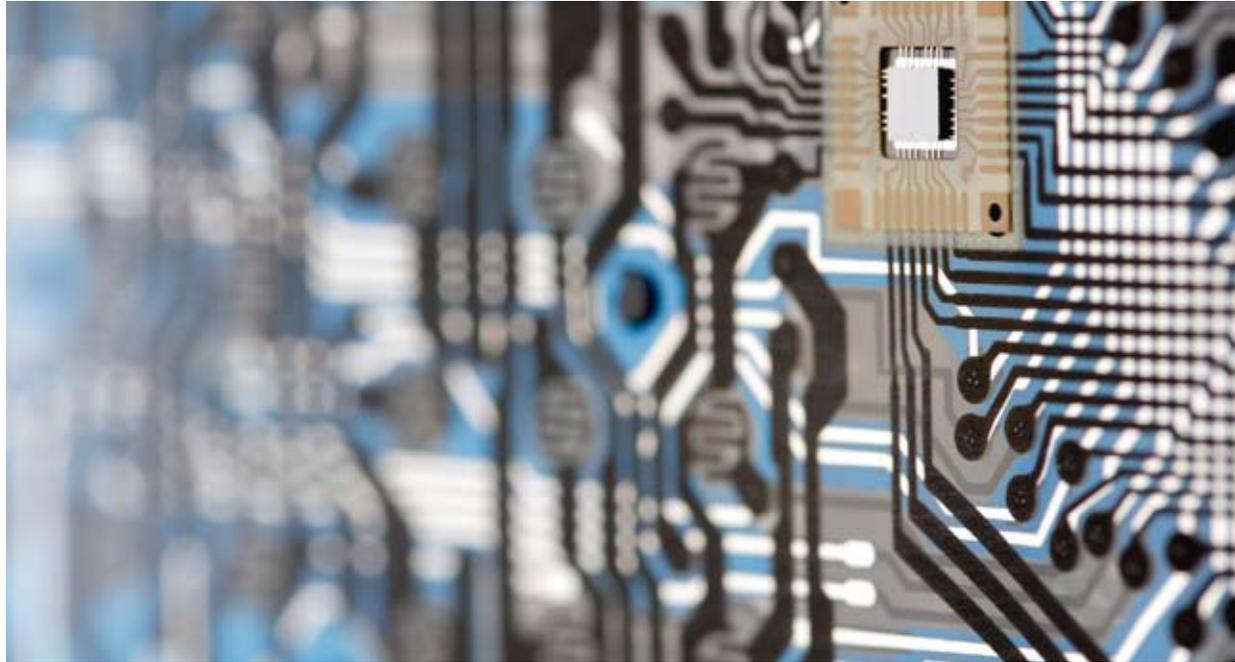


Measuring product development performance in high-tech companies



How effective is your product development organization in delivering new and profitable revenue streams? If you had to measure your product development performance in one key performance indicator, what would it be? Where are the gaps and what are the corresponding improvement opportunities separating the leaders from the laggards in highly successful product development?

Addressing these questions is critical since product development is a key driver of both top- and bottom-line performance in the high-tech sector. Much of these companies' assets are directly linked to product development, and research and development (R&D) investments are typically high as a percent of their revenues. Success in product development is a primary factor in the external perceptions of companies' future performance.

Deloitte and Deloitte's Global Benchmarking Center recently initiated a benchmark study with Oracle Corporation to develop some insights into these issues. The pilot phase of this benchmark looked at 14 business entities across multiple companies in the semiconductor sector.

The study is continuing and will extend to other high-tech sectors, but initial results already provide some measurements that will be of interest for all technology companies.

All study data referenced and presented in this report as well as the representations made and opinions expressed, unless specifically described otherwise, pertain only to the participating organizations and their responses to the Deloitte Global Benchmarking Center study of product development performance conducted in 2009.

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Return on development

This study used the “return on development” metric to identify top performers. Return on development (RoD) seeks to measure the gross margin productivity of product development investments and accounts for all three major variables of product development activity: development cost, revenue attainment, and product unit cost. If you’re looking for a simple equation, return on development equals new product revenue times the new product gross margin percentage, divided by development cost (Figure 1).

