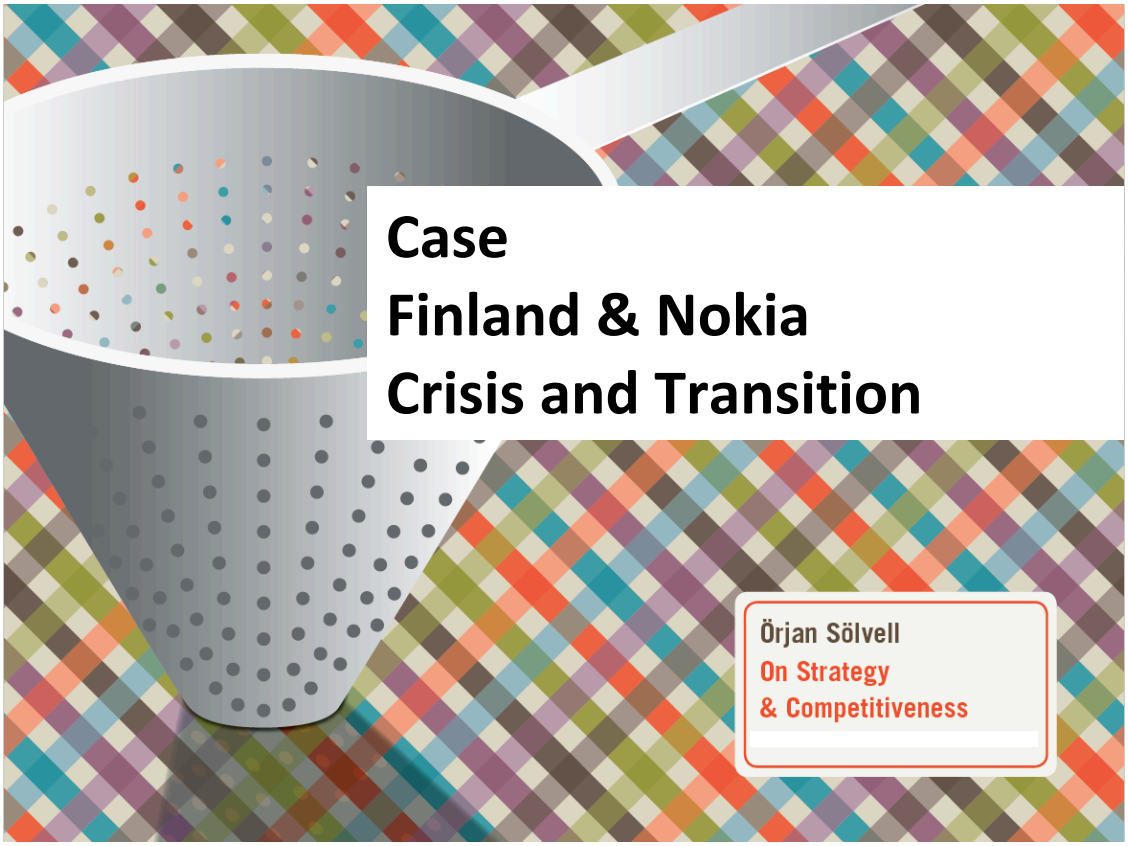

Professor Örjan Sölvell at the Stockholm School of Economics (SSE), Center for Strategy and Competitiveness (CSC), prepared this case in collaboration with MIB students Pontus Gustafsson, Alexander Kronvall, Conrad Wüller and Yi Zhang, based on public sources and expert interviews. The case is developed for class discussions in the course "On Strategy and Competitiveness". First published by CSC in Sweden 2016. All parts of this case may be reproduced, stored in at retrieval system and transmitted in all forms: electronic, mechanical, photocopying, recording, or other. The case may be lent, resold, or hired out without the publisher's consent.

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This case is a continuation of the HBS Case "Finland and Nokia: Creating the World´s Most Competitive Economy" (9-702-427) by Örjan Sölvell and Michael E. Porter.

Finland & Nokia: Crisis and Transition

"Ten years ago we felt as if we could not do anything wrong. Then 2008 came with the smart phone, Lehman Brothers that went broke, and a war in Georgia that shook Europe"

– Alexander Stubb, PM of Finland[i]

Nokia in Transition

On September 16, 2013 a leading business journalist in Sweden wrote *"Nokia´s belly flop is still an unsolved mystery"* [ii]. The company had lost 90% of its stock value in just six years. Nokia had been a world leader for decades in Telecoms, particularly in the mobile phone segment, and now the company was selling the handset business to Microsoft, which was known to be doing poorly in this segment. Business press all over the world was filled with articles about Nokia´s demise, and industry observers talked about bad strategy and bad leadership of the company.

