

June, 2008

Global Design Strategies in the High Technology Sector

Global design strategies have matured significantly over the last two years. Aberdeen Group's December 2005 *Global Design Benchmark Report* found that 79% of study participants were turning to global design chains in order to reduce costs. Aberdeen revisited the topic in October 2007 with *Profitable Design Chains: Global Product Design Comes of Age* and found the weight from cost pressures has reduced significantly (46% of respondents), while market demand for rapid product development (47%) has risen to become the top pressure. Manufacturers operating within the high tech sector indicate the same top of mind concerns, but with less of a focus on cost pressures (46% of high tech respondents) as opposed to an overwhelming concern with being able to bring products to market quickly (69%).

Aberdeen Analysis

High tech's greater focus on speed of product development is in line with many of the specific challenges of the industry. Technology itself often becomes outdated quickly, putting greater pressure on these manufacturers to get products out faster, before the technology becomes obsolete. Additionally, high tech products can often be reverse engineered with relative ease, which leads to a greater number of fast followers than are typically encountered by peers in other industries, which leads to increased competition that drives down prices. Maintaining profitability requires that a high tech manufacturer be able to respond and release the next innovation quickly.

Between September and October 2007, Aberdeen Group examined the global design strategies of more than 170 enterprises. Respondents were benchmarked according to their performance across five key performance indicators and divided among three performance categories: the Best-in-Class (top 20% of performers); Laggard organizations (bottom 30%), and the Industry Average (the remaining 50%). These measures included the percent of products meeting targets for revenue, cost, product launch, quality, and overall product development costs. High tech manufacturers perform about on par with the Industry Average of manufacturers across all industries on each of these measures (Figure 1).

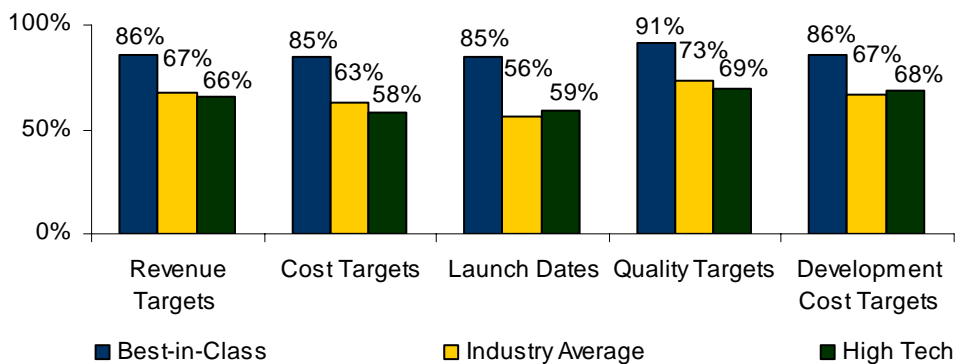
Sector Insight

Aberdeen's Sector Insights provide strategic introspective and analysis of primary research results by industry, market segment, or geography

Sector Definition

For the purposes of this study, respondents who indicated that they operated within the high tech industry were isolated and aggregated for comparison against peer manufacturers across industries in Aberdeen Group's performance framework. High tech included those in consumer electronics, computer equipment and peripherals, software, and telecommunication equipment.

Figure 1: Performance Framework



Source: Aberdeen Group, October 2007

The Competitive Framework Key

The Aberdeen Competitive Framework defines enterprises as falling into one of the three following levels of practices and performance:

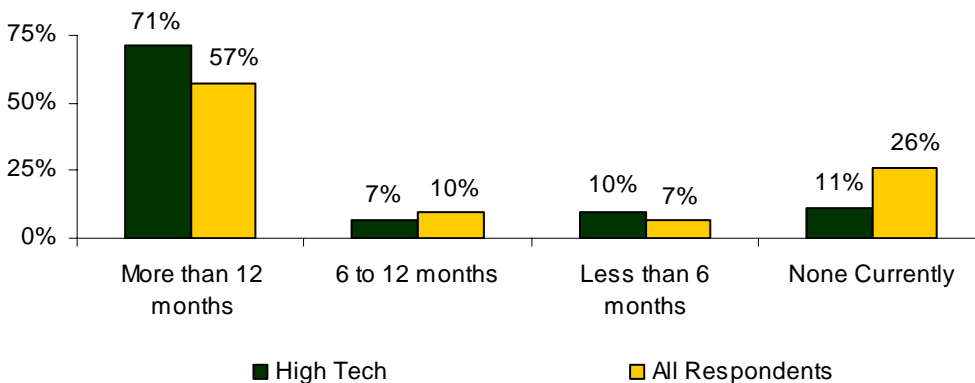
- Best-in-Class (20%)* — practices that are the best currently being employed and significantly superior to the industry norm
- Industry Average (50%)* — practices that represent the average or norm
- Laggards (30%)* — practices that are significantly behind the average of the industry