Figure 1

$$\text{Return on development} = \frac{(\text{New product revenue} \times \text{new product gross margin \%})}{\text{Development cost}}$$

The benchmark’s financial data is obtained from responding companies’ most recent financial year. Revenues attributed to new products are defined as those for products introduced within the most recent two financial years. New product gross margin percentage is the average for all such new products, and development cost is the portion of R&D expense attributable to specific product development activity (as opposed to pure research).

We identify median performers as those with the 50th percentile RoD performance, and top performers were identified at the 75th percentile of RoD.

The benchmark results highlight some clear differences in performance drivers for different product development business models. It suggests that the success factors are different for companies focusing on incremental product extensions to sustain their core business, as opposed to companies focusing on breakthrough product platform opportunities to create future business.

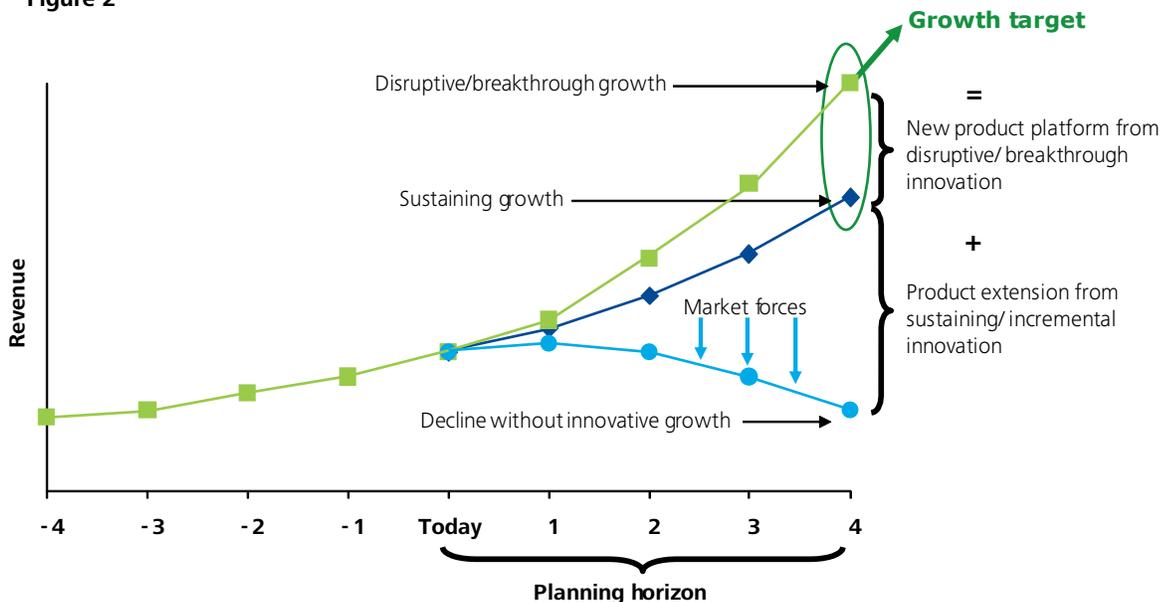
New product platforms are often development efforts to break through to new markets and customers.

They have the potential of generating disproportionate growth and profitability through disruptive innovation.

Their risk-reward equation is more extreme, since they take a radical approach to serving potential opportunities, may require skills or knowledge that are new to the organization, and may even cannibalize existing businesses.

Incremental product extensions protect existing franchises and help defend market share and profitability. They extend product range with derivative products. Consequently, these products can be more stable than new platforms, with more market, technology, and financial certainty around them. Then again, the core product around which they are premised has a finite lifecycle.

Figure 2

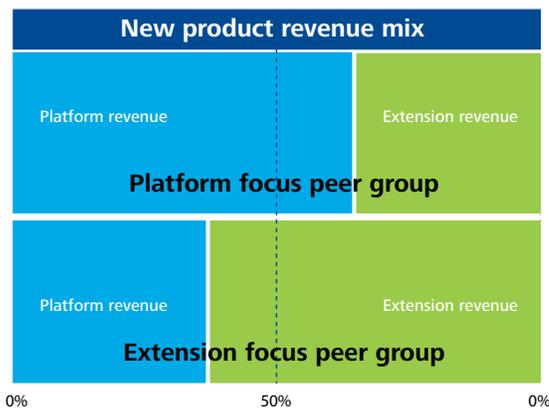


Companies need to decide what balance of these two strategies is right, to not only extract quick return of R&D investments for today’s business but also generate sustained growth from their R&D investments for the longer term (Figure 2).

