

ACCELERATING SUCCESS THROUGH STRATEGIC INNOVATION

## Performance Genesis: Right Architecture – Successful Innovation – Computer Input Device

**Client:** A venture-backed startup in the computer peripherals market, focused on positive interface experiences for disabled computer users.

**Challenge:** The client had recognized an opportunity for a new computer input device geared towards customers unable to use mainstream hardware. To that end, the venture had retained a major Industrial Design firm to develop new product designs based on their proprietary technology.

While the resulting design was attractive, it did not meet the production cost targets. As result, investors withheld funding for production ramp-up until the cost issue could be resolved. Consequently, the client engaged Product Genesis to redress the manufacturing cost problem while creating a product that would be both aesthetically pleasing and functionally robust.

**Diagnosis:** The client's product was based entirely on proprietary technology. The configuration of the technology upon which the design was based introduced severe mechanical and software complexities into the product.

These complexities manifested themselves in two ways. First, the proprietary components had unique interfaces that made system integration more difficult. Assembly was more difficult and diagnosis/QA required unique fixtures and instrumentation. Secondly, the proprietary, sole-source components were significantly more expensive than equivalent industry-standard parts.

**Methodology:** The Performance Genesis process is a modular set of tools that can be implemented based upon client needs. In this case, the client required a product architecture that delivered differentiated benefits without an extreme price penalty.

A DFSS-based architecture analysis was performed to partition the functionality of the proposed product. Differentiated aspects of the product were implemented in modular subsystems employing the client's proprietary technology. The remaining subsystems were implemented

using industry standard components that sold in high volume to the PC peripheral industry.

An analysis of user expectations of computer peripherals indicated that the client had under-specified the life and reliability requirements for the product. Also, the original proprietary design contained numerous untested failure modes. Using a majority of commercially available parts, with proven test-lives, and setting robust component specifications for the limited custom parts achieved the life-target at reduced production cost.

Heretofore the client had focused on a single interface due to the complexity of creating, testing and manufacturing new designs. A user needs analysis confirmed for the client that various user segments required different physical PC interfaces and software drivers. The modular architecture proposed by Product Genesis allowed the customer to quickly implement new computer interfaces with little incremental cost.

An examination of enclosure options indicated that the client's original choice was inappropriate for the projected volume. A detailed cost analysis demonstrated that use of injection molding would provide a significant cost savings over the range of volumes that the client had projected.

**Results:** The architecture analysis and redesign reduced the production cost of the product by 66% while preserving its unique features. Moreover, the client was able to reach a broader customer base by offering multiple interfaces.

Product Genesis guided the client through the transition into production. As a result of learning derived from the engagement, the client felt comfortable taking over

from that point. The rapid scale-up of production was enabled by the robust, modular architecture designed under the Performance Genesis framework.

Not only was product highly profitable, it won three industry innovation awards, including the Consumer Electronics Show Best of Innovations 2003 award.

Performance Genesis took a product that had missed its cost targets, analyzed the product architecture with an eye on cost reduction and product reliability, and led the client to an economical solution without compromising functionality. The result was a successful product launch, investor satisfaction, and high praise from the industry.