Nokia had launched the first mobile phone in 1982 (the Mobira Senator) for the common Nordic cellular system, NMT. The NMT system grew rapidly and already in the late1980s Nokia had become the largest manufacturer of mobile phones in the world. Initially they had entered the market through a joint venture with the Finnish firm Salora (a company producing radios, TV sets etc.), creating a new brand, Mobira. In 1983 Nokia acquired Salora and in 1987 the Mobira brand was switched to Nokia. During the time of the switch, just before the big economic crisis hit Finland, Nokia had reached a 14% share of world markets for mobile phones, just ahead of Motorola from the U.S. with a 13% share. After these two leaders there were a number of successful Japanese firms including NEC (12%), Panasonic (9%), Mitsubishi (8%), Toshiba (8%) and OKI (6%). The two Korean firms Samsung and LG had not entered the market by then.

Nokia had been going through several major changes in its overall strategy, ever since its creation through a merger of Finnish companies in several unrelated businesses in 1967. Kari Kairamo, CEO between 1977 and 1988, transformed the company from a Finnish conglomerate (including rubber tires and other rubber products, cable, forestry and paper and telecom) into a regional consumer electronics firm (telecom, mobile phones, TV sets, radios, PCs etc.) during the 1980s. After a short period of four years under leadership of Simo Vuoriletho, Jorma Ollila took over as CEO. All non-telecom businesses were quickly sold off, turning Nokia into a focused global mobile handset and telecom infrastructure firm in the early 1990s.

Looking back to 1992, the first year as CEO of Nokia, Mr Jorma Ollila had doubled manufacturing of phones to 1.6 million units. Two decades later Nokia reached a production of more than 450 million units. In his farewell speech at the annual shareholders meeting in Helsinki, March 30, 2006, Mr Ollila, finally gave the recipe as to why Nokia had succeeded to become the world leader in mobile phones:

"We understood at a very early stage that a mobile phone would be a product in every man´s hand. We understood the importance of brand, how to build a truly global organization and to deliver the

world´s best product – The winner in this race was the one who understood that this was not a niche market"

Mr Ollila continued:

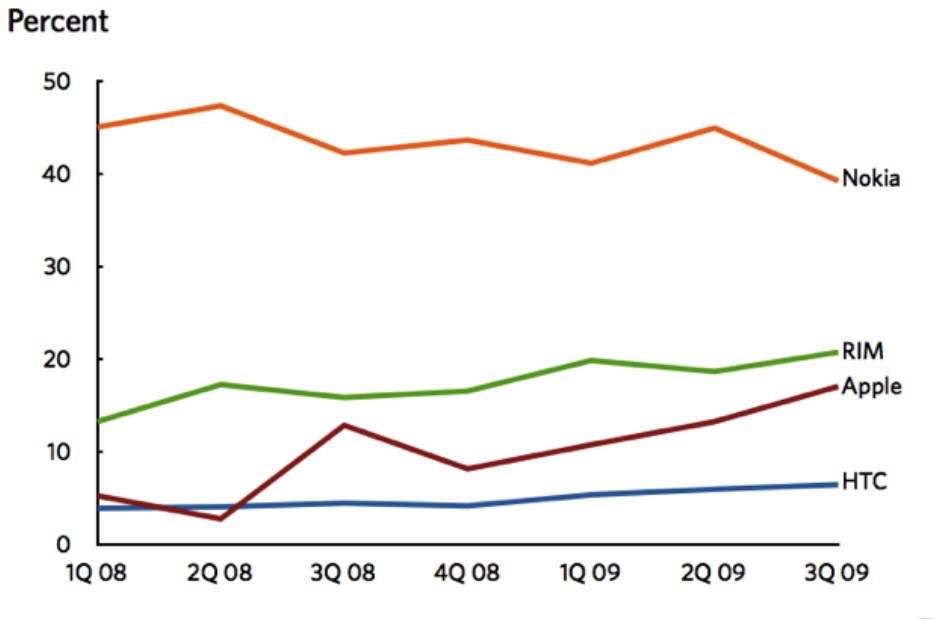
"It is about the Nokia culture. To really implement a culture – not just on paper – which is present in everyday work, is the key. We never give up – we fight, and we win! Many people were skeptical in the first years, and then again in 2004, but we didn´t give up!"

