Successful innovations from an established company

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This article studies the problems in innovating in big, ''established'' companies. The size of the company is not the culprit; some big companies have shown themselves to be innovative over a long time. The authors discuss two successful case companies that are studied through three stages of a general model of innovation: an ideation/discovery phase, an engineering/solution phase, and a testing/launch phase.

A high degree of novelty in products is needed to sustain the long-term growth of a company. But, the more a new venture, service or product differs from tradition, the more likely it is that the internal entrepreneurial efforts will fail. This is one of the major paradoxes in business strategy: the paradox between systematic procedures and creativity – often termed ''sustained innovation''.

Discontinuous (revolutionary, radical, non-linear) innovation is usually based on a different set of engineering and scientific principles and often opens up whole new markets and applications. Radical innovation challenges established firms because it destroys the usefulness of their existing capabilities and because it doesn't fit into their structures: radically new products have no obvious locations in an established company into which they can be transplanted.

In this article, we briefly look at the problems that ''being established'' causes to innovativity and how they could be overcome through a look at two Finnish companies' innovation activity.

Innovation as a process

A process of innovation, seen as a chain of stages, typically begins with a data-finding/ideation stage and an evaluation of whether the idea is good and suitable for further development, then continues with stages where the idea is developed to a complete product or service, the testing of the product, and finally the launch to the market. Each phase has distinctive challenges. There must be enough ideas, there must be resources and processes for the development, and there must be processes in place for testing, verification and launch of the products to the market. Thus, *sustained* innovation requires a *continuous* flow of ideas, a continuous process through which they are cultivated to products and product families, and finally an effective market launch process. It is also easy to see that the required skills and resources differ in different stages.

The discovery stages in established companies

Established firms, for the purposes of this article, have been successful for years with a certain set of products, serving an established set of customers. Before we look at the inflexibility of many established firms' processes, we must discuss the inability or unwillingness of the people to delve into radical ideas, because of the consequences for their personal situation.

When a start-up company develops from the first wild idea of a small entrepreneurial core to a listed company and maybe further into a corporation, it goes through a history of events (see, for example, Greiner, 1972). These are, at the same time, stages that take place in those people's lives that are active in the company. This means that the personnel in a

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company also typically goes through a development of being ''entrepreneur'' to becoming a ''man or woman of a corporation'' (Kohtamäki *et al.*, 2004).

Consider this: a large unit of an international company, active in the same business for about 50 years, had a period of layoffs in the early 1990s. Some years after that, the demand in the business started to climb again and the company had to hire new people directly from university.

In a study we performed in the company (Kekäle *et al.*, 2004), we found out that the orientation of the first and second generations of engineers was completely different. The young generation was interested in studying new technologies and developing breakthrough innovations, and was very interested in listening to customer opinions, while the old generation held all of these to a very low status, and instead wanted to fine-tune the process and test and improve the product technology in-house with no customer input at all.

Rather than to physical age, we would connect the ''relative lowering of personal targets'' to the length of work history in the company – to the ''established'' state of mind. Newcomers take risks and become interested in matters that are mostly new to them. On the other hand, when people get their share of successes in the company and learn the most important issues of the technologies used or customers served, they start to get more interested in their own social environment, value stability over change, and become risk-avoiding. Leonard (1998) writes about ''favourite problem-solving methods'' and ''favourite type of problems''; we claim, based on our studies and the psychology literature, that there might be much fewer ideas and especially much fewer openings towards new technologies in units where everybody is ''established''.

Von Hippel (2005, p. 100) tells us that ''too often software developers spend their days grinding away for pay at programs they neither need nor love''. On the other hand, a project's initiators could become the project's ''owners'' or ''maintainers'', taking on responsibility for project management.

For sustained innovation, then, a company should not allow people to become established; on all levels, there should be motivation factors and also enough time to sustain the ideation, learning and interest of the individuals to matters outside the current requirements of existing customers.

Metso Ltd, a Finnish industry conglomerate, is in a turnover stage in its history; new sales are getting difficult, global competition is tough. To improve the situation, Metso is developing a mindset to include a services business in its offering. For this change, the structure and culture appear to be in a central role. Metso is a combination of very different companies; thus, ''thinking in silos'' within the business units is very strong. Culturally, the two units of Metso (Metso Article, producing article manufacturing machinery; and Metso Mineral, in mining machinery) have one thing in common: a strong faith in technology. Organizational flexibility, however, is limited. Metso is a machinery manufacturer and the service culture does not flourish. Metso has indeed recognized the need for new kinds of technological competencies to build the new applications. Its aim is to understand and take into use technologies that are currently owned by subcontractors, customers etc. Metso also seeks to use IT as a part of existing solutions, in order to build services around them. Business model innovation is needed to transfer Metso from machinery supplier to services provider.

