

# Innovation: The Nokia Way

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## Introduction

Innovation is the display of the ultimate achievements of human brain power. For an idea, product or service to be innovative, it has to break away from tradition. In intellectual terms, it has to involve a fundamental, philosophical paradigm shift. Innovation does not necessarily have to be an advanced concept or product.

Business today is being impacted by multiple forces – economic shocks, atomization of markets and demand, borderless commerce, advances in technology, a sense of acceleration and deconstruction of business. Moreover from the monolithic markets of the pre 90's the scenario has now shifted to that of micro segmentation, multiple competitors and short product cycles. The key to performance lies in anticipating the future and working towards it. This means, asking the question: How much of its resources does a company put in renewal and innovation?

Innovation is the corner stone of superior competitive advantage. As pointed out by Peter Drucker in his book 'managing for results', it is innovation and focus on customers that enable companies to succeed.

Management Guru, Gary Hamel, has stressed the importance of innovation stating that it is imperative, given the fact, that overtime commoditization happens in any business and the future remains unpredictable.

## Innovation Enablers

Various factors influence innovation in an organisation. Those are

**Openness to new ideas**– Innovation does not happen through a sudden burst of creative inspiration. Neither does it occur as a result of an annual brainstorming ritual conducted in a picturesque. Innovation can be an ongoing process where any moment is good enough for embarking on an innovation. However it is important that leaders are open to new ideas. Unfortunately, most corporate leaders do not give enough attention to proposals for innovations.

**Tolerance of Failure**– Though successful innovation leads to a hunky dory situation, the fact remains that innovation is a risky process and the path is littered with numerous failures. On one hand an organisation needs to manage the risk; on the other it should not send negative signals by punishing innovators who have failed despite diligent efforts. The onus for managing this balance lies with the top management. In fact, great business leaders have acknowledged their failed innovations and termed them as opportunities for learning.

**Customer Intimacy**– Innovation happens by tracking attitudes, desires and aspirations of customers. If the needs of customers can be understood better, innovation can be more appropriately executed.

**Collaborations**– To undertake innovation effectively, companies often may have to look for competencies outside the organisation. In such a situation, it makes sense for it to involve competent partners in the endeavour.

## Research Methodology

The objectives were to study about the strategy of Nokia –which enables innovation in the company, to make a SWOT analysis of Nokia Corporation, to study the factors which provide competitive advantage to the company, to know about the company's success secrets which helped them to become market leaders.

The study was purely based on secondary data which was obtained from sources such as Journals, Magazines, Books, and Websites.

## Company Profile

### History of Nokia

During its 140-year history, Nokia has developed from a small Finish Wood and Paper firm to one of the biggest telecommunications companies in the world. The company Nokia is named after the town of Nokia in south-west Finland It started in the year 1865,when a ground wood mill was built in Nokia by engineer Fredrik Idestam. Nokia was an ideal place for such an industry due to nearby resources, particularly hydro power .

Ides tam named his company Nokia Ab in 1871. Nokia Ab added electricity generation to its business activities in 1902. In 1898, Arvid Wickström found Finnish Rubber Works, which will later become Nokia's rubber business. In 1912, Eduard Polón starts Finnish Cable Works, the foundation of Nokia's cable and electronics businesses. In 1960 Cable Works establishes its first electronics department, selling and operating computers.

In 1962, it made its first electronic device in-house: a pulse analyzer designed for use in nuclear power plants. The company's involvement with telecommunications systems also began in the 60s, and it 1963 it started to develop radio telephones for the army and the emergency services. Nokia Ab, Finnish Rubber Works and Finnish Cable

works formally merge to create Nokia Corporation1967.

The newly formed Nokia Corporation was ideally positioned for a pioneering role in the early evolution of mobile communications. As European telecommunications markets were deregulated and mobile networks became global, Nokia led the way with some iconic products. A new era for mobile phones began in 1981, with the launch of the Nordic Mobile Telephone (NMT) service. Nokia soon introduced the first car phones to the network. The Mobira 450 car phone came in 1982, followed by the portable in 1986. In 1982, The Nokia DX200, the company's first digital telephone switch, goes into operation.

From the start, Nokia was one of the key developers of GSM technology. Its expertise in the new standard, coupled with the deregulation of European telecommunications markets in the 1980s and 1990s, was to be the cornerstone of its international success. By the turn of the century, the company is the world leader. In 1992, Nokia decided to focus on its telecommunications business. This was probably the most important strategic decision in its history. At present Nokia has four business groups namely Mobile phones, multimedia, networks and enterprise solutions, under the president ship of Olli-Pekka Kallasvuo. As mobile usage grows in the world's emerging markets, Nokia continued to develop affordable mobile devices that can contribute to increased economic growth and quality of life.

