examining After Action Review lessons, learned data from previous transfers. Building on this information, they developed a comprehensive plan, which devoted particular attention to identifying potential obstacles unique to their products as well as counter measures. Detailed discussions were held involving the PL and ADI's manufacturing organizations, resulting in revisions to the plan to ensure it met the needs of both groups.

A key plan objective was establishing

Exhibit 1: Impact of Enhanced Information Sharing Processes

= Plan | = Actual Results

SOURCE: ADI Internal Process Guidelines

an incremental learning curve for the off-shore engineers. The order and priority of transferring products was based on capacity, demand, similarity, complexity, and the new technology and processes the off-shore facility would need to establish. Products were staged in a deliberate pattern of increasing levels of complexity. Detailed discussions were held involving the PL and ADI's manufacturing organizations, resulting
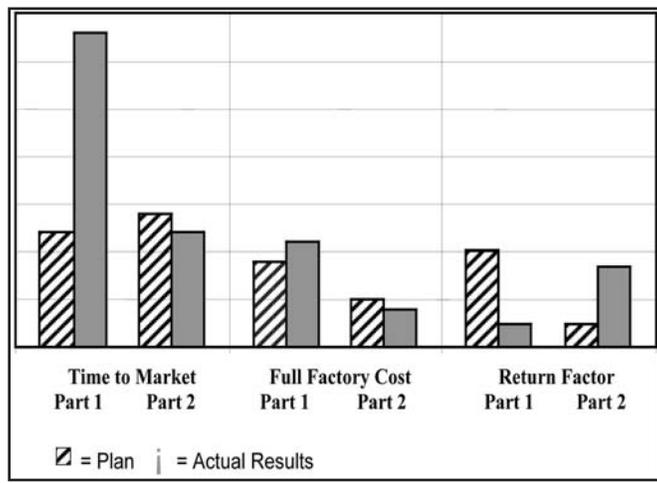
in revisions to the plan that fit Product Development and manufacturing schedules.

Implementation

Weekly teleconferences were held to review project status and ensure everything stayed on track. These virtual team meetings maintained close communication, and successfully resolved most technical and logistical real-time issues that arose during implementation. Web-based tools were used to track the status of all open action items, action items, and document decisions. During this time, several engineers received training at transferring sites.

Whereas this project was by no means a Knowledge Management initiative, it involved an application of knowledge-sharing principles—and their use clearly contributed to the project's success. Although it is premature to quantify all the benefits of a smooth transfer effort, the main transfer goals were achieved, as Exhibit 2 on page 21 shows. It was especially important that the transfer be transparent to customers. Complications would have adversely impacted both customers' and ADI's revenue and Time-to-Market goals. At the off-shore planning team's final meeting, an After Action Review was held to identify key learnings ADI could apply to future multi-site, cross-functional projects.

Exhibit 2: Off-Shore Transfer and Direct Release
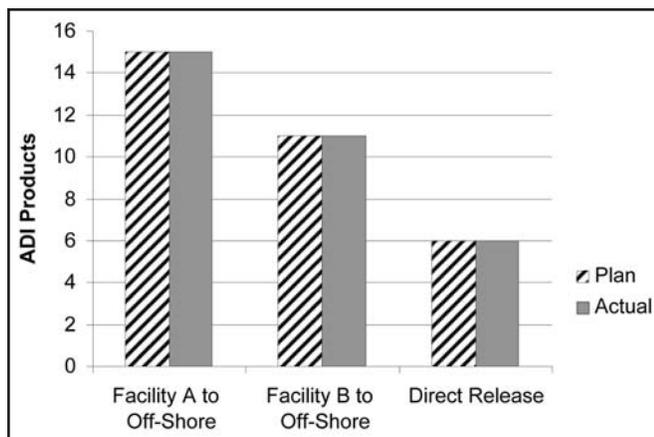
SOURCE: ADI Internal Report

R&D Center in Ireland

Our second example involves a project which is underway in ADI's R&D center in Ireland. A "knowledge" business process was initiated at this center and positioned in a business process map for the site, as shown in Exhibit 3 on this page.

This initiative was launched to address two problems. First, up until that time there had been several successful knowledge-related activities; but since they were somewhat ad hoc in their composition, it was difficult sustaining momentum over time, and we were reverting back to less-productive practices. Secondly, productive practices in knowledge-sharing were somewhat localized in separate business units, and were not being successfully deployed elsewhere in the organization.

The proposed solution involved elevating and linking knowledge-sharing practices to a more holistic enterprise model, thereby developing a better chance for these practices to be accurately replicated and disseminated throughout the organization. We expected that this approach would also make it easier to sustain the practices and the benefits we were achieving.

The value of mapping business processes has been articulated by many experts[2]. The map shown in Exhibit 3 depicts a Product Development activity comprised of eight business processes. The map was developed with a deliberate structure in mind. The intent was to develop an image of an infrastructure with four cornerstones supporting a commercial engine that contained four processes. The four cornerstone processes were identified as: People, Technology, Knowledge, and Scorecard. These pivotal processes were seen as fundamental enabling processes

whose role was to provide support for the four processes that comprise the commercial engine of the company in regards to Customer and Market Intelligence, Strategic Planning, Portfolio Management, and New Product Development. A process leader—and deputy—were assigned to each core process. While the initiative is too new to report benefits, testament to the perceived business value senior management sees in this activity is the fact that during a two-year economic downturn, resulting in cross-the-board cost cutting, this initiative remained on track and funded.

Knowledge-sharing

However, even with the successes outlined here and in the first part of this series, ADI is not satisfied with its KP-shar-

Exhibit 3: New Product Development Core Business Process Map
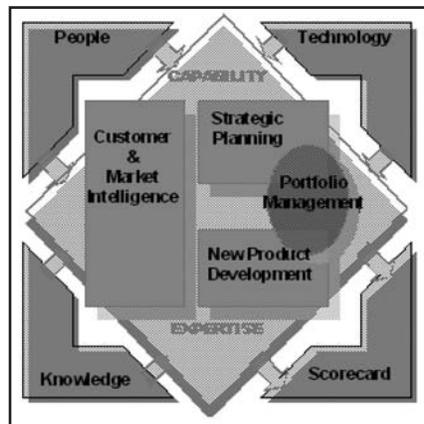
SOURCE: ADI Internal Business Plan document

ing successes. The company continues to work hard to improve the quality of communication and knowledge-sharing across the organization.

Two primary methods of PK sharing are being used: One is called Codification, the other Personalization. The goal of the Codification approach is to provide a high-quality, reliable means of re-using codified knowledge though the use of electronic repositories. It is a "people-to-documents" approach using IP Exchange databases, Team web sites, et al.

The goal of the second approach—Personalization—is to leverage the expertise and wisdom developed by individuals and teams within the company. This "tacit knowledge" is best shared by promoting person-to-person interaction through such venues as Technical Reviews, Brown Bag Seminars, and After Action Reviews.

Conclusion

The central tenet of ADI's approach to creating and sharing PK is that to be successful, these activities must be embedded within our existing, day-to-day business processes. We achieve this in a number of ways. For instance, we recognize that the organization possesses unique business and technical knowledge, and we deliberately work to share and leverage that knowledge on an on-going basis. Particular attention is devoted to identifying opportunities during planning and implementation of the development effort for knowledge sharing and creation. By capitalizing on these opportunities, ADI has reduced development expenses, accelerated cycle time, and increased profitability. Upon project completion, After Action Reviews and Product Line Review meetings are held as part of a continuous improvement process to assist in improving both product selection and execution. Through these and other actions, ADI successfully leverages our knowledge assets as a source of competitive advantage. ◆

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