On Top of the world in 2008

Based on strong revenues and profitability from the mobile business, Nokia had both developed new innovations in-house and had added technologies through acquisitions of small start-ups, such as Sega.com, Intellisync Corporation, Twango, Cellity, Scalado, MetaCarta, Loudeye Corporation and Navteq. Innovations ranged from network technologies to handset features, such as Internet access (Nokia 7110 in 1999), the cameraphone (N 7650 in 2002), the smartphone (Nokia 6600 in 2003), the Internet tablet (Nokia 770 using Linux OS and launched in 2005), and a smartphone with GPS functionality and maps (Nokia N95 in 2007). In 2008 Nokia launched a new model about once a week (47 new phone models); there was a phone for every segment in every corner of the world.

The year before, in 2007, Apple had launched its first mobile phone, the iPhone 1, featuring user-friendly Apps and based on the in-house iOS software. Two years later Apple reached 15% of the world market in smartphones, a market where Nokia had taken early leadership.

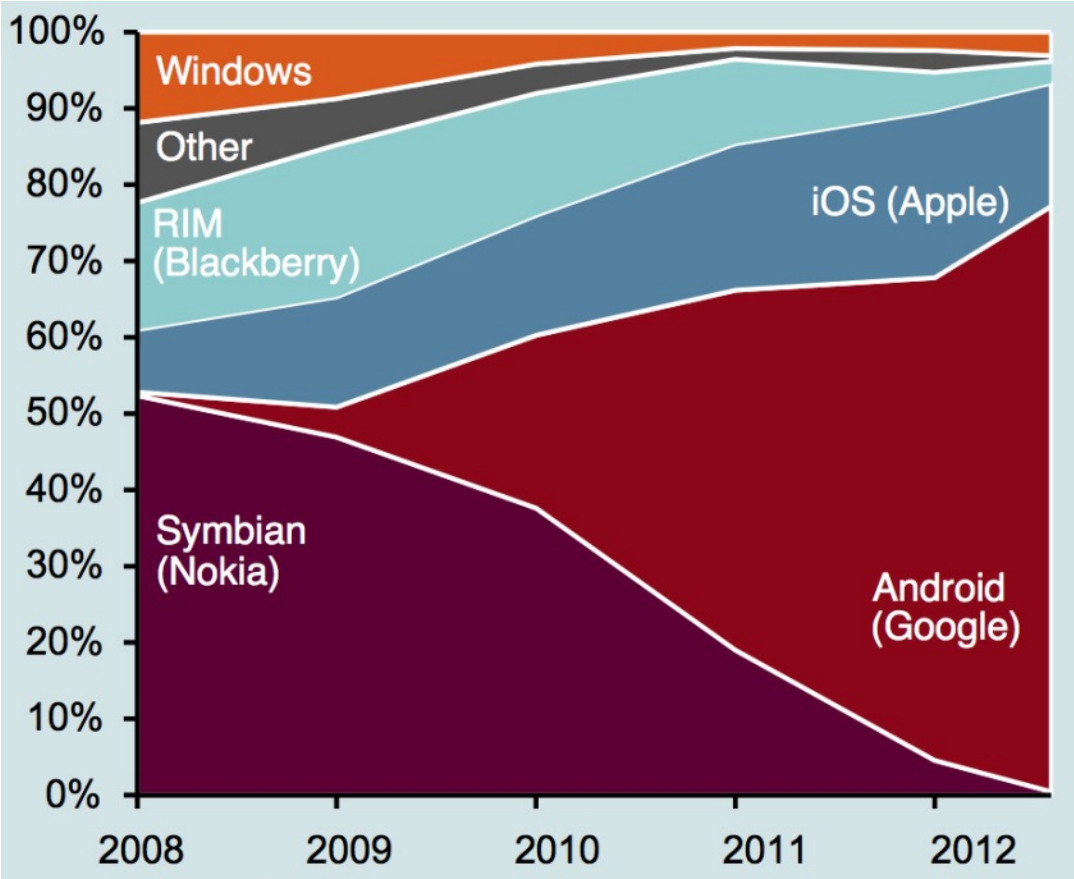
Figure 1 Worldwide Market Shares in Smartphones 2008-2009