Nokia is the Global Leader in mobile communications. A pioneer in mobile telephony, Nokia is the world's leading mobile phone supplier and supplier of mobile, fixed and IP networks and services and multimedia terminal. Nokia owned 60% of the world cellular phone market which consists of both CDMA and GSM mobiles. Nokia had net sales of \$53.96 billion in 2006 and a net profit of \$5.6 billion. Nokia is one of the most widely

held companies in the world with listing on 6 major exchanges of the world. Nokia's principle objective is 'to transform a digital age into a truly mobile age', giving everyone access to information. The slogan was "Connecting People" which has recently been replaced by 'Connecting to Life'.

## **Technologies and Capabilities**

Nokia operates four separate business groups: Mobile Phones, Networks, Multimedia, and Enterprise Solutions

### **Mobile Phones**

The Mobile Phones group is responsible for all mobile phone handset development. Nokia manufactures phones for different standards and technologies that are in use in different countries. GSM is most common in Europe but CDMA standard is emerging. Many countries have their own standards.

Although the ARP (Autoradiopuhelin, "Car Radio Phone") network in 1971 standard was technically and from a user point of view closer to a two-way radio than a mobile telephone, it was still Nokia's first publicly available mobile telephone. The NMT technology followed, along with other analogue technologies, and later GSM.

Although the technical requirements of telephone networks have changed

Over a period of time, Nokia has been able to use its existing technologies in developing new devices. Communication with the network is just a small part of a modern mobile telephone. Other aspects of the product development, such as user interface and power consumption remain the same from one network technology to another. Much of the development effort can be reused for other networks, so it makes sense to develop devices for a large audience even if that means supporting multiple technologies.

## **Networks**

Nokia Networks develops solutions for telephone networks. The group develops mobile base stations and other infrastructure products and services for the different mobile phone standards. Apart from mobile telephony, Networks also develops devices for other networks, including broadband devices and professional communication networks including the tetra network.

Nokia's first digital telephone switch, the DX 200, has been available since the 1970s. The early interest in digital telephone technology fuelled the development of mobile network infrastructure devices for the early mobile phone standards. Nokia was a major supplier of the Scandinavian NMT network technology along with Ericsson. Nokia started developing devices for the GSM network as soon as the standard was finalised.

Currently the company supports all major current and emerging network standards. Provided development is done in a structured and modular fashion, much of the technology is interchangeable between different standards. This makes it easy to support the multitude of network technologies that exist now and in the future. Nokia has been successful in using this development process and therefore has been able to compete in all different mobile networks.

## **Multimedia**

The Multimedia group creates devices and applications as well as content for mobile multimedia applications. The group is responsible for developing new smart phone solutions that incorporate music, video, games and other content. The Multimedia group is a new addition to Nokia's organisation. The group diverged from the Mobile Phones group to further develop smart phones and advanced multimedia capabilities in mobile handsets.

Although these can be seen as features of mobile phones, they do not necessarily depend on the telephone network or other technology of the handset. New smart phones are currently in use and even surpassing the functionality of traditional PDAs (Personal Digital Assistants).

The latest generation of smart phones has all the features of a typical PDA plus those of a mobile phone. These new phones can be thought of not as telephones with PDA functionality but rather as PDAs with built-in telephones. Nokia's decision of separating handset development (Mobile Phones) from user interface may have anticipated this paradigm shift.

### **Enterprise Solutions**

The Enterprise Solutions group develops solutions for businesses by incorporating technologies from different groups. Enterprise Solutions products include mobile devices and networks for internal enterprise networks. Due to the requirements of the enterprise sector, emphasis in security and mobility are essential. The group aims to develop complete solutions to "help companies mobilize their workforces while ensuring the security and reliability of their networks".

This group is most clearly a fusion of different technologies. Enterprise Solutions uses technologies and experience from all other groups and provides solutions independent of existing public telephone networks. The base infrastructure can be thought of as a small-scale public telephone network with special mobile devices implementing custom functionality.

### **Innovative Activities at Nokia**

Nokia's investments in R&D activities are in line with other major radical technological innovators in 2003, Nokia spent 12.7% of its net sales on R&D As much as 39% of Nokia's employees work in R&D. Nokia's R&D

activities are broken into two categories: short and medium term, and long term. The short and medium term activities include developing products to master certain key technologies rather than creating new technologies.