Taking these differences into account in our study, we observed some different financial and time-to-market metrics among top performers.

We analyzed top performers for two key subsets of the benchmark population: “platform-focused” and “extension-focused” businesses (Figure 3).

Figure 3



The top performers in each group show very different paths to higher return on development.

The top performer focusing on new platforms achieves almost double the median return on development primarily through better new product revenue, hitting nearly triple the top line results of the median performer. The top performer also demonstrates an advantage in product cost, hitting cost targets for new products 25% more of the time. In terms of internal capabilities, the top performer displays focus on information technology for requirements management, design collaboration, and stage gate management, as well as using lean techniques such as standardized development processes and agile development methodologies.

On the other hand, among product extension peers, the top performer doubles its relative return on development through aggressive cost management: development costs as a percentage of revenue are 42% lower than the median performer. They also excel at leveraging common product platforms and intellectual property (IP) in new product designs, with 9 times greater reuse.

Balanced scorecard for product development performance

Clearly, you can’t optimize your product development operation from a single perspective or metric. For sustained growth, high-tech companies must simultaneously improve their product development capabilities while still executing to meet their current business needs.

Figure 4

| | |
|---|---|
| <p>Financial performance: How effective is your product development function in delivering new and profitable revenue streams? Are you getting the desired ROI in new products and technologies?</p> | <p>Operational excellence: How effective are you in meeting your cost targets and generating higher gross margin from new products? How efficient are your product development projects in delivering to your target budget?</p> |
| <p>Customer impact: Are your efforts generating customer satisfaction? Are you meeting market windows with competitive features and performance?</p> | <p>Continuous improvement: Are you investing in capability improvements that will drive performance improvements? Are you raising the bar internally and competitively?</p> |

The study adopted a balanced scorecard in four areas: financial performance, customer impact, operational excellence and continuous improvement (Figure 4). The balanced scorecard helps companies evaluate both the effectiveness and efficiency of their product development function, and zero in on the key improvements in the above areas that will offer the most leverage for their investment.

In the area of financial performance, the study found that the companies in the top quartile of RoD are able to generate high levels of revenue — three times — with better gross margin (an additional 3%) from new products in first two years of product life as compared to the companies in the bottom quartile (Figure 5).

Time-to-market performance drives the top quartile in meeting customer expectations, with leaders delivering new products in half the time of companies in the bottom quartile (Figure 6).

The companies that excel in operational excellence achieve three times the performance in delivering products on time and on budget as compared to the companies in the bottom quartile. High reuse of components and IP in the top quartile suggests advantage in portfolio/platform coherence and approach (Figure 7).

Performance improvement opportunities exist for all companies in continuous improvement utilizing core product life-cycle management technology and applying DFX and lean product development techniques (Figures 8 & 9).

Figure 5
Return on development

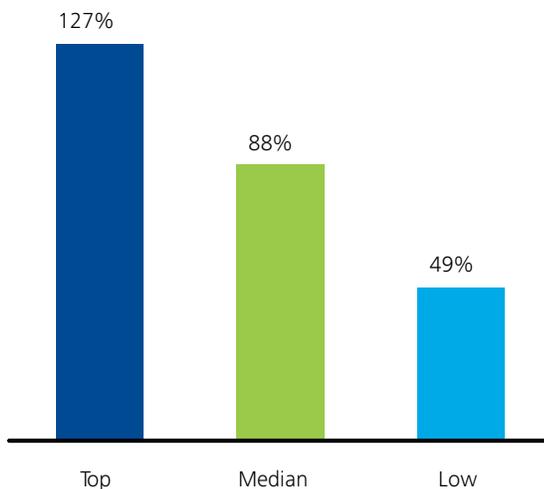


Figure 6
New platform development cycle time (in months)