Source: Gartner

With the entry of the iPhone in 2007 competition between smartphone manufacturers heated up, but maybe more importantly competition between different mobile operating systems sharpened. Symbian (Nokia) was losing ground to iOS (Apple, launched 2007) and Android (Google, launched 2009). Windows and RIM were also struggling. In 2013 The Financial Times commented on Nokia: *"The Finnish company missed out on the early Smartphone boom, ceding ground to Apple and Google"*[iii]

Figure 2 Markets Shares of Smartphone Operating Systems (2008 – 2013)



Source: Gartner

New CEO from Microsoft

In June, 2006 Mr Ollila had moved up to become Chairman of the Board of Nokia, and Olli-Pekka Kallasvuo took over as President and CEO. But only four years later, in 2010, a new CEO, Mr Stephen Elop, was from brought in from Microsoft, replacing Mr Kallasvuo. Mr Elop who was a U.S. citizen received a signing bonus of 6 million USD, a substantial salary and was given preferential tax status in Finland. During the coming three years revenues fell by about 40% (41.7 billion EUR to 25.3 billion EUR), and profits fell by 92%. Sales of mobile phones dropped some 175 million units.

Back in early 2011 Mr Elop had written a Memo to all employees telling a story of a man who decided to jump from a burning oil platform, and by making this bold choice he survived. Mr Elop wrote that after talking to shareholders, operators, developers, suppliers and company staff *"I have learned that we are standing on a burning platform"*. The Memo continued about heat coming from competitors with high-end products such as the iPhone and smartphones using the Google Android platform, as well as from low-end products from China. Mr Elop continued *"The battle of devices has now become a war of ecosystems"*.

Shortly after the Memo, Mr Elop announced a new strategy for Nokia. The new strategy included a discontinuation of the in-house mobile operating systems Symbian (standard and smartphones) and MeeGo (smartphones), shifting to the Microsoft Windows Phone platform. The first Nokia Windows phone, the Lumia 800, was shipped already in November 2011.

In September 2013, it was announced that Microsoft had agreed to buy Nokia's mobile phone and devices business for 5.4 billion EUR and that Mr Elop would stand down as Nokia's CEO to become Executive Vice President of the Microsoft Devices Group business unit (which changed name to Microsoft Mobile in April 2014)[iv]. As of February 2014 Mr Elop announced the first Android based Nokia phone, the Nokia X. Shortly after, on 17 June 2015, Mr Elop was laid off from his position at Microsoft.

Microsoft continued to sell mobile phones under three different brand families: the Lumia, the Nokia X and the Asha (low end phones from Nokia) brands.

Nokia Focusing on Telecom Infrastructure

After selling off the mobile business in 2013, Nokia Corporation consisted of a telecom infrastructure business and a digital map business. Nokia´s employment in Finland that stood at around 25,000 in the early and mid-2000s, was now down to around 10,000.

Already in 2006 Nokia had formed a 50/50 joint-venture with Siemens of Germany merging the two infrastructure businesses, and a new brand was formed, NSN (Nokia Siemens Networks). After selling off the handset business in 2013 Nokia decided to buy out Siemens´ shares and in April 2014 the NSN name was phased out, rebranding the company to Nokia Networks. In April 2015, the new CEO of Nokia Corporation, Mr Rajeev Suri, announced that the company had put a bid of 15.6 billion EUR on the French rival Alcatel-Lucent, to make Nokia Networks the number one telecom infrastructure company in the world.

In July 2015 it was also announced that Nokia was selling its digital map business for 2.5 billion EUR to the three German auto makers Audi, BMW and Daimler.

Finland´s Microeconomic Environment in 2016

As late as 2007, Nokia had paid 23% of all corporate taxes in Finland, had filed 27% of all patent applications and spent 30% of national corporate R&D[v]. With the Nokia demise the Finnish government recognized a pressing need to take action in order to prevent a worsening of the ongoing European crisis. A few promising tech start-ups had already emerged in Finland, and particularly the Helsinki region was competitive in different technological segments, most notably with Rovio whose Angry Bird games had conquered the world.

