



*The Power of Innovation [fig.3]*

## Ground-breaking Innovation Management Concepts from the Past 25 Years

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The term innovation comes from the Latin word *innovare*, which means “to renew or change”. Today innovation management is seen as “the creation and capture of new value in new ways”. Our evolving understanding of the essence of innovation is marked by the occasional emergence of ground-breaking new management concepts. We have selected the six concepts that in our opinion have fundamentally shaped the meaning of innovation management in the past 25 years. And we are pretty sure they will stay highly relevant in the next 25 – just check whether you recognize the challenges raised in the side boxes.

### 1986: Stage-gate product development

Robert G Cooper introduced the stage-gate product development model in his book *Winning At New Products*. It was the result of observing numerous product launches all over the globe for 20 years. At that time models for screening and ranking ideas and selecting projects were readily available. However, winning at new products calls not only for the selection of the “right” ideas and products but also for the effective and efficient management of the product development process all the way to launch. This is exactly what the stage-gate product development model aims to achieve.

The model divides a new product development project into discrete and identifiable stages, each preceded by a gate that serves as a go-or-kill decision point. The model promotes efficiency because each stage consists of a set of prescribed, multifunctional and parallel activities. It also promotes effectiveness because each gate specifies a set of deliverables and a list of criteria enabling informed decision-making. Early examples of firms implementing the stage-gate model, in whole or in part, include Exxon Chemical, Procter & Gamble, DuPont and Polaroid.

*How often do we fail to kill a project sufficiently early, before resources and investments have run up?*

### 1991: Strategic R&D portfolio management

With their book *Third Generation R&D*, Arthur D. Little consultants Philip Roussel, Kamal Saad and Tamara Erickson shocked both general managers and R&D managers. They stated something that seems obvious now: that general and R&D managers should have strategic conversations so that the R&D portfolio supports the company's strategy.

*How can we justify our R&D investment to investors and secure a strong competitive position for the future?*

Until then companies often still followed the so-called strategy of hope: give R&D a bucket of money, put them far away in a nice setting, and hope for the best. More advanced companies would already select individual R&D projects on the basis of their specific rewards and risks. But the most advanced companies – the followers of third generation R&D management – would align the overall R&D portfolio with the business strategy and ensure balance in terms of risk, reward and time-to-completion.

Six years later, in 1997, former Arthur D. Little consultant Chris Floyd published the book *Managing technology for corporate success*. It elaborates the thoughts of Roussel, Saad and Erickson by not only addressing the question of how to decide which technologies to invest in, but also taking into account the question of how to manage and exploit them for maximum commercial benefit. The book describes how to make well-informed make/buy/colaborate decisions regarding existing and required future technologies in relation to overall strategic goals. This becomes necessary as the technology content of products increases and product and technology life-cycles shorten. Companies simply cannot afford to invest in all emerging technologies.

### 1991: Lean product development

The lean product development concept emanates from the International Motor Vehicle Program at MIT and its studies of Toyota's production and product development principles. James Womack, Daniel Jones and Daniel Roos first described the concept in terms of design principles in the book *The Machine That Changed The World*. Much

*How much time and effort do we waste due to needless iterations in our new product development process?*

as for production, lean product development sets out to reduce waste and lead times. This is done by adhering to a set of development principles and a specific way of thinking, supported by tools for efficient problem-solving, communication and other tasks.

Since the publication of the book several other authors have thoroughly addressed multiple dimensions of Toyota's lean thinking on product development. Prominent work has been done by Jeffrey Liker and Michael Kennedy, who set forth a number of lean tools such as set-based concurrent engineering, the chief engineer, value stream mapping and visual planning.

### 1995: Disruptive innovation

Clayton Christensen introduced the concept of disruptive innovation in a 1995 article and addressed it more thoroughly in the book *The Innovator's Dilemma* two years later. He presents multiple examples of leading companies that fail to stay at the top of their industries due to new technologies that disrupt the market place. They fail because they focus too narrowly on their most profitable customers and businesses. By doing so, they disregard new technologies that appeal to small or emerging markets but – at least initially – don't meet the needs of mainstream customers. Yet pioneering firms do launch new technologies and products in precisely these disregarded small market segments. They then gradually improve them until they eventually outperform the established technologies and products.

*How has a hitherto insignificant player surprised us again and grabbed a leading share in this growth market?*

The technology underpinning a disruptive innovation is not usually radically new, but disruptive innovators use the technology to offer customers radically improved performance on hitherto neglected product attributes. So-called "low-end" disruptive innovations prosper in less advanced segments of the market, where the technology can establish itself and develop further (e.g. the mini steel mill).

### 1997: Business model innovation

Business model innovation emanates from the need of a company to rejuvenate systematically the way it does business as disruptive innovations threaten its position.

*How can we turn the economics of a business upside down and enter a market cosily carved up by the incumbents?*

Business model innovation is no longer about a new product or process but is about the way the company does business and makes money. Clayton Christensen addresses this need in *The Innovator's Dilemma*. In subsequent publications he shows that four distinct components define a business model: the customer value proposition, the profit formula, key resources and key processes. Business model innovation is the modification and alignment of these components to find new market segments and optimize revenues.

In recent years other people have presented more hands-on approaches to business model innovation. Alexander Osterwalder, for instance, introduced a step-by-step guide and innovation tools for creating your very own business model. However systematic and repeatable approaches to business model innovation are still not firmly established. Apple's iTunes store, IKEA's concept of flat packages and outsourcing of assembly to customers, Amazon's bazaar-like online platform for new and used items and Ryanair's low-cost air travel are legendary examples of business model innovation.

### 2003: Open innovation

Henry Chesbrough was the first to describe open innovation as a concept in his book *Open Innovation: The New Imperative For Creating And Profiting From Technology*.

*Should we keep our innovation secrets to ourselves or should we create an open platform to accelerate growth?*

Through observation of a number of high-tech companies, he documented practices associated with the paradigm shift from closed to open innovation. Based on those findings, he summarizes open innovation as "the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively." In his 1988 book *The Sources Of Innovation*, Eric von Hippel developed the concept of user innovation, thereby focusing on value

creation. “Open innovation” goes one step further by focusing on value capture and finding the most appropriate business model for commercializing a new offering. It is about exploiting spillovers from a company’s own research, for example through technology spin-offs and licensing.

Today there are many examples of open innovation initiatives within companies, as well as examples of companies that make open innovation their very business. InnoCentive, for example, offers a market space for “seekers” and “solvers”, thereby joining up companies with problems and talents with the know-how to solve them.

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