VICTA – Virtual ICT Accelerator

Juha Ruohonen, Arvoketju Oy

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Tekes

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Final Report

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Foreword

According to various competitiveness rankings, Finland is one of the leading countries in the world. One of the key underlying factors behind this success has been a long term commitment in buiding what is now regarded as one of the best innovation environments in the world. A strong emphasis on education, research and collaboration supported by significant public investments in R&D and innovation has been instrumental in renewing traditional manufacturing and process industries and creating new strengths, like the telecom industry.

However, the innovation environment has also some weaknesses. The number of new innovative fast growing companies has remained low compared to the other leading innovation environments in the world, such as US and Israel. Young fast growing companies are absolutely vital for a knowledge based economy such as Finland, and therefore new ideas and models are needed.

The VICTA –project (Virtual ICT Accelerator) was launched as a joint project by the public sector and the venture capital industry. All major players of the Finnish early-stage community were consulted during the project. The fundamental goal of the project was to analyze the existing business development models in the Finnish early-stage high-growth ecosystem and to compare them to the best environments globally. The benchmarking and the subsequent recommendations are valued against the ability to generate and help young fast growing companies.

Tekes wishes to thank the writer of this report and all those that contributed to the project. The report provides a valuable contribution to the on-going effort to continuously find new ways to improve the Finnish innovation environment.

"You cannot run away from weakness;
you must some time fight it out or
perish; and if that be so, why not now,
and where you stand?"

Robert Louis Stevenson

Helsinki, November 2007

Tekes

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1 Project Description

1.1 Project Background

"All is not as it seems in the frozen land" was an intriguing headline in Financial Times early September 2007. The world's leading financial newspaper was describing Finland as one of the most prosperous countries during the last 10 years. Finland has a reputation of being the nation for high education, innovation and strong economy. At the same time the FT reporters were pointing out alarming structural weaknesses, especially in the innovation system and the ability to attract foreign investments. Many experts interviewed were concerned over the ability of Finland to sustain their competitive position in the future.

The VICTA project (**V**irtual **ICT** **A**ccelerator) was launched as a joint project by the public sector and the venture capital industry involving the major players of the Finnish early-stage community. The fundamental goal of the project was to analyze the existing business development in the Finnish early-stage high-growth ecosystem and to compare it to selected environments. All evaluations and suggestions are valued against the ability to help ***growth companies***. The detailed goals of the project were:

- To analyse best practises in high-growth incubation and business development activities
- To compare the finnish early-stage high-growth ecosystem to selected benchmarking targets (Silicon Valley, Massachusetts, Israel)
- To create a model for more efficient business development operations (including public-private cooperation) focused in high-growth companies in Finland
- To create a business plan for "Virtual ICT Accelerator" -concept.

In addition, various aspects of the early-stage high-growth ecosystem were studied since business development activities cannot be evaluated without analyzing the surrounding ecosystem.

1.2 Project Resources

The project was coordinated by Culminatum Oy and the project resources were provided by Value Chain Ltd and PriceWaterhouseCoopers Oy. The project group consisted of the following people:

- Irma Patala, Culminatum – Project Coordinator (later replaced by Tiina Tolvanen)
- Juha Ruohonen, Arvoketju Oy – Project Manager
- Mikko Wennberg, PWC – Project Expert
- Jussi Hattula, Eqvitec Partners
- Sami Lampinen, Inventure
- Pekka Roine, Conor Venture Partners
- Markku Maula, Helsinki University of Technology
- Mikko Pirinen, Technopolis Ventures (later replaced by Tuomas Maisala)
- Tapio Koivu, VTT
- Tapio Siik, Nokia Growth Partners
- Kim Kaisti, Fastrax
- Kari Herlevi, Tekes (later replaced by Tiina Rissanen)

The project had a steering group consisting of the key players of the finnish early-stage community:

- Henri Grundsten, Finnish Industry Investment
- Petri Laine, Finnvera plc.
- Heikki Ojanperä, Sitra
- Artturi Tarjanne, Nexit Ventures
- Martti Hintikka, Innofinance
- Jukka Rauhala, Nordic Venture Partners
- Vesa Wallden, CapMan Oyj
- Vesa Sadeharju, 3i plc
- Ari Siponmaa, Aura Capital
- Antti Sekki, FVCA

In addition, there has been a network of people participating in selected discussions. The project started in May 2007 and was accepted in October 2007.