For many years, leading ranking institutions (e.g. World Economic Forum) and leading business magazines (e.g. Newsweek) had ranked Finland as one of the most competitive countries in the world, weighing in factors such as education, health, quality of life, innovation, clusters and the policy environment. However, the country was now facing difficult times, and in October 2014 the Finance

Minister, Jutta Urpilainen remarked:*"The state of the economy is not good. We need to boost it with government investment and by stimulating domestic demand".*

Finnish incomes were high, with a GDP per capita (PPP) of €36,770, or 39% above the EU average. This figure was even higher in the Helsinki capital region, with a per capita income of €49,450. However, the Finnish economy had been severely affected by the "double dip" recession and was currently experiencing weak growth. Also, the fact that Euro zone members had lost their triple-A rating had a negative impact on the economy.

Demand was strongly driven by the high-tech characteristics of the Finnish society; Internet usage was among the highest in the world (92%) and as the only country in the world the Finnish government had made broadband access a human right. Combined with extensive ICT infrastructure[vi], high education levels and a generally modern way of life, Finns readily adopted new technological innovations. Furthermore, the Finnish market was consistently ranked as one of the most open in the world, and being a part of the EU and the EMU, Finland had no trade or labor mobility barriers with the EU.

Finland was among the top ranked countries concerning everything from quality of life[vii], air cleanliness[viii], press freedom, legal system to gender equality[ix]. It had been named as one of the happiest countries and one of the best places to raise children[x]. The human capital of Finland was only surpassed by Switzerland[xi].

The Finnish educational system was excellent, ranked as second in the world by WEF[xii], and ahead of all other European countries in the PISA evaluations. Finland also had one of the highest proportions of inhabitants with higher education in the world, and its universities were highly ranked. Finns were known for being hard-working, persistent and encouraging of others' success instead of being envious. In fact, this mentality was so pervasive that the Finns had a word for it *"sisu"*. R&D personnel made up some 3% of the population, one of the highest shares in the world[xiii], as well as the highest R&D expenditure share of GDP in the European Union, at 3.5%[xiv].

But Finland also had the fastest ageing population in Europe with childbirths significantly under replacement rate. In comparison to its Nordic neighbors, the country applied a more restrictive, albeit slowly loosening, immigration policy for non-EU immigrants.

The main clusters in Finland, apart from ICT, included shipbuilding, forestry, chemicals and metal industries. The ICT sector made up a larger portion of national GDP than in any other country.

Figure 3 Employment in ICT Sectors (1990 – 2012)

Source: Statistics Finland

Overall, supplier quality was very good in Finland but supplier quantity was suffering as a consequence of the small size of the country. Venture capital firms were becoming increasingly prominent in Finland, with the availability of venture capital ranked as the 8th best in the world[xv].

Government Policy

The Finnish political system was stable with a well-functioning government and citizens had high trust in politicians[xvi]. The government had taken several measures to lessen the impact of Nokia's decline and to promote entrepreneurship in the wake of Nokia. First, the government had lowered the historically high corporate tax rate by 6 percentage points, to the current level of 20%, which was on par with or lower than most comparable countries. The Aalto university merger in 2010 was made with the explicit purpose to promote creativity among students and foster cross-disciplinary collaboration in Finnish business life. Tekes, the Finnish Funding Agency for Technology and Innovation, continued to play an important role. In 2013 alone, 680 start-ups were partly funded by Tekes. Tekes together with three ministries had formed the Team Finland network to provide financial support and to organize business and technology events for Finnish companies. One of Tekes' philosophies had been called the "try quick, fail quick" approach, which put low demands on

companies to receive initial funding, but where the capital inflow ceased if the venture failed to show progress. Another governmental program was the VIGO program that included several accelerators for start-ups. The high levels of state ownership, dating back decades, the 6th highest among the OECD countries continued[xvii].

Silicon Valley

During the mid-1980s and into the early 1990s a number of mainly U.S. manufacturers of calculators, home computers and desktops began to offer smaller easy to carry computer devices. The first, the Psion Organiser, developed by a British firm, was launched in 1984. It offered electronic diary and searchable address database. A U.S. manufacturer, GRiDPad offered a touchscreen computer in 1989, referred to as a Tablet. The GRiDPad tablet was manufactured by Samsung Electronics in Korea. The new portable minicomputers were referred to as Pocket Computers, Tablets, Personal Digital Assistants (PDAs) or simply Palm Pilots (one of the brands in the market). These gadgets typically offered pen computing, serial communications port, calculator, diary, address book, and tools for writing memos and drawing of basic graphs. During the 1990s a large number of U.S. firms entered the market. Early entrants included GO, Tandy and Apple´s Newton. A division of U.S. Robotics named Palm Computing launched a Palm Pilot in 1996. Moving into the mid-2000s PDAs now began to offer more advanced connectivity (USB port, Bluetooth etc.), music (MP3 player), camera, color screen, Internet access through Wi-Fi (E-mail) and a built-in mobile phone (SMS and MMS). The Palm Treo launched in 2002 offered GSM mobile phone capability. The PDAs now turned into smart phones. The Palm operating system was shifted to Microsoft Mobile software in 2006. In 2010 Palm was acquired by HP.

