

Engineering Product Redevelopment

by Sam Burd and Pete Tormey

Product redevelopment is the process of taking a critical look at a product that is not living up to its market potential and making the changes necessary to bring about success.

Usually, this process attempts to reinvigorate older products that have lost their luster, but are still serving a valuable market. Sometimes, redevelopment attempts to invigorate a product that never reached its potential. In either case, dramatic benefits are often gained, even though there is much less investment than developing the product from scratch.

The team redeveloping a product has a significant advantage over the team that originally developed it. They have access to much more knowledge about the market, the users, and the use of the product. To gain the most from that advantage, product redevelopment starts by objectively auditing the product's situation. Possible internal sources include the company's personnel in marketing, sales, engineering, manufacturing, quality, service, and management. External sources may be current customers, potential customers, competitors' customers, industry leaders, and those who could be sold a revised product.

Choosing the best information-gathering method is critical to pointing redevelopment in the optimal direction. Objectivity is the key. Gathering information from internal sources is done by interviews, reviewing internal documents, and brainstorming sessions. Gathering information from external sources can be tricky. Although market research and interviews might be adequate, other methods, such as focus groups and market surveys, might yield better information.

For technology-based products, an objective engineering point of view is critical to getting the most from product redevelopment. Starting with the audit, it is important to factor in the design and manufacturing ramifications of each possible design alternative. It helps if experienced, knowledgeable, and creative engineers interface with customers and sales personnel. Often, new ideas for product improvement spring from these interactions. Also, it's not uncommon for an engineer to have a ready solution to a problem, but not know that the solution is sought after by end users. Engineers should meet with as wide a range of customers as possible.

Many redevelopments can give a modified product new uses in other industries. With slight redesigns, you may be able market your product, or parts of it, to previously overlooked customers. It pays to review how you can leverage the product toward new applications or distribution channels.

New industries and possibilities need not be limited by a company's current capabilities. There are partnership opportunities with companies in other industries that will solve logistical and marketing problems. If new products and industries are identified, further research will be needed. You will most likely need to consult experts in the new areas.

Based on the information collected from the audit, redevelopers can start to suggest concepts that address the issues. Although it is usually too early at this stage for much detail, the list can still be evaluated according to estimated cost, benefit, and likelihood of success. Evaluation is critical because companies must select which redevelopment tasks to invest in. This means they must then decide how much will be budgeted for the completion of redevelopment.

A Case Study

A simple instrument to commercialize a leading-edge technology, conceived in academia, was developed by a start-up company. The technology had not been used by industry and so this first commercialization was done without a full understanding of what the market would eventually require.

Sales were mostly to enthusiastic first adopters in academic research labs, but sales didn't progress well to industrial customers. The company felt this product should be more profitable, but was unsure how best to proceed. It contracted Medical and Biotech Developments Inc. for product redevelopment. Although the redevelopment was confidential, the essence of the project detailed below illustrates how the process works.

The first step was to audit the specification, design, manufacturing, features advertised, and customer comments. The audit indicated that design and manufacture were appropriate for a product based on the original specification. A quick analysis did not find a benefit in cost reductions by the usual methods, such as redesign or outsourcing.

A survey of users showed a strong satisfaction with the product. A survey of potential customers-those who had not purchased the product-showed they were disappointed in the manual nature of its operation. Speed of completing usage wasn't the issue since the instrument performed faster than competing technologies. Every part of the instrument was engineered to work rapidly, and as a consequence the entire operation went quickly. After careful analysis, it seemed the problem in the eyes of the industrial customers was that the instrument required a person to attend it. The conclusion of the audit was that an automated version would yield significantly more sales and profits.

The original instrument processed a sample held in a disposable cassette. With little modification, the original instrument was judged appropriate as the basic core of the envisioned automated system. An input rack was needed to stack cassettes waiting to be processed and an output rack was needed to hold the cassettes after they were processed. A mechanism was needed to move the cassettes into and out of position. Cabinetry to house the system and connections to a controlling computer were added. Lastly, firmware-read-only programming-had to be compatible with off-the-shelf control software.

The project team generated a rough plan to design an automated unit. Then they estimated investment needed to implement the automation project. Some of the potential industrial users were resurveyed to see if they would be interested in an automated unit and at what price. Projections were made of quantities, costs of goods, and price points. Added to the mix was additional support that would be needed to install and service an automated system. Since the automated product would promote the use of more high-profit disposables, the profits from the product line would be greatly increased.

Analysis with conservative projections indicated that an automated unit would have a very satisfactory return on investment. Alternative designs were surveyed to see if they might improve the projected return. Alternatives included an internal microprocessor with proprietary control firmware, additional automation for loading the sample into the cassette, and increased environmental controls to add flexibility to the processing of samples. Until the market requested these added features, they were not deemed to be justified.

Based on the analysis and recommendations of the audit, the company approved the investment in redevelopment. The design and prototype testing were completed in several months. Rapid integration into manufacturing successfully allowed for release to sales so that orders could be taken at the next large industry convention. The entire redevelopment took less than 10 months and yielded a tripling of sales and quadrupling of profits.

Tips for Redevelopment

The following are some of the things we have learned from past redevelopment projects:

- Technology improvements unavailable or unaffordable previously may now be justifiable.
- Changes in appearance can give the resulting product a new look, to distinguish the new from the old version, or to better fit with other products in the company's line.
- Savings from increased quantity buys, outsourcing fabrication, or design simplification can reduce the selling price and increase profit.
- Features and other enhancements must meet newly identified desires of the market.
- Modifications to a product may give it appeal to a new target markets.

Our argument is that product redevelopment can be performed using in-house employees and an outside firm experienced in redevelopment. In-house personnel add knowledge that is invaluable. Outside firms add experience to the overall process and bring new insights to a task. Working together is a logical mix to get the optimal return on the investment in redevelopment.

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