1.3 Problem Assessment

Finland is widely regarded as one of the most successful corporate-driven innovation economies in the world. The investment in R&D per capita ranks among the highest (currently number 3 behind Israel and Sweden) and Finland is consistently ranked as one the best in global competitiveness assessments (e.g. #1 in ranking published by WEF).

However, there are serious challenges in Finland's ability to generate and support high-growth start-ups. Finland has a strong foundation in research, technology development and IPR but fails to engage a large number of growth companies. This mismatch was specially highlighted in the FT report as well.

The chart below (Figure 2) illustrates a comparison between Finland, Israel and Massachusetts in selected key measures of the early-stage high-growth ecosystem.

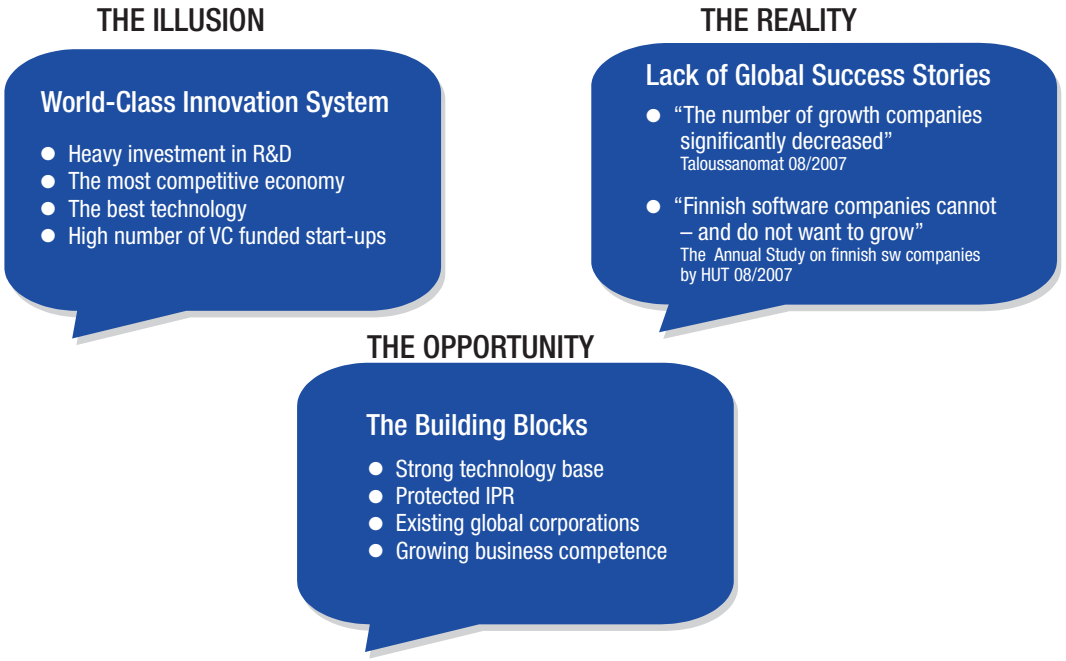

Figure 1. The illusion, the reality and the opportunity.