Figure 4 Evolution of The PDA Industry

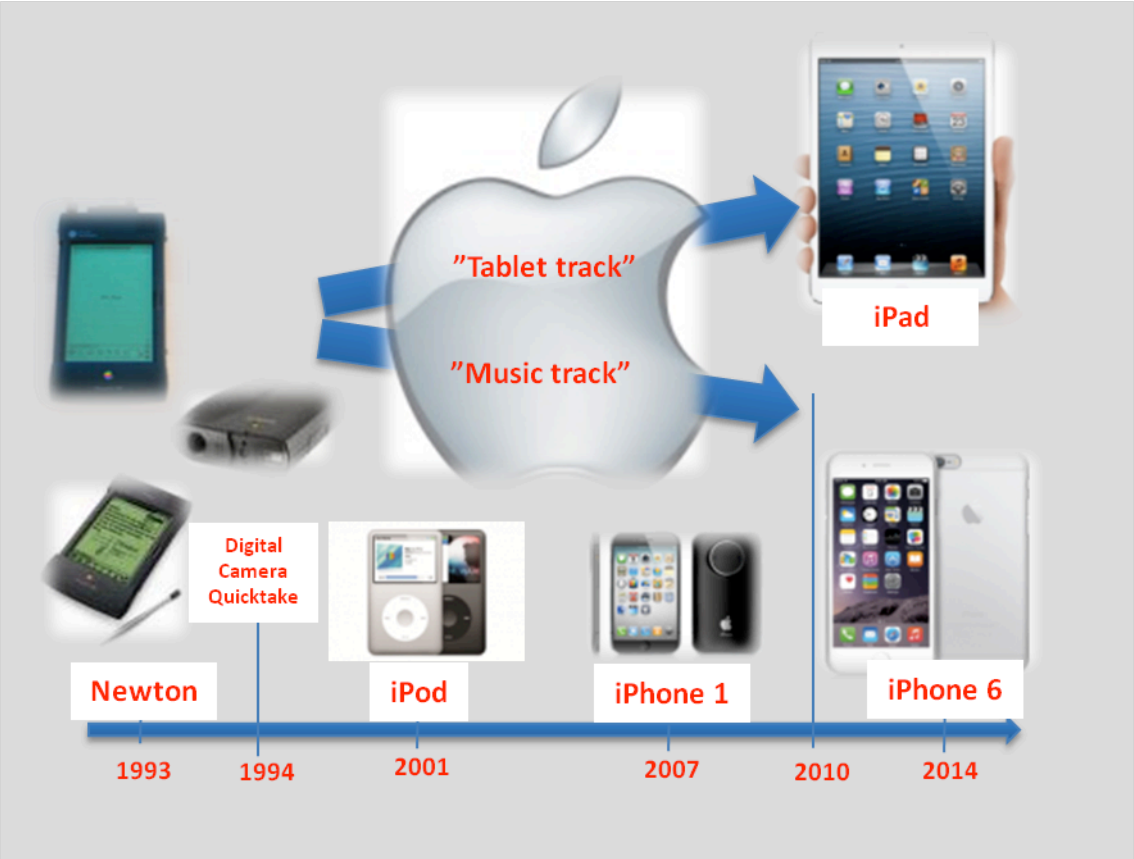
Apple

Apple was based in Cupertino in the Silicon Valley area, traditionally known for its range of Macintosh personal computers and laptops and operating software. The company had been set up in 1976 by two persons that in due time became legends in the industry: Steve jobs and Steve Wozniak. After Steve Jobs had passed away in 2011 an official biography was released presenting him as the "creative entrepreneur whose passion for perfection and ferocious drive revolutionized six industries: personal computers, animated movies, music, phones, tablet computing, and digital publishing".

