BY JIM CARROLL



The Nano-cycle

IN A WORLD THAT OPERATES ON "INTERNET TIME," PRODUCT LIFE CYCLE IS SHRINKING FAST

Back in 1843, a fellow named Henry Ellsworth commented, "The advancement of the arts, from year to year, taxes our credulity and seems to presage the arrival of that period when human improvement must end." Such a silly statement – and even more bizarre when you realize that it was uttered by the first commissioner of the US Patent Office.

Ellsworth failed to see that invention and innovation would in fact ▸

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become the cornerstone to business success for many organizations. And since he couldn't even conceive of a world that operates on "Internet time," he couldn't foresee that the world economy was headed into a period of what we might call hyper-innovation.

A period of time in which corporate organizations would find themselves with a need to innovate – or perish.

YESTERDAY

For as long as mankind has been around, members of the species have been busy innovating and inventing. And with so many busy minds at work, there are also so many things that can be invented, re-invented and developed yet again. There are over 50 types of paper clips, for example, each covered by a different patent!

Having an ongoing stream of new products has become, for many companies, the cornerstone to success. Indeed, some of the most widely recognized corporate names of the last 100 years have been what we might consider innovation superstars.

If we measure them by the number of patents granted, then IBM is the clear leader: it obtained 1,742 patents in 1997 and registered 2,658 the following year, an increase of 53 per cent. It was the sixth year in a row that IBM had led the patent race, and indicative of an organization that has made new product development a fundamental factor in its ongoing success.

Phillips Petroleum Company is another of the superstars. It received its 15,000th patent in 1998 – the equivalent of obtaining a new one almost each and every day since 1925.

Of course, the granddaddy of inventive firms through the last century has to be 3M, an organization with a firmly entrenched culture of innovation. Its "15% rule" requires that all employees devote at least 15 per cent of their time to thinking about new products. The impact has been stunning: the organization now sells more than 50,000 products worldwide, and keeps its product line fresh with approximately 450 new entries each year.

TODAY

Companies such as these superstars have helped to fuel an ever-increasing rate of innovation.

Statistics maintained by the US Patent and Trademark Office indicate that the pace of innovation accelerated greatly during the final years of the 20th century. The number of patents being granted rose 15 per cent between 1991 and 1997, and the number being applied for rose 15 per cent in the 1996-1997 period alone.

Any company operating in the global computer or telecommunications marketplace finds itself in a situation in which it must invent quickly and constantly. Consider YTC Telecom, a Korean-based telecommunications equipment maker. In order to keep up in the marketplace, its CEO has determined it

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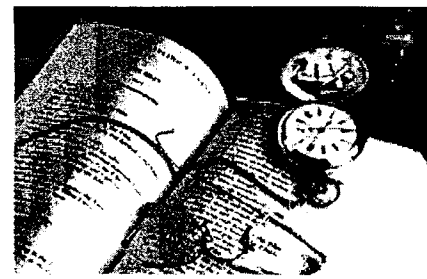

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must invest at least 20 per cent of its total revenue each year in new product research, so that the firm can introduce at least two new products a year.

This attitude is typical in the high-tech world: at Excel Communications, the CIO notes that his job is one of "revenue enhancement," to be accomplished by establishing new products and services on an ongoing basis.

Yet in many other industries, the level of R&D investment is much lower. Worldwide, according to a survey by the British Department of Trade and Industry, corporate spending on R&D averages just 4.6 per cent of sales.

TOMORROW

That low percentage isn't likely to last, however. The near future promises to be one in which – simply to survive – every company in every industry will have to consider getting on the innovation bandwagon.

The reason for this is the Internet. In past times, R&D information moved about slowly, through reports in academic journals, conference discussions and long-term joint ventures. Given the leisurely pace of the exchange, products typically had long life cycles.

The Internet has changed all that. It functions like a giant, global Petri dish, in which information about new developments and new technologies is shared on a basis that has never occurred before. By permitting the rapid dissemination of knowledge throughout all industries worldwide, it is further accelerating the already rapid rate of technological change.

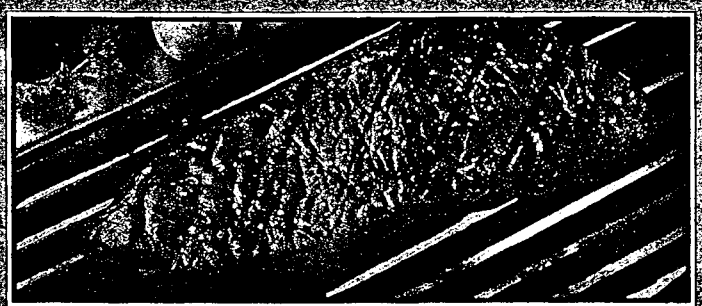
The impact of a world of constant, relentless innovation means that the life cycle of many products will become excessively short: pause for breath, and your competitor will release something new. The impact for the typical company is stunning: the CEO of Enron, a major energy company, believes that within 10 years, half of the organization's revenue will come from lines of business that it does not have today. The only way to reach this goal is to ensure that the R&D pipelines are full.

This isn't unusual: a 1988 Deloitte & Touche survey of the manufacturing sector found that executives expected product innovation to be the primary source of new growth, and new products to continue to account for 50 per cent of sales revenues for the foreseeable future.

Quite simply, the Internet is leading us into an era in which a product life cycle can be remarkably short – all too short, for many companies. Constant innovation, rather than being a luxury, is now set to become a necessity. ■

Jim Carroll's newest book, *Light Bulbs to Yottabits: How to Profit By Understanding the Internet of the Future*, examines the product nano-cycle, and what happens in a world of excessively short product life cycles.

Unfortunately, this is not one of the items you'll find in the duty-free catalogue.



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