With these companies so much more likely to turn to global design strategies in order to improve the speed of product development processes, it is surprising to learn that their ability to meet product launch dates is only slightly ahead of the Industry Average. Despite the intensified need for rapid product development among these manufacturers, only 59% of their products meet target launch dates, which is only slightly ahead of the Industry Average across all verticals.

The Maturity of Global Design

On average, high tech manufacturers report global design initiatives that are more mature than their peers in other industries (Figure 2). Seventy-one percent (71%) of companies within the high tech sector indicated global design programs that have been underway for over a year, which can be compared to a response of 57% by manufacturers across all industries. However, while they have been doing global design for a while, based on the performance of the high tech sector, there are some best practices they can learn from the Best-in-Class that will help them boost performance further.

Figure 2: Maturity of Global Design Program



Source: Aberdeen Group, October 2007

Strategic Actions

The strategic actions that high tech manufacturers report taking as part of their global design initiatives are directly tied to finding ways to improve the speed of product development processes (Table 1). The initial value proposition of globalization was around the ability to take advantage of different labor costs around the globe. High tech's focus on speed and early adoption of global design strategies indicates they recognize that global product development may have additional benefits that exceed cost reduction. However, at this time only 59% of their products meet target launch dates. This means there is still an opportunity for further improvement by leveraging these design chains to effectively accelerate the design process, providing even more benefit.

Where manufacturers from Aberdeen's cross-industry participant base report a more diverse set of strategies, high tech manufacturers are relatively united in a focus on leveraging the high talent, low cost design resources of a global workforce. How this is a strategy that improves speed may not be immediately apparent. The global workforce has developed to the point where talented and qualified design resources have become a ready source. However, due to the fluctuations between international markets, these resources are available at less cost than local resources. These reduced labor costs means companies can employ a greater number of highly skilled engineers to work on a design without stretching the budget. When utilized effectively, these additional resources can reduce the time involved for product development strategies.

Table 1: Top Strategies of Global Design

Strategic Actions	High Tech	All Respondents
Leverage high talent, low cost design resources from global workforce	67%	51%
Access new sources for product innovation outside the company	26%	28%
Increase design capacity beyond currently available local resources	21%	32%
Acquire knowledge of local markets and regulations	21%	22%

Source: Aberdeen Group, October 2007

The Challenges of Global Design

Turning to a global design strategy can provide the opportunity to accelerate the processes involved in product development. However, it is a strategy that comes with a number of its own challenges that can create obstacles unique to a dispersed product development team (Table 2). Failure to adequately address these obstacles can impede rather than aid the progress of product development.

Table 2: Top Challenges on Global Design

Challenges	High Tech	All Respondents
Protecting Intellectual Property (IP)	63%	61%
Keeping distributed designs synchronized	49%	40%
Coordinating distributed projects and people	44%	31%

Source: Aberdeen Group, October 2007

The challenge for high tech may be compounded by their focus on reducing time to market. They report project management obstacles, keeping distributed designs synchronized and coordinating distributed projects and teams, with greater frequency than other manufacturers. In the interest of speed, adhering to a process takes a back seat. If the process is viewed as a hindrance, engineers will find ways to work around it in an attempt to get things done more quickly. While this might satisfy short term goals, it can have very negative downstream effects. Losing sight of the necessary investments in the coordination of design teams can result in loss of control of projects as well as create additional roadblocks for later projects. To this end, retaining company knowledge of products or product design decisions was also reported as a top challenge for high tech manufacturers, reported by 39% of these manufacturers. Interestingly, and in contrast to what one might expect of high tech manufacturers, these companies lack many of the tools that can automate the repetitive tasks that may be skipped otherwise.

Finally, protecting product Intellectual Property (IP) is a major challenge of global product development, regardless of industry. As designs are outsourced, particularly to partners in regions with differing legal protections and standards, valuable product design data can become less secure. The case is no different for high tech manufacturers, who report this as a challenge on par with their peers.