Apple had launched a number of unsuccessful consumer products during the 1990s, including digital cameras, portable CD audio players, speakers, video consoles, the eWorld online service, and TV appliances. It also launched the "Newton Message Pad", a portable computer or PDA that offered features such as handwriting recognition on the screen, calendar, address book etc. In 2001 Steve Jobs showed the iPod for the first time, a portable media player for music and video. The iPod was developed together with a platform, iTunes, for downloading music, and was presented to the market as "1,000 songs in your pocket". In April 2003 at the "All Things Digital" conference, Steve Jobs mentioned that he saw a future in mobile phones rather than the PDAs. A first entry into mobile phones took place in 2005, when Apple launched a phone jointly with Motorola, the U.S. leader in mobile phones, using the iTunes software. Motorola had designed the phone but Steve Jobs was not

happy with the design, and two years later the iPhone 1 hit the market, and cooperation with Motorola was discontinued. Also the iPod line was discontinued.

Figure 5 Evolution of Portable Devices in Apple



In 2010 Apple launched the first tablet, the iPad (iPad air in 2014). The iPad also used the in-house iOS software and Apps (downloaded from the App Store). Just like the iPhone, the iPad offered multi-touch screens and virtual keyboards. Some iPads only offered Wi-Fi connection while others also had a built in radio unit, similar to mobile phones.

In 2005 the search giant Google, also based in Silicon Valley, acquired Android, and in 2007 the operating software for smartphones and tablets was launched. The software is open source. As of July 2013, the Google Play store had over one million Android applications (Apps) published, with over 50 billion applications downloaded.

Helsinki ICT in Transition

"When Nokia fell, there was a lot of talent who found themselves without a job. These people then started doing their own thing."

– Tommi Houvinen, iZettle Finland

In recent years competition in world telecom markets had heated up considerably. Huawei and ZTE from China had moved into both the infrastructure and handset businesses, and Silicon Valley based firms had taken leadership positions in new operating software and handsets. ICT and other technology-oriented start-up clusters had emerged in Berlin, East London ("Silicon Roundabout"), Tel Aviv, Bangalore, Tokyo, Singapore, NYC and other places. Still Silicon Valley dominated the scene with successful start-ups, so called "Unicorns" (companies valued at more than $1bn within 10 years from inception). In 2014 Silicon Valley was the home of 53 unicorns, Stockholm the home of five, and Helsinki of one[xviii].

A number of collaborative initiatives emerged, including Aaltoes, a student-run entrepreneurship society, Startup Sauna, Skene, and the Slush conference bringing thousands of entrepreneurs and venture capitalists to Helsinki once a year. Tekes, Forum Virium and Helsinki Business Hub were all involved in these initiatives. In 2014 Slush registered a record of 14,000 attendees in 2014. Wang Jian, CTO of the Alibaba Group in China, noted *"I always thought Silicon Valley was the epicenter of global innovation. After Slush I changed my mind."*

These cluster organizations helped to close gaps between firms and other actors inside and outside the cluster. For instance, Startup Sauna's World Tour hosted around 30 events all over the globe to promote Finnish tech start-ups, and Slush launched a 2015 spin-off in Tokyo. Competitions were arranged where a number of startups would win trips to places like Cambridge and Silicon Valley in the U.S.

Nokia also provided support to budding start-ups through its Bridge Program offering up to €100,000 to ex-Nokia employees who wanted to start a new business. More than every 10th ex-Nokia employee had started their own ventures and roughly 1,000 start-ups could be traced back to the Nokia Bridge Program[xix].

"When Nokia was successful, it was very hard to hire talented employees, because they all worked there! Now, people are ready to take risks, to do what really excites them."

– Tommi Uhari, founder of Uros, ex-Nokia employee[xx]

One particular cluster had emerged around Helsinki, namely the mobile gaming cluster, including Rovio, established in 2003, Supercell established in 2010, and some 200 smaller start-ups (Exhibit 1). In 2013 Rovio (with "Angry Birds") passed the torch to Supercell as their game "Clash of Clans" became the most successful app game in the world to date[xxi]. Mobile gaming had become one of the fastest growing industries during the last decade. In an interview Ilkka Paananen, CEO of Supercell, remarked: *"Supercell would not exist without Tekes"*.