Metric	Finland	Israel	Massachusetts
Population Millions	5,2	6,9	6,3
Share of academic degrees	25.00%	24.00%	N/A
Number of new companies annually	23 000	20 000	27 000
R&D Investments per capita %	3,5 (#3)	4,1 (#1)	4,9 (N/A)
Annual US patents filed per million capita	166	186	300 (N/A)
Number of initial investments annually (approx.)	100	100	150
Fault line			
Average initial investment M $	0,3	2,8 (#4)	6,2 (#2)
Total annual volume of VC investments M$	220	1650 (#3)	2400 (#2)
Number of companies in the Deloitte Fast Growth 500	4	44	36
Number of annual stock exhange listings	1	35 (1H/2007)	9
Number of companies listed in Nasdaq	0	100	60
Number of active VC funds in early-stage	10	60	50
Global R&D Centers of major corporations	5-6	30-40	10-20

Figure 2. Comparison. After the "Fault line" a clear discontinuity in Finland.
Source: FVCA, NVCA, IVA, IVC, EVCA, E&Y, PWC Money Tree

The difference is clear. Finland matches Israel and Massachusetts in most of the proportional input metrics but fails badly in the outcome metrics focused on growth. It must be noted here that Nokia seriously distorts the figure for R&D per capita (72% of the R&D investments by TOP 50 Finnish companies in 2006!) – Finland would be ranked as number 15 globally without Nokia´s huge R&D contribution. The relative share has not grown since the year 2000[1]. In general it can be said that the Finnish system produces a fair number of new potential high-growth companies but cannot support their growth to a global level.

There are several reasons for this moderate success. They can be analyzed in three groups; attitude and competence, dealflow and resources.

By nature Finns are not good at tolerating risk. This is a fundamental challenge in a business (like the growth entrepreneurship) where the ability to tolerate risk is the ultimate building block for reward. This risk aversion can clearly be seen in the public sector funding where *selection criteria has been vague* and the *hit-rate* for funding has been *high*. The public sector has focused on the high survival rate instead of the success rate. This has lead to large number of companies with insufficient resources for growth.

Even more serious challenge is the *lack of global business competence*. The number of serial entrepreneurs is very low and most of the talented business (sales and marketing) professionals choose to work for the large corporations. This can also be seen in the low number of corporate spin-offs or spin-outs entering the Finnish early-stage high-growth ecosystem.

There has been numerous development programs and projects in the Finnish early-stage technology cluster during the last 10–15 years. The common nominator has been that only few permanent structures have been created, real development has been slow and the same players and service providers populate the projects and programs all over again. Most of the initiatives are training or networking programs trying to educate Finnish engineers and scientists to become better businessmen. One of the indicators is the very low involvement of international service providers as sources for development in the system. These companies (e.g. The big 5 consultants) could contribute to the system but due to the bureaucratic system choose not to.

Another inconsistent feature in the Finnish system is the short time-span of the development activities. Typically any program, project or organization is expected to show results in 2 or 3 years which is very difficult in the early-stage high-growth industry. This inconsistency leads to artificial targets followed by wrong measures. Current innovation system in Finland is dominated by the public sector. When services are bought from private sector, operations are guided by public rules and regulations. Finnish innovation system has evolved to a huge, over-sized infrastructure, which doesn't match at all the needs on high growth ventures.

