

Harry Campbell

The hunt for revenue:

A case for further granularity

Uncovering additional market opportunities can be a critical driver of growth in today's semiconductor markets. But how should executives and managers broach the exercise? Three approaches can help ensure that markets are assessed at the appropriate level of granularity.

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As semiconductor players consolidate, the opportunities for growth through M&A have diminished. Now well documented, the supply of semiconductor start-ups has dropped at a 13 percent compound annual rate over the past decade, and the number of new companies formed has slipped to under 50 a year, compared with 144 in 2001 (the year the Internet bubble burst). In the face of these conditions, semiconductor players that seek to grow beyond their core business are increasingly challenged in identifying markets and building sufficient confidence in the attractiveness of those markets.

Based on the observation of these trends across a number of maturing markets, McKinsey has

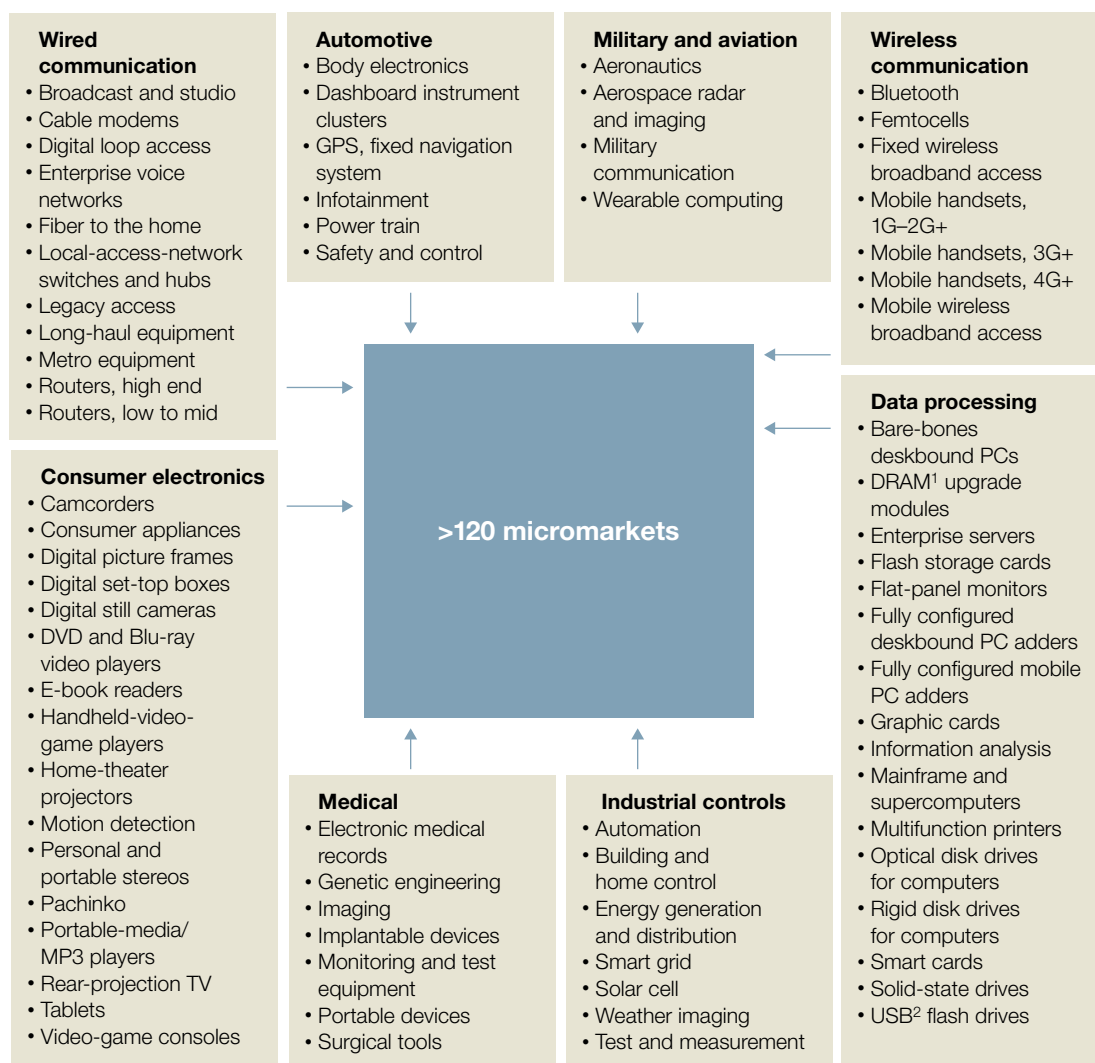
developed an approach called the “granularity of growth,” which focuses on finding opportunities in emerging businesses while defending and extending core businesses.¹ We believe that certain elements of this approach have high applicability to semiconductor companies and move beyond what companies typically do when trying to identify market-growth opportunities. Specifically, semiconductor companies could benefit from assessing micromarkets rather than broad categories, looking around corners to consider the impact of disruptive trends, and getting closer to their customers and end users. Such a granular approach to assessing markets is more likely to identify pockets or niches that could be attractive as a result of subtle

¹ Mehrdad Baghai, Sven Smit, and Patrick Viguerie, *The Granularity of Growth: How to Identify the Sources of Growth and Drive Enduring Company Performance*, Hoboken, NJ: John Wiley & Sons, 2008. For additional details, see mckinsey.com.