Long term activities include generating new and innovative technologies and products in the market. This is where new products emerge, current markets are disrupted and directions changed. Long term activities also include changing the way that the company runs by innovating new methods of running the organisation. This enables Nokia to adapt to current and future trends of the industry and market, and even to change the company's core businesses.

In general, Nokia manages its R&D activities by interacting with universities, research institutes, standards bodies and other companies worldwide. In addition to research and development, Nokia plays a strong role in monitoring and influencing the open standards used in their products, for example the NMT and GSM networks.

### **Research Centres**

Nokia's research centres are located worldwide. The main role of the research centres is to manage and coordinate the company's relationships with external bodies. The relationships include cooperation in R&D and standardisation. Standards are critical in the telecommunications industry as interoperation between different systems is essential to increasing the size of markets and opening new ones. Nokia has research centres dealing with a number of production areas

**Software & Application Technologies Laboratory** develops and builds new applications and software as well as prototypes. More importantly, Nokia's software platforms are researched here, to make third party application development as easy as possible.

**Multimedia Technologies Laboratory** integrates audio, video, human interfaces, games and multimedia into mobile devices and other products. The short term strategy of this laboratory is to improve current products and prototypes to enable end-users to maximise the ability of their devices. The long term goal is to look into new, unexplored technologies.

**Computing Architectures Laboratory** researches into new hardware and software platforms that can enable more functionality, performance and productivity in a device. This can include devices for commercial, enterprise, multimedia and even gaming industries.

**Networking Technologies Laboratory** comes up with new ideas and improvements to existing networking protocols, technology and standards to improve end-to-end connectivity. It develops networking and service concepts to complement Nokia's current product line.

**Radio Technologies Laboratory** develops and designs new radio and wireless technologies. Examples of research are antennas and electromagnetics. The above laboratory areas overlap functionally. Nokia have three categories that all projects tend to fall in: Mobile Applications, Multimedia Devices and Wireless Access. Since most projects require skills in many areas, it is efficient to gather teams of diverse skills to work in those categories. This has proven to work well, as the research centres produce half of the patents that Nokia holds.

## Memberships

Another source of innovation in Nokia is its strong involvement in creating standards and specifications in the telecommunications industry. New solutions, technologies and products are developed during the process of drawing up standards and conforming to them. Different companies and institutions

can access these standards and specifications to develop new products into the market. Examples of Nokia's involvement in standards and specifications include the System 60 platform for the Symbian operating system and the GSM protocol.

## Proposals and Venturing

Nokia wants to give an image of being open to new ventures and proposals. To this end, it has expressed its willingness to review business proposals submitted via an online application form. Many competitors have followed this trend to extend the research and development process to external bodies through proposals and venturing.

Research projects done in cooperation with universities range from minor studies to large projects. Sometimes the projects are part of a university initiative that Nokia can benefit from. When venturing with other companies, Nokia tends to share the risk, cost and resources. Rather than building and innovating current markets and core businesses, the venturing process attempts to identify new businesses that may one day be incorporated into Nokia's core business, a culture that may have characterised Nokia's growth since the beginning.

The venturing process is handled by the **Nokia Venturing Organisation (NVO)**. Nokia has internal programmes, such as the annual "Venturing Challenge", which are open to all employees to promote the culture of innovation. There are three phases to the venturing process: Research, Analysis and Validation, and Funding.

**Research:** During the research phase, NVO shares its breadth of knowledge and resources to identify the validity of the business proposal. In cases where the technology does not exist, NVO will commission the research.

**Analysis and Validation:** NVO attempts to look for market and returns opportunity for

the venture. The proposal's business and marketing model will be reviewed thoroughly. This phase is to identify potential pitfalls in the proposal and find solutions to overcome them.

**Funding:** Most funding for venturing proposals come from Nokia Venturing Partners (NVP), a venture capital firm and investor. Nokia invests in NVP for profit and market feedback for new and upcoming technologies. One of the programmes that help Nokia get the most out of its diverse venturing projects is Innovent, which helps entrepreneurs convert their ideas into commercial businesses. The Innovent team's main focus is to help entrepreneurs tap into Nokia's knowledge about various markets, technologies and business models. Innovent provides resources to entrepreneurs in the form of finances, research support and Nokia's strong networking within the industry. Examples of Nokia's recent ventures include the Nokia Fitness Monitor and Nokia One connectivity service for enterprises.