The Three Pillars of Effective Global Design

Aberdeen's October 2007 [*Profitable Design Chains: Global Product Design Comes of Age*](#) report found there are three key areas where the Best-in-Class have developed the capabilities that allow them to overcome their challenges and most effectively leverage their global design initiatives: protect product IP, design in parallel, and coordinate the global design team.

Protect Intellectual Property

While protecting IP was the top challenge for high tech manufacturers, they are not doing a lot to address it. As they look to access new talent in other global regions, this will remain a top challenge. Interestingly, while these companies have been quick to adopt emerging technologies that help secure design data, they are behind the Industry Average when it comes to simpler steps that can help protect product IP (Table 3).

Table 3: The Competitive Framework - Protecting IP

	Best-in-Class	Industry Average	High Tech
Sharing varied levels of design accuracy with different partners (based on need for detail)	63%	41%	39%
Product knowledge and IP retained by company	82%	69%	63%
Digital Rights Management (DRM) / design security	41%	19%	31%

Source: Aberdeen Group, October 2007

Interestingly, high tech companies report relatively high adoption of Digital Rights Management (DRM) solutions to protect their design data. This was one of the largest differentiators of Best-in-Class performance uncovered in Aberdeen's [Profitable Design Chains](#) report, and the highest technology growth area uncovered by Aberdeen's [Product Innovation Agenda 2010](#) report. High tech manufacturers report adoption of DRM that well exceeds that of the Industry Average and approaches the Best-in-Class. These technologies provide them both with increased control over the individuals who have access to the data as well as control over how long access is available before it expires.

However, high tech companies are a bit behind the Industry Average in terms of other measures, such as retaining product IP or sharing varied levels of their design. The varying degree of copyright protection in different countries puts product intellectual property at greater risk. This means that with a global design strategy, extra precautions are required to keep intellectual property secure.

Design in Parallel

High tech manufacturers report higher adoption of the capabilities and technologies that enable globally dispersed teams to work on designs in parallel as well. In all of these areas, they report adoption that is about on par or slightly ahead of the Industry Average (Table 4). However, given the high tech's rapid innovation aim, they should look to match the Best-in-Class here. Investments in this area are what will allow them to continue to shorten time to market.

Table 4: The Competitive Framework - Design in Parallel

	Best-in-Class	Industry Average	High Tech
Parallel development of different portions of design across design chain	65%	30%	53%
Formal review process after consolidating designs from across design chain	69%	47%	53%
Designers design with visibility to adjacent assemblies or subsystems (in context)	71%	51%	54%

	Best-in-Class	Industry Average	High Tech
Digital mockup	71%	54%	39%
Design collaboration (visualization, review, markup)	76%	55%	53%

Source: Aberdeen Group, October 2007

Interestingly, given the nature of the industry, the area where high tech companies show lagging adoption is in the adoption of technology solutions to support parallel design processes. Specifically, the Best-in-Class are 1.4-times more likely to use design collaboration tools to support parallel product development. By enabling global collaboration in this way, high tech companies will also be better positioned to capture the knowledge and the reasons why design decisions were made which will help them adapt to the global workforce. Digital mockup is another technology that can be helpful to high tech companies. For example, it can be useful as the design components are brought together and evaluated for things such as making sure the PCB fits inside the enclosure.

“Our formal, cross-functional design reviews are imperative to our design process. Each team member looks at problems from their perspective. This allows us to leverage the individual expertise of everyone on the design team and we arrive at a much better solution.”

~ Chris Goldsmith, Director,
Global Systems R&D, Brady
Corporation

Coordinate the Global Design Team

Leveraging global design in a way that can truly speed up product development requires an increased attention to the management of design tasks. Companies will not be able to take advantage of faster product development processes if they have not placed the appropriate investment in preparing the organization to respond accordingly. It's no surprise then, that high tech companies report keeping distributed designs synchronized (49%) and coordinating distributed projects and people (44%) as top challenges. The Best-in-Class, by contrast, approach this challenge in a programmatic fashion, adopting standardized processes and design tools such as formal program and project management to coordinate activities across the design chain (Table 5).