Exhibit 1

Companies must go beyond high-level end markets and analyze micromarkets.

Example micromarkets



¹Dynamic random-access memory.

²Universal serial bus.

shifts in customer needs or disruptive technologies specific to a certain submarket or application.

Pockets of opportunity

As a first step to achieving this additional level of granularity, companies should build their planning and market intelligence around an analysis of micromarkets. As an example, the medical-device market is significant for many semiconductor companies, but is it helpful to assess that market's overall growth rate?

That may work for overall portfolio decisions, but it is not as useful as breaking the market down into application subcategories that would include electronic medical records, genetic-engineering technologies, imaging technologies, implantable devices, monitoring and test equipment, portable devices, and surgical tools. By examining these specific markets in this granular fashion, we have consistently seen untapped opportunities appear (Exhibit 1). The discipline that this calls for is a shift from

Exhibit 2

Companies should try to anticipate disruptive trends.

Example, data-converter sales in smart-meter application

	Trends affecting smart-meter serviceable addressable market	Impact on growth	Implications for analog players	Market growth estimate ¹ vs. adjusted growth
Number of units of application	China smart-meter growth 2x 12% average	▲	Are your China sales commensurate with a 2x average growth rate?	12% vs. 13%
	Smart transformers replacing smart meters	▼	Are you "product ready" for the smart-transformer market?	
Semiconductor content per application	High-end application-specific standard products replacing stand-alone analog-to-digital converters	▼	How aligned is your product portfolio to integration trends?	0% vs. -3%
Average selling price	Supplier pressure, die shrinkage, and analog-to-digital conversion	▼	Have you considered worst-case scenarios of average selling prices on product lines?	-3% vs. -4%
Serviceable addressable market	<div> <div>Market's estimated growth</div> <div>9%</div> </div> <div>vs.</div> <div> <div>Estimate using our approach</div> <div>6%</div> </div>			

¹Growth rate: 2010–15 compound annual growth rate.

Source: ABI Research; expert interviews; McKinsey analysis

How do you know a disruption is coming? Looking around corners means taking the time and actions to provide insight beyond the latest market research or analyst report.

planning at the broad product-category level and instead developing medium- and long-term plans based on micro-assessments of applications (rather than products).

Two additional lenses might then be applied to this more granular approach. The first is to make geographic comparisons (at the granular level of countries rather than the broader level of continents) and the second is to assess opportunities in applications adjacent to the current chip portfolio. As an example, in the industrial-automation submarket, semiconductor companies could explore programmable logic controllers (PLC) or the operator-interface market specific to different applications (such as process manufacturing in Brazil, which is a particularly high-growth opportunity). Analysis shows these niches may be smaller than the overall automation market, but they are growing slightly faster, at more than 9 percent per year, significantly higher than the automation market as a whole.

Looking around corners

How do you know a disruption is coming? Looking around corners means taking the time and actions to provide insight beyond the latest market research or analyst report. A disruption seen at the level of the overall market is often an

evolution when analyzed at the level of the system and value chain. The effort involved to find these disruptions is in a detailed approach to application and system-level design evolution.

As an example, let's examine the opportunity in analog-to-digital converters (ADCs) in smart meters (Exhibit 2). Viewed at a normal component-market level, the overall revenue in the addressable market for analog-to-digital converters in smart meters is expected to grow by 9 percent a year. In addition, the consensus estimate for unit growth is forecast at 13 percent annually over the next two years. That would seem to be a robust opportunity. However, a thoughtful evaluation of the system level and value chain indicates that a change in technology elsewhere in the value chain could have a significant disruption: the transition to smart transformers on power poles could reduce the need for stand-alone ADCs on meters. That evolution might make the opportunity for analog semiconductor companies in the ADC market a lot less attractive.

In this example, the impact is a significantly weaker outlook for the smart-meter data-converter market (making it likely to grow by 6 percent a year over the next three years

rather than by the 9 percent that the analyst and market-research consensus expects).