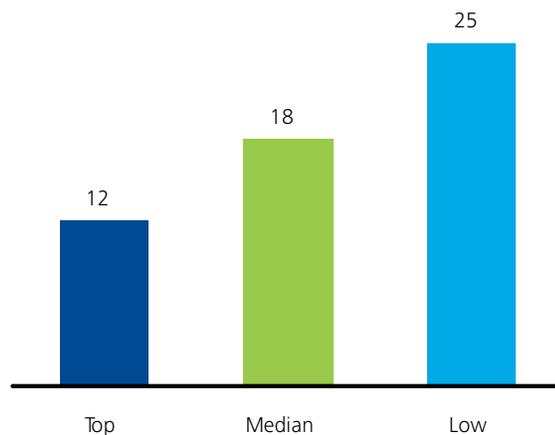


Figure 7
Platform design reuse

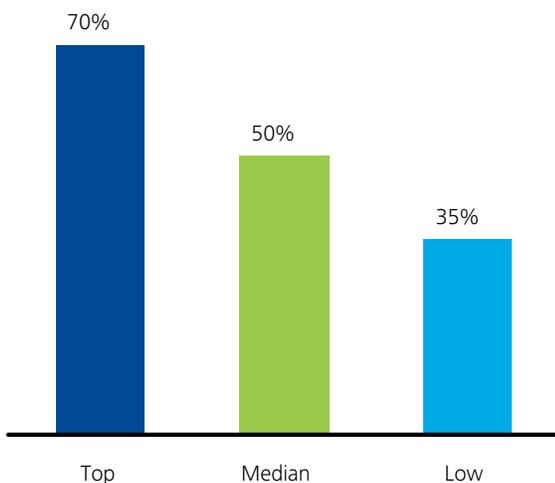


Figure 8
Application software systems supporting new products

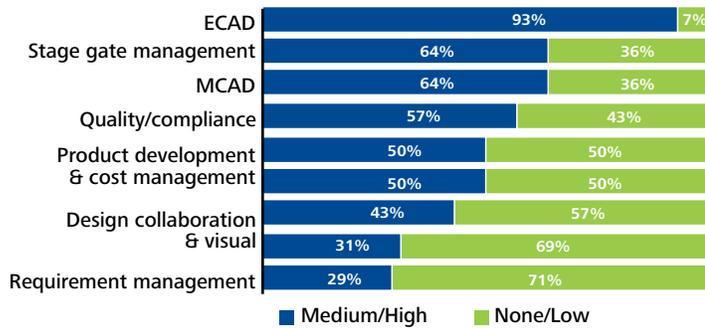
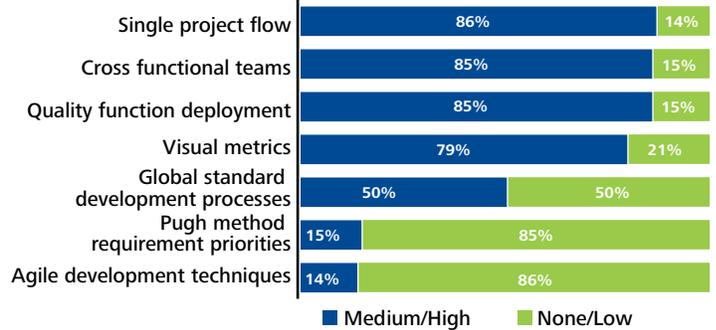


Figure 9
Usage of lean development techniques



Driving success with insight

Benchmarking studies using relevant, current, industry-specific data such as this can help executives quickly identify and quantify potential improvement opportunities; set reasonable, attainable performance goals and analyze trends from one year to the next; establish targets that make sense and evaluate the accuracy of forecasts; and perform competitive analysis that leads to fast, meaningful improvement.

Comparing their company's performance with top performers allows executives to identify relevant insights that are timely to their specific circumstances as revealed by the balanced scorecard comparison. Executives should also consider the following practices in each of the four quadrants of the balanced scorecard. Of course, these practices are not isolated and should be evaluated holistically to help drive improved product development performance (Figure 10).

Figure 10

| | |
|---|--|
| <p>Financial performance: Clearly differentiate platform vs. extension products in the product strategy as the company balances the need for current sustained growth with the must for future breakthrough growth. At each product development stage, consistently incorporate financial and ROI exit criteria to focus effort on the right products. Product development performance should be measured against clear targets.</p> | <p>Operational excellence: Establish a standard program/project management process with executive emphasis and accountability, along with a cross-functional product development process that includes supply chain, manufacturing, quality, finance, and sales. Clearly define portfolio planning and management processes to maximize the use and reach of core IP and platforms.</p> |
| <p>Customer impact: Establish clear "bounding box" on product requirements and willing to withhold promotion to the next stage until the criteria are met. Develop clear processes for voice of the customer (VOC) and competitive analysis. Measure performance for both stage-level and time-to-market program performance.</p> | <p>Continuous improvement: Implement a top-down strategy and roadmap for lifecycle product development process and technology improvements. Identify short- and long-term performance targets. Adopt Lean Six Sigma methodologies for product development to reduce engineering churn and improve time to market and operational efficiency.</p> |

While benchmarking can't identify specific solutions or always provide the answer to every issue an executive encounters, it can provide the insights into a company's relative strengths and weaknesses compared with other organizations. The fact-based, qualitative and quantitative measurement of the product development effectiveness and efficiency can change the way an organization views its performance.