In Metso, business units work on ideas that link to their existing businesses. The business units manage the innovation through their own processes, but a corporate-level innovation process is also being created. The key criteria for assessing innovation are links to existing businesses and the available resources. The ideas are first assessed in the business lines and, if needed, put forward to corporate level (corporate technologies) evaluation. The attempt to move to services involves greater risks than what Metso, a typically risk-averse engineering company, is used to. This has been tackled by small-scale projects with focus on learning by doing. Risks are also personal – a machine engineer doesn't become a service provider overnight. Metso thus also seeks to find new approaches by focusing on corporate-level themes, putting young professionals together, and actively screening the environment.

The development stages in established companies

Novelty, appearing as uncertainty, is a key dimension of innovation. A company can assess the challenge related to a given innovation by analyzing the novelty of each component of innovation (market, technology, business model). It is important to realize that the novelty of each component is always relative to the corporate context – i.e. industry, location, resources, knowledge, organizational structure and culture.

The structures and processes in companies must develop to enable the delivery of the first big innovation to market in a large scale. For an established company, its structure and culture develops along with profitable business, together with existing customers, and ends up inhibiting the innovative thinking needed to create new business (see, for example, Leonard, 1998; Christensen, 1997). Due to established turfs and ongoing business concerns, new ideas seldom get the resource backing they would require in established companies.

The most difficult but maybe also the most viable change strategy is to attempt to keep the organization in a state of continuous corporate renewal. Corporate renewal is a competence-building process that begins with the identification and definition of the existing core competencies and an analysis of how they are used and coordinated. After defining the desired future state, strategic objectives are developed to formalize the status of existing core competencies and to define new competencies needed to meet the objectives. Ultimately, strategy implementation requires new vision, and a modified attitude of the company towards its competitors, its environment and its own organization. Continuous renewal requires annual incremental improvements in both the value and productivity of current operations, just to maintain cash flow, as well as simultaneous significant investments in ''next generation'' systems, which are deliberately designed to prematurely obsolete current business operations (Merrifield, 1993). Related to corporate renewal is an environment that is favorable for learning in a corporate-wide context. An organization that favors learning has better odds of generating corporate renewal.

Furthermore, the strategy of an innovative company needs to clearly communicate the choice of market orientation beyond existing customers in the long term. The business model, on the other hand, should be evaluated whenever a new product does not fit the old paradigm, when an old product is entering a new stage of its life-cycle, or when a new technology threatens to disrupt the model's platform, when filling the key positions of the firm and when the economy shifts. Three processes become particularly important for synergies as market dynamics increase:

1. knowledge transfer is related to strategy implementation and, for example, the integration of new technologies into existing ones (Iansiti, 1998);
2. co-evolution (re-linking) is about continuously creating new linkages between businesses to exploit new opportunities and dropping those linkages that are deteriorating; and
3. patching is the corporate level process of adding, splitting, transferring, exiting or combining chunks of businesses – rather than whole businesses or products – whereby corporate managers remap or reconfigure businesses in accordance with changing market opportunities (Brown and Eisenhardt, 1998; Martin and Eisenhardt, 2001).

Even in mature markets, a company's ability to understand the motives of customers is a significant resource of corporate renewal. Likewise, technological complexity is a rich source of competitive advantage, but is also a great danger. Too much focus on technology and too little on the market may lead to a situation in which the company is developing functionality that does not add value to users (negative complexity).

Finally, it takes a very different kind of manager to start a business than it does to run an established one. David (1994) indicated greater success for new product ideas in cases where the project manager was the person behind the idea. A project manager also needs to have a proven knowledge of the business and demonstrated ability to attract, motivate and manage a high-quality team of operational personnel, which can be a challenge for one individual. A new idea thus needs a ''corporate godparent'', to make sure that the established organization of the company provides the necessary long-term support, freedom from the interference of the daily activities, and adequate incentives.