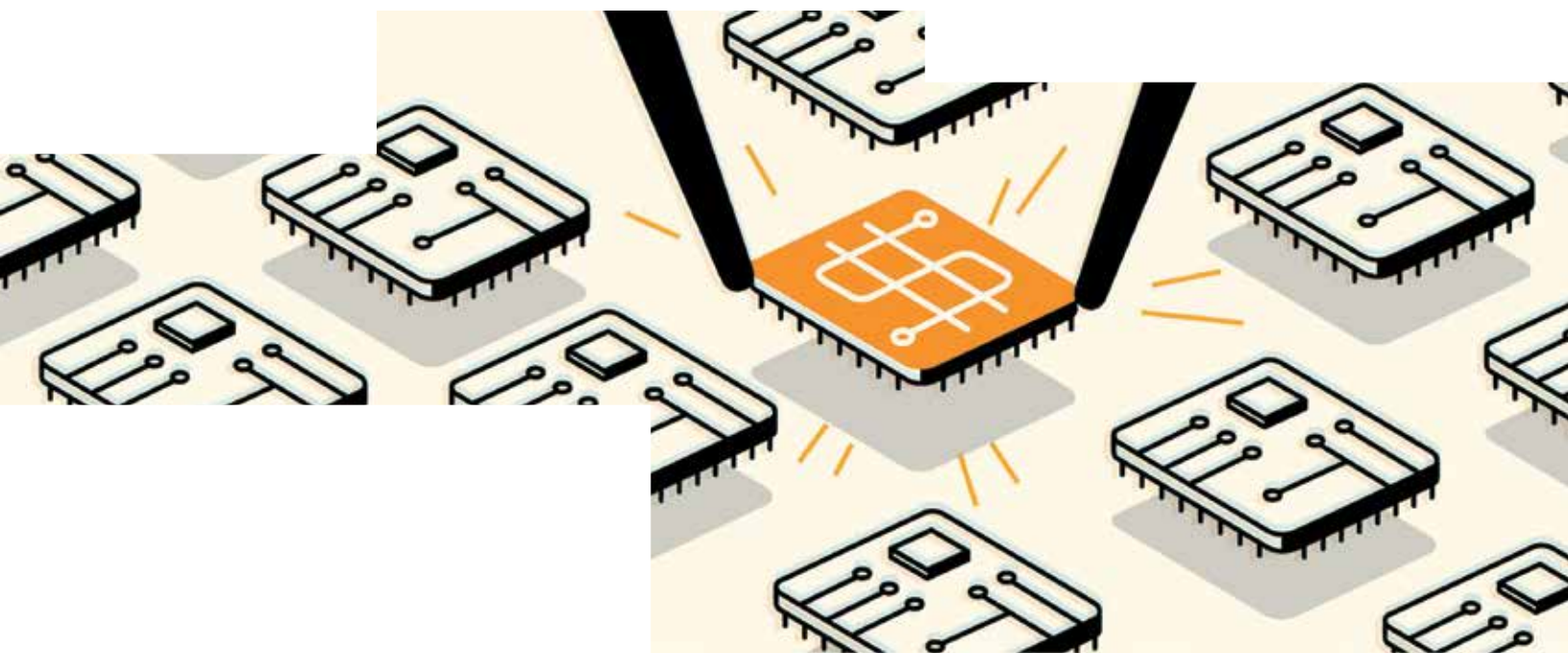
Getting closer with customers and end users

Most semiconductor companies that perform well already know their customers and the main decision makers within those companies. However, a handful of activities can help in gaining further insight into the customers' needs and their own markets. One such activity is to develop customer intelligence through an advisory board, a strategy now used by most companies.

A less traditional activity to gain intelligence is to create lead-user groups, where major customers have the chance to comment on products in development. There is a real benefit to be realized because this effort allows companies to gather feedback on the product pipeline and gain insight

into customer needs. These interactions, which can be supplemented by follow-up conversations, can help build stronger relationships with participants. Companies must decide what functional groups to involve in this process. Broadening the group to include technology, product marketing, and sales can provide valuable customer insight to multiple parts of the company early on in the process.

We noted that it is essential to know a lot about your customers, but frequently they have different needs than their own customers do. And the ability to gain insights into these end users' needs is often obfuscated when the products are sold through a distributor or third-party assembler. Why should this matter now more than it did in years past? Because the anticipated growth in embedded, connected devices in the physical world (the Internet of Things) and forecasted



growth in wearable and mobile devices beyond the smartphone mean that more specific knowledge of application requirements will become increasingly important for semiconductor companies. For example, say a semiconductor company wants to sell data converters in the industrial market. However, its industrial customers may use the chip in a PLC, which is then sold to an oil refinery. Let's examine the needs of these different players: the industrial company wants the chip to integrate easily into the PLC, and it wants a low price on the component. The refinery's primary concerns are uptime and reliability. In the past, the system-level designer typically took care of making the chip rugged, but as the market opportunity grows and pressure on system costs intensifies, the chip designer would do well to develop a higher-reliability product that can help reduce overall system cost. The example, though simple, reinforces the

increased need for semiconductor players to understand the application requirement, particularly in the embedded world.



In sum, semiconductor companies stand to benefit from taking a more granular approach to sizing markets and upgrading their approach to market-potential analyses. By assessing micromarkets, employing approaches to look at system and value-chain trends, and by getting closer to customers and applications, companies stand to find opportunities for growth where market research and analysts fail. With these inputs in place, the revenue engine could be further revved up, helping semiconductor companies grow more robustly in the years ahead. ○



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