Guided by the benchmark insights and the identified practices, companies can identify and focus on the high return improvement opportunities in product development in their efforts to improve its performance in revenue, margin contribution, and, ultimately, shareholder value.

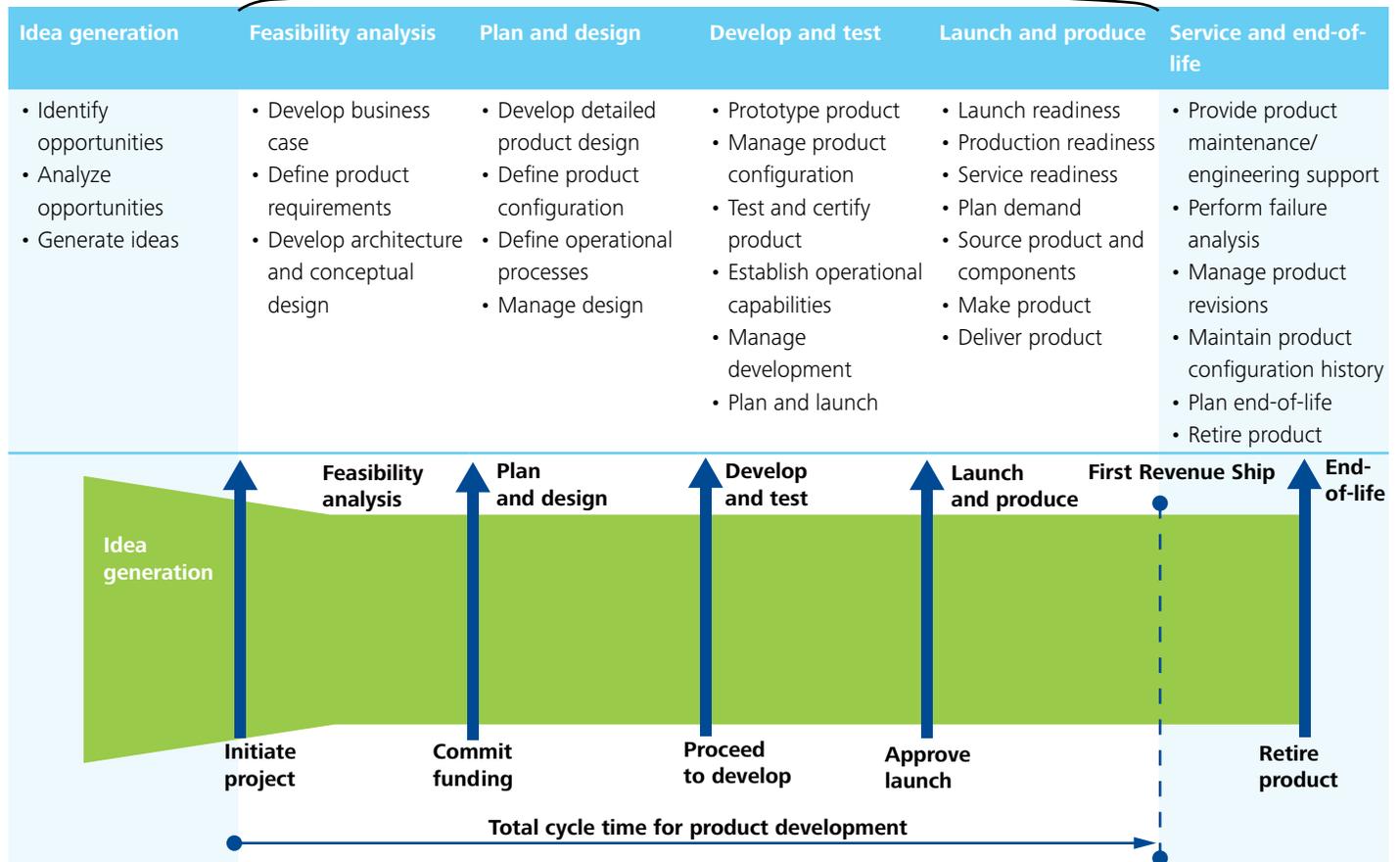
Appendix

Approach and methodology

Methodology

The scope of the program is governed by a refined taxonomy and stage gate definition. This allows a standard set of definitions to guide participants in data collection and facilitates a true apples-to-apples comparison with industry peers.