The number of people employed in the digital games cluster more than doubled between 2008 and 2015, from 1,150 to 2,500, while turnover increased more than 11 times during the same period. Other technology segments had also emerged, including e-health with companies like BetterDoctor, MeeDoc and NetMedi. One industry observer noted: *"Everyone knows everyone which helps entrepreneurs to get in contact with the right people"*[xxii].

Future Outlook

Internet of things (IoT) and the networked society were important trends in society, involving cloud computing, mobility and ubiquitous broadband. Industry leaders were discussing issues such as communication and data security, identity handling and location confidentiality. The major telecom firms were investing into cloud services and multimedia segments.

Figure 6 Major Telecom Firms and Business Segments

Global position	Firm	Telecom networks	Servicing networks	Mobiles & Smartphones	Cloud services	Multimedia
1	Ericsson	X	X		X	X
2	Huawei	X	X	X	X	X
3	Nokia	X	X		X	x
4	Alacatel Lucent	X				
5	ZTE	X		X		
6	Samsung	X		X		

Source: Compiled by author

To drive new standards within IoT a new consortium had been initiated by GE, Intel, IBM, SAP and Schneider Electronics, the Industrial Internet Consortium (IIC). The consortium had also attracted Telecom firms.

In 2015 there were discussions around the possible merger between Nokia and Alcatel-Lucent, putting Ericsson into the number 2 position, and Huawei to number 3 in telecom infrastructure. Samsung, being a top player in the Smartphone segment, was also making an inroad into the infrastructure business. In 2015 Nokia confirmed that it was planning to return to the Smartphone business in Q4 2016, when the contract with Microsoft, barring Nokia from this market, ended.

In January 2016 the merger of Nokia and Alcatel-Lucent was celebrated in Helsinki. Risto Siilasmaa, Chairman of the Nokia Board of Directors *remarked: "Nokia has gone through a fundamental transformation - over 99% of our more than 100 000 employees did not carry a Nokia badge just three short years ago*".[xxiii]

Exhibit 1 Ranking of Clusters in Europe: Software and Games

Region	Employees FTE	Wage € / FTE	LQ	LQ Rank	CC Rank
Utrecht	11 517	47 007	4.1	1	1
Karlsruhe	25 337	61 570	2.94	4	2
Helsinki-Uusimaa	13 766	57 896	3.62	2	3
Berks-Bucks-Oxon	17 097	71 652	2.26	11	4
Hovedstaden	12 909	82 108	2.23	12	5
Stockholm	25 466	53 046	3.27	3	6
Oslo og Akershus	9 066	84 015	2.42	9	7
Berlin	19 690	42 341	2.85	5	8
Oberbayern	31 614	53 548	2.19	13	9
Vlaams-Brabant	4 931	55 723	2.05	16	10

Source: CSC – The Cluster Observatory

FTE is Full Time Equivalents

LQ is Location Quotient

CC (Cluster Competitiveness) rank is a measure combining LQ rank and Wage rank (total of around 300 regions/ranking positions in Europe).

[i] Dagens Industri, 27 November, 2014.

ii Svenska Dagbladet Näringsliv 130916 ”Nokias magplask fortfarande en olöst gåta” by Tomas Augustsson.

[iii] Financial Times 24 October 2013: The Australian Financial Review, p. 31.

iv The Wall Street Journal (2013), article: “Nokia Sale Marks End of an Era - Former Tech Giant Has Long History of Reinvention” http://online.wsj.com/articles/SB10001424127887324886704579052380986072894.

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viii Yale University (2014), Environmental Performance Index, air quality ranking http://epi.yale.edu/epi/issue-ranking/air-quality.

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xii Ibid.

xiii OECD, 2009.

[xiv] Eurostat, 2014.

xv World Economic Forum, Global Competitiveness Report, 2014.

xvi Ibid.

xvii OECD, 2006.

xviii Tung, L. (2014), ” Stockholm is the 'most prolific' billion-dollar startup hub behind Silicon Valley”, ZD Net http://unctad.org/en/PublicationsLibrary/ier2011_en.pdf.

xix Sucher, S. and Winterberg, S. (2015) “Nokia’s Bridge Program: Outcome and Results (B)”, Harvard Business School.

xx Quote from Agence France Presse via NDTV, 2013.

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xxii Expert interview with Kasper Suomalainen, Aaltoes.

[xxiii] http://company.nokia.com/en/news/press-releases/2016/01/14/nokia-celebrates-first-day-of-combined-operations-with-alcatel-lucent