

# The Next Big Thing?

Trends Shaping Nordic Innovation

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## **The Next Big Thing?**

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*Nordic cooperation* has firm traditions in politics, the economy, and culture. It plays an important role in European and international collaboration, and aims at creating a strong Nordic community in a strong Europe.

*Nordic cooperation* seeks to safeguard Nordic and regional interests and principles in the global community. Common Nordic values help the region solidify its position as one of the world's most innovative and competitive.

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# The Value Chain as the Innovation System



For the last 15 or 20 years innovation researchers and policy makers have adopted the habit of analysing innovation systems and of thinking about them from the point of view of the public sector institutions which are intended to support them. Innovation is about business. It is “done” by companies. It is a risky, collaborative, iterative, self-correcting activity that spans entire value chains, not individual companies, research labs or university departments.

And yet the research environment seems almost oblivious to this fact. A lot of work has been out on innovation policies, but relatively little on how the practice of innovation evolves. For example, if innovation is all about collaboration, then what is the nature of this collaboration? How are these collaborative efforts established? What skills are required? How can they go wrong, and what kind of support services might be useful? Finally, and from an organisational perspective, while tools such as portals, on-line market places, brokerage services and business-oriented social networking services become more widespread, how does the practice of innovation evolve, and what new opportunities and challenges will arise as a result?

A survey of the literature on innovation gives the distinct impression that the key players are not the companies and their supply chains, but universities and national research institutes. It is true that these institutions have a role to play, but such has to be seen in context. Large innovative companies such as IBM or Intel collaborate with between 500 and 1,000 universities and research labs located in most of the countries of the world. Merck carries out almost 12% of all research in the domains of interest to its business – possibly more than any single country. Companies are responsible for two thirds of research carried out in the world. Productivity and efficiency is important to such companies. They always need to do more for less. They not only carry out and source research, but also often administer their own corporate universities. These are amongst the largest learning systems in the world, involving as many as half a million people, including their own staff, together with the staff of their supply chain partners and small research teams dispersed among their hundreds of knowledge partners.

Innovation is organised and managed by professional corporate managers. It consists of many complex and risky inter-linked activities distributed across the value chain in large, dynamic networks. This view is

useful because it reflects the reality in terms of how innovation appears from a business perspective. It is a very different picture than that we experience from a public research laboratory or public sector body, and arguably it should receive more attention from innovation researchers than has been the case in the past.

Companies such as Wal-Mart, P&G and Intel play an active role in the development of innovation and entrepreneurship among their supply chain partners. They often collaborate with and invest in small enterprises operating in their sectors of interest. They provide market intelligence and orientation on customer needs. They provide access to tools and finance, support for marketing and distribution, and business service brokerage. These companies embody a wide range of models and philosophies for innovation support. Such models have so far received scant attention from innovation researchers. They can teach us a lot about the management and organisation of innovation.

It is quite natural for someone who is paid a salary to work all day in a lab, collaborating with his or her colleagues, to employ students to carry out development tasks as part of their study courses and avail themselves of the available space, raw materials and equipment, in the hope that some day they might discover something. Such requires dedication and flair, but discovery in this context is almost inevitable. However, this is not innovation. Innovation deals with finding a market and adapting the invention to the market in question. It sometimes involves solving hundreds of additional technical problems, most of which are difficult but of no great scientific interest. These constitute the essential success criteria.

Yet the issue of the market remains, and this is a problem of an entirely different kind. The questions of who will use the innovation and who will pay are often two entirely different matters. Who will make it? Who will distribute it and how? What will happen in the event of breakdowns or failures – when the product is returned, or when requests are made for modifications? For most researchers this is where the system falls apart. They can usually obtain assistance for the straightforward aspects of the process, but not for the subsequent stages. Amar Bhidé has

interviewed several VC-backed start-up companies, of which one remarked that<sup>37</sup>

“The way you sell enterprise software in Europe and Japan is not conducive to start-ups. You have to go through resellers and third-party channels. So you touch your customer much less. The customers themselves are often more risk averse and leery of adoption early stage technology from a small U.S. company.”

This story illustrates the point that the creation or invention of a technology or solution by an innovator is at best only half the battle. The real challenge to innovation is the second step. Real life examples illustrating how innovation is supported in the supply chains of major firms provides us with some clues as to how this can be tackled. The following examples are not exhaustive, but may serve to illustrate this new way of examining, analysing and understanding innovation systems.

Example 1: Intel is well-known for manufacturing micro-processors, and most people are familiar with the logo “Intel Inside”. Much of the company’s research and innovation activities naturally involve microchip design and production. However, the devices produced by Intel are deployed in a variety of different environments. As such they have to be designed in anticipation of specific user needs. These needs may be expressed in terms of levels of performance or speed, physical size, and energy consumption. The company must anticipate how they eventually will be used in applications such as servers, computers and laptops, supercomputer arrays, mobile phones, video monitors and games systems. For this reason Intel also carries out a great deal of research with the buyers of its chips and their customers in order both to correctly anticipate future needs and to demonstrate new applications. Intel also works with the software developers who write the code that makes the chip work in the purchasers’ respective applications. The makers of electronic goods, together with the developers who provide the software and services that make them run, all play important and shifting roles throughout a series of multiple cycles of design, development and production that may continue for several years.

