# Thorlabs: Designing a Business, Part 1

In the first installment of a two-part article, Thorlabs founder and chief executive **Alex Cable** shares a personal view of some core business design practices and concepts underlying the company's success.

A technology business needs to be consciously designed for profitable growth. Since its founding in 1989, Thorlabs has pursued such growth as a consistent goal—and with a pretty good case to claim success: amid an overall photonics market that typically grows 5 to 8 percent each year, we have achieved compound annual sales growth of 17 percent. And our profit on those yearly sales has proved sufficient to fund the next year's growth, ensuring that we can build our business without significant borrowing.

Such double-digit growth means that Thorlabs will double in size every five to six years, and that, consequently, I have a different business to run every half-decade or so. A business built for that kind of growth needs a firm foundation, but also a willingness—indeed, a drive—to continually reassess, re-invent and evolve, sometimes incrementally, sometimes rapidly. Multi-year projects related to infrastructure often need to be designed and constructed well ahead of actual need, to keep the company well-prepared for the challenges it will face.

Product driven or market driven?

Every business has its own unique practices. Yet I believe that several fundamental concepts, carefully incorporated and leveraged, provide for a business design that can endure. These include a burning desire to

Thorlabs sales growth, 1989-2016 (US $)
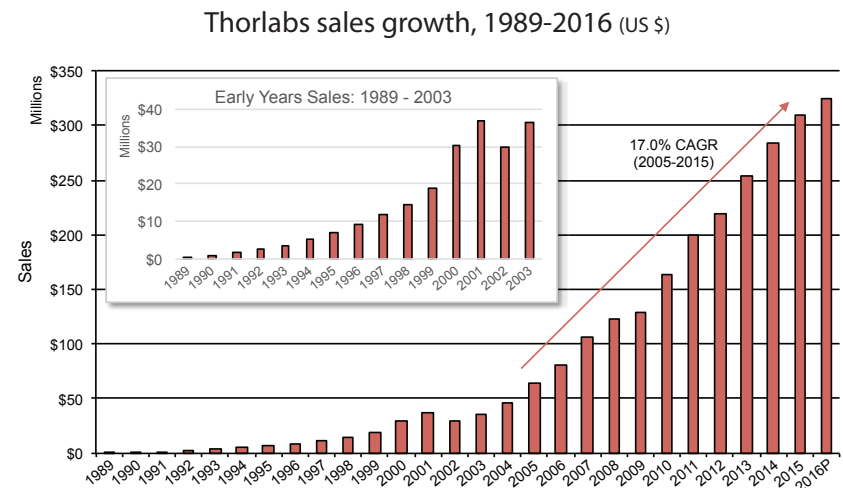
run the business; truly knowing the customer; providing unique value to your target audience; and seeking out market needs, rather than simply fulfilling some need of your own—as well as rolling all of these up and incorporating them into an overall strategy.

The first step is to determine if you are heading in an entrepreneurial direction because you believe you have a great idea and want to commercialize it—the "product-driven" model—or if you have a desire to build a business but have an open mind regarding the actual product or service—the "market-driven" approach.

In a product-driven model, you have a product and plan to find a place for it in a market—a challenge not to be underestimated. Many start-up teams associated with university-generated technological advances underestimate or miss

the unique challenges inherent in commercialization. Nurturing a new technology often takes 10 to 20 years, and even after that, many never actually become profitable.

A market-driven approach looks to find an opportunity in a well-defined but not overly constrained market, with identifiable target customers that have identifiable needs. Such market opportunities can be found in under-served areas, where needs aren't being addressed, and in over-served areas, where unneeded features are driving high prices. The academic market of the early 1990s, for example, was under-served: many companies wouldn't sell their products in small quantities, and those that did often did so reluctantly.

While I've experienced both opportunities a number of times, I've come across many more product-driven than market-driven start-ups.

While the product-driven approach can seem to carry higher risk, it also typically chases a larger reward, and thus commonly gets the majority of the attention from venture capitalists. In designing Thorlabs, my approach was to start market driven, and add higher-risk, higher-reward product-driven opportunities over time. Of the 25 or so acquisition opportunities that I review each year, most are product driven, with an exhausted investor base and, at times, an exhausted management team.

Knowing the target audience

Having a well-understood target audience is critical to both the market-driven and product-driven approaches. A well-chosen target audience can create brand appeal and business validation. For instance, if you appeal to the thought leaders within a field as your target audience, their use of your products adds validation; as a consequence, you win the much larger customer base responsible for the bulk of sales.

In the early years of Thorlabs, the target audience was comprised of academics and those working in academic-like industrial labs. It's a diverse population, sharing a culture strongly rooted in the scientific method. That culture has heavily influenced our marketing. There's a degree of integrity in the community that has allowed Thorlabs to implement low-friction practices that might not work in other markets.

In the past, I've used six categories to understand a new customer segment: demographics, psychographics (qualitative facts regarding hopes, desires, feelings, fears, and emotional context), behaviors, consumption

Alex Cable, Thorlabs founder and chief executive

habits, motivations, and needs. Our market analysis starts by studying the worldwide community of scientists that we serve, as well as that community's social norms, traditions, and ethics. Having such a well-defined, broadly studied target audience was a perfect foundation on which to build our market-driven focus.

Based on this detailed analysis, Thorlabs defined its target audience as being *the time-starved technologist working to advance the science and technology of photonics*. Combining this target audience with a comprehensive customer-centric strategy has allowed us to consistently capture market share year after year for the past 26 years. In the second installment of this article, in the September issue of OPN, I will look at a few of the components of that strategy, and how they have evolved with the market.

Ideas are plentiful

There's no shortage of product ideas. I can go to any of hundreds of technology-licensing offices attached to one of the roughly 350 U.S. research universities, and countless others worldwide, and find great product ideas. Thorlabs has used its direct customer access, its relationships with licensing offices and individual inventors, and the peer-reviewed literature to identify and validate such opportunities and the markets for them.

Ideas for establishing a market-driven business aren't as easy to establish. Think about launching a new brand of bottled water: H_2O is about as generic as a product gets, so being market driven is nearly the only option. In this case, the challenge then shifts to branding and brand positioning vis-à-vis a well-defined target audience. This is a great example of the ultimate marketing challenge.