Study scope



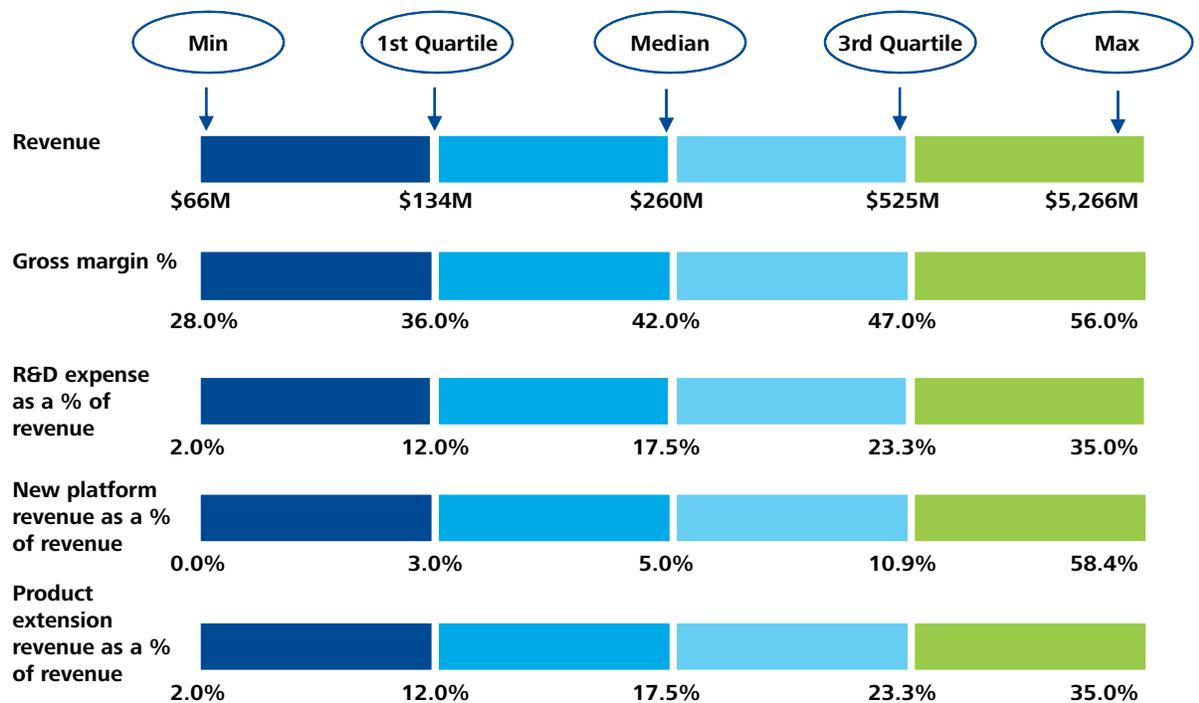
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Profile of participants

Fourteen business units from the following semiconductor companies participated in the pilot study:

- Atmel Corporation
- Cirrus Logic, Inc.
- Freescale Semiconductor, Inc.
- Kopin Corporation
- Lattice Semiconductor Corporation
- ON Semiconductor Corporation
- Zoran Corporation

Profile of participants



Key definitions

$$\text{Return on development} = \frac{\text{New product revenue} \times \text{new product gross margin \%}}{\text{Development cost}}$$

- **New product revenue** is attributed to products introduced within the most recent 2-year horizon
- **New product gross margin %** is the average gross margin percentage for new products
- **Development cost** is a subset of R&D expenses. The annualized P&L cost to conduct development project activities
- **Median performer** represents the company with the 50th percentile of performance for return on development
- **Top performer** represents the company with the 75% percentile of performance for return on development

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Participation in this ongoing study is open to all high-tech companies.
For information about participating in this study, contact:

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