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<sup>37</sup> Page 112 of “The Venturesome Economy – How innovation sustains prosperity in a more connected world” by Amar Bhidé published in 2008 by Princeton University Press, ISBN-13 978-0-691-13517-5.

Naturally, Intel has its own suppliers. The companies that supply it with silicon and chemicals for its processes, combined with the companies that build the fabrication plants that package its chips, and those that handle transport, security and storage throughout the world. These suppliers are constantly under pressure to innovate in order to meet new targets in terms of functionality and performance, price and time to delivery. The specialised machines required to make the chips are constantly being re-designed in order to be able to adapt to successive generations of technology. The plants are complex and must be managed. This is accomplished by software, some of which is developed in-house, while the rest may be sourced externally. Waste must be recycled or disposed of. There is an ongoing process to reduce environmental impact and financial costs. All of these activities are constantly being improved. Every single day involves thousands of problems of varying size and complexity, all of which have to be solved. Most will have many possible solutions. This means that choices, trade-offs and decisions have to be made. This situation represents the real context in which innovation happens. We have used Intel as a reference here, but similar scenarios are also emerging in other sectors, notably in the manufacture of engines and motors, games software, and in the media, foodstuffs and catering sectors.

Intel supports a variety of online communities and maintains links with over 1,000 universities around the world. It has developed a partner programme designed to assist SW developers in keeping up with its ever-evolving hardware products, and to help them align their development plans with those of Intel. The programme also helps them access the tools they need to develop the SW that will run on Intel hardware, and to facilitate business networking via its partner catalogue. It also helps to facilitate sales of the SW via Intel BX, which is the company's proprietary business exchange.<sup>38</sup> The SW partner program has three main components:

*Firstly*, a planning component which is aimed at executives and business decision-makers and which provides access to technology road maps.

*Secondly*, a development component, which is aimed at engineers and technology decision-makers and which provides access to support for development projects, together with access to developer tools, libraries and training opportunities.

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<sup>38</sup> <http://www.intel.com/cd/software/partner/asm-na/eng/index.htm>

*Thirdly*, a “Go-to-Market” component, which is aimed at marketing and sales executives, and which provides access to the use of Intel logos, case studies, catalogues and certification programs, together with tools for planning marketing campaigns and sales support via the Intel Business Exchange.

This description covers just the SW partner system. For example, other partner systems are oriented towards specific types of hardware or towards basic research. Intel also operates a venture capital arm that invests in companies operating in businesses where it sees a synergy and opportunities to play a constructive role in assisting business growth. This is not simply a system for supporting innovation and development for Intel’ own sake, but for the many companies that gravitate around it and which participate in the sectors in which it is involved.

Example 2: P&G operates hundreds of manufacturing plants around the world, together with a vast network of sales channels and retail test-sites, and specially trained teams armed with the ability to observe consumers and understand their unmet or as yet unarticulated needs. These have been documented in many recent books and articles, but most informatively by their CEO<sup>39</sup> P. J. Lafley himself. The company has adopted an open innovation model in which it aims consistently to source more than 50% of its new product concepts from outside the company. It offers itself as a platform for entrepreneurs developing new consumer goods and has thus positioned itself as the partner of choice for innovation companies developing new ideas for commercial domains in which P&G is active. In effect, the company is offering itself as a platform for the commercialisation of ideas, innovations and market insights that originate elsewhere.

P&G’s vision<sup>40</sup> is “to be known as the company that collaborates better than any other company in the world.” They have 28 R&D facilities on four continents focusing on 150 areas of science and technology. The company has accumulated know-how and experience from the development, manufacture, launch and distribution of more than 300 brands in more than 160 countries. It conducts more than 10,000 consumer research studies every year. P&G offers itself to smaller businesses and entrepre-

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<sup>39</sup> “The Game Changer – How Every Leader can Drive Everyday Innovation” by P. J. Lafley and Ram Charam, published by Profile Books Ltd in 2008, ISBN 978-1-84668-162-2.

<sup>40</sup> [http://www.pg.com/en\\_US/index.shtml](http://www.pg.com/en_US/index.shtml)

neers as a platform-for-innovation all over the world. In the spirit of open innovation the company collaborates on new products and services, on S+T research, market research, packaging, design, manufacturing, distribution and new business model deployment. External Business Development<sup>41</sup> at P&G is based on two main programmes, named “Connect and Develop”,<sup>42</sup> and FutureWorks<sup>43</sup>.

The P&G Connect and Develop programme is well-known by now, having served as the open innovation icon for many innovation writers and commentators. It supports collaboration between P&G and the wider world on scientific and technical problems. It is a two-way street in that it supports both the sourcing of solutions to existing problems and challenges faced by P&G, while at the same time offering solutions to outside parties based on underused IP assets created by P&G itself.