Table 5: The Competitive Framework - Coordination

	Best-in-Class	Industry Average	High Tech
Standard design processes across global design chain (for both internal and external resources)	71%	37%	48%
Formal project and program management across design chain	63%	55%	49%
Central management and control over internal and external designers in design chain	63%	58%	53%
Product Lifecycle Management (PLM)	53%	33%	38%
Product Data Management (PDM)	82%	51%	54%

Source: Aberdeen Group, October 2007

Standardized processes help companies to coordinate activities as well as ensure that different portions of the design can be incorporated with minimal effort. While high tech manufacturers are ahead of the Industry Average, they still fall behind the Best-in-Class, 71% of whom have standardized design processes across the design chain. The Best-in-Class are 46% more likely to have central management over both internal and external designers in the design chain, which also supports keeping designs in synch. Additionally, both the Best-in-Class and the Industry Average are more likely than high tech manufacturers to use formal program and project management across the design chain.

Supporting all of this includes not simply PDM but PLM solutions. PLM includes PDM capabilities, but also supports extended business processes, collaboration capabilities, as well as manage programs and projects. High tech companies are more likely than the Industry Average to adopt PLM, but are less likely than the Best-in-Class to do so. PLM helps to support the business processes and collaboration that enable parallel development. PLM in particular, provides mechanisms to capture knowledge and the means to keep design data centralized and synchronized. In particular, high tech's focus on speed means that "getting it done" is often more important than completing the correct processes. If designers feel that they are being slowed down by a process, it is likely that they will simply stop following it. This can lead to problems with not always being able to track who has the latest version of a design and poor communication of changes. PLM is a tool that helps to automate and enforce these administrative aspects of product development.

Global design includes extra challenges for high tech manufacturers, who are not simply attempting to manage design teams that are dispersed geographically, but across engineering disciplines as well. Products in this industry often incorporate a combination of electronic, mechanical, and software components which compound the complexity of global design. Managing these elements requires a deeper investment in technology than is reported by high tech.

Required Actions

High tech manufacturers can learn from the Best-in-Class to improve how they leverage global design chains in ways that can help manage the complexities of global design while continuing to shorten time to market windows. This includes taking steps to:

- **Invest in the means to protect IP.** In today's evolving market, keeping product IP secure will remain a significant challenge. Without the capabilities in place to keep IP safe, high tech companies are inhibiting their ability to take advantage of some of the strategic benefits of global product development that the Best-in-Class enjoy.
- **Enable design teams to work in parallel.** High tech manufacturers should continue to look to implement processes and

"The number of products and variants we produce has increased, resulting in a general lack of control. Implementing PLM has allowed us access to more competitive markets, compensate for increased product complexity, and gain greater control of configured products."

~ Systems Administrator
High Tech Manufacturer

technologies to support parallel development. This will help to accelerate the design process and put them in a better position to keep costs down as well as boost revenue.

- **Coordinate the global design team.** Keeping the global design team coordinated helps to keep the design in synch. In a fast environment, manufacturers need ways to automate the management of not simply design tasks, but all of the aspects of product development itself.

For more information on this or other research topics, please visit www.aberdeen.com.

Related Research

[*Profitable Design Chains: Global Product Design Comes of Age*](#) October 2007
[*The Global Product Design Benchmark Report*](#) December 2005

[*System Design: New Product Development for Mechatronics*](#) January 2008

Author: Michelle Boucher, Analyst Product Innovation & Engineering Research (michelle.boucher@aberdeen.com), David Houlihan, Research Associate, Product Innovation & Engineering Research (david.houlihan@aberdeen.com)

Since 1988, Aberdeen's research has been helping corporations worldwide become Best-in-Class. Having benchmarked the performance of more than 644,000 companies, Aberdeen is uniquely positioned to provide organizations with the facts that matter — the facts that enable companies to get ahead and drive results. That's why our research is relied on by more than 2.2 million readers in over 40 countries, 90% of the Fortune 1,000, and 93% of the Technology 500.

As a Harte-Hanks Company, Aberdeen plays a key role of putting content in context for the global direct and targeted marketing company. Aberdeen's analytical and independent view of the "customer optimization" process of Harte-Hanks (Information – Opportunity – Insight – Engagement – Interaction) extends the client value and accentuates the strategic role Harte-Hanks brings to the market. For additional information, visit Aberdeen <http://www.aberdeen.com> or call (617) 723-7890, or to learn more about Harte-Hanks, call (800) 456-9748 or go to <http://www.harte-hanks.com>

This document is the result of primary research performed by Aberdeen Group. Aberdeen Group's methodologies provide for objective fact-based research and represent the best analysis available at the time of publication. Unless otherwise noted, the entire contents of this publication are copyrighted by Aberdeen Group, Inc. and may not be reproduced, distributed, archived, or transmitted in any form or by any means without prior written consent by Aberdeen Group, Inc.