At Nokia, resources and processes have traditionally been strongly directed to existing markets and customers (i.e. mobile operators). There also appears to have been a clear division between ''telco'' and ''IT'' people. The convergence challenge of these areas is about understanding the value of new knowledge, leveraging the existing telecommunications knowledge base. To sustain innovativeness, Nokia created two new business units, Enterprise solutions and Multimedia, in late 2003 to shift the development view from the established Mobile Phones and Networks units. This organizational change can also be seen as an attempt to implement a culture change. The corporate structure can be characterized as very flat, thus making the best of the situation of the power of the ''big established company'' from an innovation viewpoint. In our view, an amazing amount of knowledge exchange exists in Nokia. People exchange ideas a lot and are encouraged to do so.

Technologically, the greatest challenge of Nokia is to move out of its comfort zone, from the regulated telecommunications market towards the unregulated IT industry. Nokia relies on multiple sources of innovation: a lot of ideas emerge spontaneously but ideas are also sought by using tools such as Nokia Venture Challenge (a yearly idea competition), by screening new opportunities in selected areas (insight- and foresight-driven) and by monitoring external sources. During the past few years Nokia has acquired a number of companies with interesting new technologies and competences (20 acquisitions and minority investments during 1997-2003) and has been engaged in joint ventures (14) and in different cooperation networks or forums (23). The existing businesses focus on and fund projects that relate to existing markets and technologies, which decreases the resistance here; the risky new ideas are directed to the ventures organizations.

Nokia also seeks to maximize the leverage on existing competencies by making the product development transparent between the business units. The existence of a market (end-user acceptance), technology and business model are the key criteria for assessing timing and resources commitment related to an idea.

The testing/validation and launch stages in an established company

In most of product development the capability to build and test prototypes is critical in the relatively early stages of design. In interactive systems design, prototyping is used to create a design where the completeness and success of the user interface can utterly depend on the testing of a working model. A prototype also in many cases allows the user to be involved

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in testing design ideas, enabling ''learning by doing'' which, according to von Hippel (2005), can be one of the most important inputs in making the product ready for the market. User involvement can, however, have some drawbacks: for example, users may lack the ability to imagine the implications of decisions made by the design team and/or users may be unable to comment on the technical content of the design.

The testing of products and software is typically conducted to meet the requirements stated. For established companies, the equipment and personnel required for testing is not normally a problem, and the requirements of established customers are also often clearer and more complete than for new technologies or start-ups. However, in established markets, the time-to-market pressure may be higher and may lead to a decision to launch the product with a minimum of testing because laboratory testing or automated software testing typically falls short of the complexity of real life.

Nokia Mobile Phones have allowed their own personnel to use the next models of mobile phone in-house for their daily telephone usage. This kind of ''friendly user'' group is probably good for practical testing: users are very knowledgeable about the technology, and they also test the phone's features much more thoroughly than a typical external user would. They also typically ramp up the manufacturing of especially the more expensive handset models in their own factory in Finland, physically near the development organization, and only after it really works in an economical way do they move it to subcontractors around the world.

In the complex system products of Metso and Nokia Networks, the testing requirements are much clearer because the users are somewhat more homogenous than end-users. Furthermore, they are both a source of innovation (''lead users'') because they have to continue to fine-tune the products for the problematic environments they face in their businesses, and these types of products also typically inter-weave the ''product launch'' and a lengthy testing period in a start-up phase where the customer and the producer work together to fine-tune the product.

Develop a venture capital mentality

In our opinion, the key to sustained success is not the process of developing new products systematically but the mentality to attempt to build more than one prototype and to get more than one idea. The typical product development processes attempt to ''effectivize'' the development of the product, minimizing the risk of spending resources on ideas that ultimately turn out to be less than successful.

However, as many venture capitalists will testify, participating in projects where the risk is reduced to a minimum will not yield big gains in the long run; participating in only one such project, even less so. The venture capitalist mentality, maximizing long-term earnings, is based on searching for a portfolio of projects with larger-than-average risks and relatively long (in established-company terms) payback times. The total earnings in the long run will probably be much bigger with a portfolio of ten projects with a 25 percent probability of success and a possibility of earnings 7.5 times the investment in the case of success than with one project where the probability of success is 75 percent and the earnings 2.5 times the investment.

Companies that recognize in their strategy that they do not want to establish themselves forever in a given market and technology often work as venture capitalists, also literally. In these, a good deal of the returns of the ''established'' products are directed in cultivating high-risk start-up ideas within the company or buying up ideas from outside.