## **Competitive Innovative Strategy of Nokia**

**Early player, offensive innovator:** Nokia has all the characteristics of an offensive innovator. It is a market leader; its R&D spending was 11.2% of net sales in 2006 amounting to Euro 3825 million; it funds new research projects and companies; and it has created a large patent portfolio.

From a development point of view, mobile phones have two distinct parts. As Jeffrey L. Funk explains, "Mobile phone firms typically define product families in terms of different analog and digital air-interface standards; these standards define the interface between the phone and base station. Within a specific standard, different models are developed for different users and user needs." Nokia has been influential in designing many of the network standards.

The network technologies themselves are standardised, so variations in the actual air-interface are not possible. Technical innovation comes from developing products that are smaller, more integrated and consuming less power than previously. New handsets, notably the new smart phones, also add features to the standard mobile. Because of the need to develop products for different standards and keep a wide selection of models in the market, competitive manufacturing is vital, too.

The innovation process in mobile phones is a chain-linked one, with many parties involved. First of all, products have to be manufactured by specifications set in the standards. This is the first requirement and the basis for any design. Second, development in manufacturing, component and battery technology enables manufacturers to add new features and improve designs, for example by improving battery life or adding colour screens.

Customer demand plays an important role, too. For example, when the GSM standard was developed, text messaging was envisaged as a feature not dissimilar to what pagers were used for. The first GSM handsets could only send predetermined messages such as "call secretary" or "I'll be late". Text messages proved to be a success, though, and so new products were built with that in mind. This led to the development of features such as predictive text input, to make it easier to type with the small keypad.

**Protecting intellectual property :** The worldwide [esp@cenet](http://esp@cenet) patent database reports 32,774 patents with Nokia as the applicant. The United States Patent and Trademark Office (USPTO) reports 3,723 patents assigned to Nokia in the United States. Clearly, the company tries aggressively to protect its intellectual property. As an example of Nokia's eagerness to patent even small innovations, USPTO patent 5,241,583

describes the now ubiquitous 'menu-#' keypad combination for locking the keypad.

Nokia has also been active in trying to push strong IP laws in Europe. In early November 2004, Nokia announced that it is taking legal action against Sagem, a French handset manufacturer, for copying its designs, and Vitelcom of Spain for violating its technical patents. Although Nokia protects its intellectual property against unauthorized use, it also licenses some of its technologies to competitors.

A notable example is the Series 60 Platform, a user interface for the Symbian OS which is an operating system for smart phones. The Series 60 Platform is licensed to a number of mobile phone manufacturers including Samsung, Panasonic, Siemens and LG. Nokia currently owns 47.9% of Symbian itself.

## Swot Analysis of Nokia

### Strengths

- Nokia is a dominant player in the smart phone market via its majority ownership of Symbian and its proprietary Series 60 user interface which are projected to represent majority of the 100M smart phones sold in the next 4 years.
- 60% market share (both GSM and CDMA) still the largest cell phone vendor by far, with double the market share of nearest competitor.
- Size enables Nokia to amortize R&D costs and to get cost advantages.
- Nokia is ranked as MNC No. 1 by Business India magazine in the year 2007.
- Nokia completely focuses on mobile phone sector unlike its competitors.
- It has wide varieties of mobile phones of good quality at reasonable prices.

### Weaknesses

- The Ngage is considered to be a failure.
- Being the market leader and its increase role in Symbian is giving Nokia a bad

image, much like Microsoft in the PC industry.

- Nokia concentrates only in mobile telecommunication sector.
- Short life span of the product entails continuous innovation.

### Opportunities

- Nokia can increase their presence in the CDMA market, as well as 3G and Edge.
- The present customer penetration in mobile sector is only 16%. So there are lots of opportunities for Nokia to increase their sales volume.
- It can leverage its infrastructure business to get preference and a stronger position with carriers.

### Threats

- Nokia has entered late in 3G mobile segment. So it has to face tough competition from market leaders like Motorola, LG, NEC and others.
- Asian OEMs are entering the market very aggressively (TCL, NGO Bird)
- ODMs (HTC and others) are enabling carriers to leverage their customer power bypassing the handset vendor. Operators want to lessen their dependency on handset vendors and the dominance of Nokia. Orange, O2, and many other operators globally are selling their own brand of phones.
- Huge investment in R&D should be done to sustain and gain market leadership.

### Conclusion

The greatest challenge of today's world is to instill a mind set of continuous innovation that will allow achieving sustainable competitive advantage, market success, customer satisfaction and profitability. Nokia's success story is built on constant innovation. Nokia's technology is all about enhancing communication and exploring new ways to

exchange information. That's why Nokia will never stop finding new ways of connecting people.

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