In contrast, the aim of FutureWorks is to generate new entrepreneurial business. It can help to transform fledgling external businesses that currently serve new markets into scaleable mass market enterprises. It also helps to leverage the P&G brand portfolio into new and related products and services. It has a strong interest in the services sector. A good example of what this means is given by the Mr. Clean Auto-Spa<sup>44</sup> franchise. Mr. Clean is well-known as a P&G brand for household cleaning products. The Mr. Clean Auto-Spa uses this brand as a marketing platform to promote a low-cost, environmental and user friendly car wash service. The company offers a wide range of services in line with the concept of a Spa for cars. The basic hand-wash service takes as little as 15 minutes, uses less than 16 ounces of water and recycles dirty water and detergent. The services is based on P&G bio-degradable or environmentally friendly cleaning products, and the customer can enjoy a coffee while they are waiting.

Furthermore, strategies to leverage the company’s hard-to-reproduce assets don’t stop there. P&G also runs a B2B exchange to support the sourcing needs of its partners. One of its internal market research divisions has developed a network of 250,000 teenagers and 450,000 mothers who take part in word-of-mouth marketing programmes. These programmes were

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<sup>41</sup> [http://www.pg.com/b2b/pg\\_external.shtml](http://www.pg.com/b2b/pg_external.shtml)

<sup>42</sup> <https://www.pgconnectdevelop.com/pg-connection-portal/ctx/noauth/PortalHome.do>

<sup>43</sup> <https://www.pgconnectdevelop.com/pg-connection-portal/ctx/noauth/>

0\_0\_1\_4\_83\_4\_10.do

<sup>44</sup> [http://www.mrcleancarwash.com/about\\_us.html](http://www.mrcleancarwash.com/about_us.html)

initially developed by the P&G Tremor division to promote its own P&G brands. This service is now offered to external clients<sup>45</sup>.

Example 3: Amazon is primarily an online retailer. Its original focus was on books, but it now sells music and films, clothes, shoes and consumer electronics. You may have noticed that many of the books you currently available via Amazon do not necessarily originate with the company. They may be either second-hand or are provided by other publishers and distributors. Having built up an infrastructure for online sales, warehousing, distribution and payment, Amazon now offers this as a platform to other companies as a support for their retail activities. It has diversified from being purely a retailer to becoming a provider of retail infrastructure that can be utilised by smaller firms. This represents a major innovation in that Amazon now acts as an enabler of other retailers who can now avail themselves of the global retail and distribution infrastructure that it has already built.

Large companies that have built up assets such as technology platforms, brands, sales channels and processes are now finding ways to transforming these assets into saleable services. Assets such as business networks, retail and distribution channels are complex, sticky and hard to reproduce. Having made their investments and learned how to provide a service to meet its own internal needs, companies are finding ways to make these available to external parties.

Different companies have different styles and different philosophies and approaches to supporting innovation. It is worth noting that Walmart, which became famous for the way in which it applied price pressure to its suppliers in order to lower the cost of the product to the consumer, has embarked on a green crusade and is currently applying pressure to increase the resource efficiency, lower the energy consumption of otherwise reduce the environmental impact of the product<sup>46</sup>. The Toyota group is a highly diversified conglomerate that incorporates subsidiaries dealing with a variety of businesses such roof gardens, sustainable forestry and the recycling of manure from dairy cows. There are many other examples worth studying, including Google and Nokia, Ikea, Lego and StatoilHydro, to name but a few.

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<sup>45</sup> [http://www.pg.com/b2b/pg\\_tremor.shtml](http://www.pg.com/b2b/pg_tremor.shtml)

<sup>46</sup> <http://walmartstores.com/Sustainability/>

Contemporary discussions on open innovation by authors such as Henry Chesbrough<sup>47</sup> tend to emphasise the role of patents and other high-level forms of knowledge, together with the emergence of secondary markets for intellectual property in the form of patent portfolios. This is an important phenomenon, but it only represents a part of what leading-edge companies are now doing to leverage their intangible assets. The range of such activities now covers:

- Scientific and technical problem-solving
- Brand development, especially in the service sector
- Business development in partnership with high growth potential companies
- Procurement of general business services via its B2B exchange
- Provision of high value-added business services such as word-of-mouth marketing via its Tremor Division.

This discussion is intended to act as a motivation to support the following proposals regarding future research on innovation in the Nordic countries:

- Support research on the structure and dynamics of corporate innovation systems, the means by which they support innovation, and the extent to which these systems can be harnessed by small companies and newcomers operating in the sector.
- Understand how companies that have created intangible assets closely incorporated within their internal services or embodied in the business networks to which they belong, have started to use these assets as sources of additional income and as platforms for supporting both in-house innovation and the entrepreneurial initiatives of external firms.
- Examine how to help large corporations that have not yet developed such systems to consider this as a potential path for future progress. Understand how to help indigenous national companies harness these assets. Explore how such assets could be exploited by smaller companies as the private component of a domestic innovation system.

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<sup>47</sup> Author of “Open Innovation: The New Imperative for Creating and Profiting from Technology” published in 2003 by Harvard Business School Press, ISBN-13: 978-1578518371, and “Open Business Models: How to Thrive in the New Innovation Landscape” published in 2006 by Harvard Business School Press, ISBN-13: 978-1422104279