Nokia is engaged in a purposeful search of new ideas in a handful of ''opportunity spaces'' that involve both technology and business space exploration. Each venture is assessed for its own right; the venture size is not fixed. The portfolio of ventures is defined by the existence of a strategic link and by the budget, the ''law of big figures'': there cannot be too many big ventures ongoing at the same time. Nokia manages its internal venturing activities through a dedicated venturing process. It includes four phases that provide guidelines for the size and duration of the project:

1. idea phase (3-9 months);
2. business development (6-12 months);
3. verification (12-18 months); and
4. operation (beyond 18 months).

This process works with evaluation and decision gates as the stage-gate process proposed by Cooper (1992).

Nokia Ventures Organization works on projects that are further away from the business mainstream. Strategic venturing involves internal and external ventures funded by the Nokia Early Stage Technology Fund (NEST) and Innovent (an internal fund). Nokia also has an external technology fund (Nokia Venture partners). Nokia has, however, become more focused as compared to the situation in the late 1990s: today's ventures can be characterized as projects that are outside the scope and focus of the existing business with a target to create new business and value to the corporation. The actual product development of the ventures is done according to the processes of the receiving business unit whenever possible, to facilitate the transfer (if the receiving unit is already identified). Keeping the venture teams small and geographically close (in Finland) in the early stages is seen as a way to facilitate communication and development of the team spirit that drives the venture development.

As far as Metso's venturing unit is concerned, it is more of a home for heterogenic businesses than a unit driving corporate renewal. The future role of the unit involves investing in new areas and finding ideas that enable growth and renewal. The target is to develop Metso Ventures into an organization with more freedom and capability to pursue riskier strategies and more rapid development. There are already now positive outcomes from taking businesses in the venturing unit: focus on selected businesses and management commitment have proved important and have created an enthusiastic atmosphere. In essence, through ventures Metso is exploring emerging industries and mapping their characteristics and opportunities provided by them. As far as the linking processes are concerned, learning focuses on the market needs and the business model; typically, ventures leverage existing technology.

Management of innovation is inherently difficult and risky. Many authors (e.g. Covin and Miles, 1999) conclude further that innovation *per se* is insufficient to define the success of a company. It is relatively simple to succeed once, but sustaining success requires active and purposeful management of innovation. Structure and especially the culture underlying it are difficult to change to support continuous innovation, as they have required years to develop. However, it is possible to use venturing people with new ideas as catalysts for the change.

Based on the two cases and other studies, we offer the following guidelines for sustained innovation and corporate renewal:

- In our opinion, the best weapon against the innovation problems of the established companies is to try not to become ''established''. The size of the company is not the culprit; some big companies have shown themselves to be innovative over a long time. Beware of becoming established: go to conferences and presentations of unrelated technologies; talk to people from other areas; read about future technologies and research, and encourage your staff to do the same.
- Look for and encourage new ideas from the lowest levels and youngest members of the organization; the people with the ''most non-established'' minds.
- Corporate renewal must be a clearly stated part of the corporate strategy, but not the essence of it. Strategy is the basis on which a company's ability for corporate renewal is built. In order to sustain corporate renewal through corporate venturing, the venturing activities must be linked to the strategy.
- Corporate renewal in the form of ''change programs'' is not enough because it is not culture-building. Instead, corporate renewal must be continuous.

- Although some writers claim that no radical innovations come from the customers, and even more people actually believe this, it is also shown that many good ideas are indeed spurred by *users*, in response to their specific needs. Find lead users of your products and talk to them in all stages of the innovation process and on all levels of the company.
- Different views of the environment are necessary to sustain renewal. The corporate-level view of the environment involves elements of all the existing businesses whose view is determined by the history. Thus, new ventures, new people and external partners are needed to provide a purposefully different view of the environment. Be open: do not lock the ideas behind your safest doors.
- Without effective linking processes, a company's attempts to sustain corporate renewal remains ineffective: existing businesses do not benefit from new knowledge gained, the new ventures do not learn how to apply existing business knowledge and resources, and if the timing is not right even otherwise viable innovations may fail. Keep the innovation in all parts of the organization open to others; if not continuously, then at least at certain times of the year.
- Resourcing is an issue to be considered. Venturing could be used as a tool to pull new competencies. Providing the innovation and venture teams with some slack resources and creating alternative funding channels might help the companies to maximize the benefits for learning and knowledge generation.

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