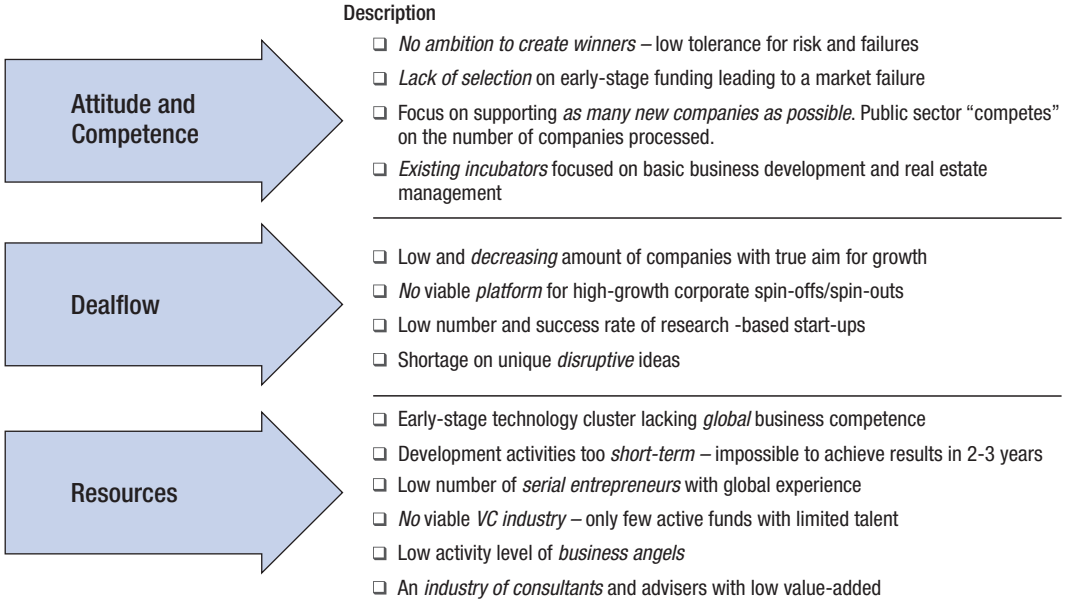

Figure 3. Reasons for problems.

1 Talouselämä TOP 500 2006

1.4 The Need

There is a clear need in Finland:

- To create a viable high-growth ecosystem
- To multiply the number of VC capable growth companies
- To eliminate the waste of resources to lifestyle companies
- To provide a viable platform for fast international growth
- To increase the corporate involvement and the number of corporate spin-offs/-outs
- To better facilitate the transformation from research project into a fast growth start-up.

This can be achieved by:

- shifting focus from quantity into quality
- moving from project-based development to efficient long-term structures
- creating structures to enable success of commercial players
- attracting much more international talent into Finnish early-stage community.

2 Project Key Findings

2.1 General

In general, few essential findings regarding the successful early-stage high-growth ecosystem can be highlighted:

- *The role of the public sector.* The role of the public sector is essential in many ecosystems. Most of the European economies (as well as Israel) are public-driven whereas the US system is corporate-driven. In a public-driven system the role of the governmental players is vital. The common challenge is the balance between direct and indirect return on public investment. Another common mistake is a direct government involvement to compensate the lack or low volume of commercial players. Instead of direct involvement, structures attracting commercial players should be implemented. The role of the public sector in well-performing innovation ecosystems is to provide resources and diminish obstacles, not to replace professional market driven players or services.
- *The role of the incubators.* Business development activities (incubation, acceleration etc.) are a fundamental part of the early-stage high-growth ecosystem. Therefore they cannot be evaluated solely without their connection to VC industry, research community and corporate players. They can be a very efficient tool for growth-oriented development as shown by the most successful high-growth economies (e.g. the Israeli example).
- *The time-span of operations.* To achieve concrete results in the development activities on the early-stage high-growth ecosystem takes time. Typically it takes a minimum of 5 years before any real results can be shown. This is especially true with growth incubation since it plays a significant role in the future success of the company. This success – however – typically takes 5–7 years to realize[2].

Israel is one of the major technology hubs in the world. Israel could have not based their success on large corporations, because they didn't have such a corporate economy as for example Finland has. They have managed to build an extended ecosystem in less than 15 years. Therefore it is essential to learn from their experiences.

2.2 The Israeli Story

The Israeli high-growth industry is one of the major success stories during the last 15 years. From virtually non-existing high-growth industry in early 90´s they have been able to develop a huge industry with[3]:

- 75% of the annual exports technology, total cumulative influx of capital 55 bn $
- The 3rd largest VC market globally
  - 60+ active VC funds in the market
  - 12 bn $ funding raised by Israeli funds since Yozma program
  - 95% of the capital in the funds non-Israeli
  - Annual investment to Israeli companies 1,8 bn $; 44% of money invested from Israeli funds
- Over 40 major strategic R&D centres employing 35–40 000 people
- 100 + companies listed in Nasdaq
- All 10 initial Yozma –based funds active in the market (now 5bn $).

The Israeli ecosystem is a result of on-going public-private cooperation. It was originally planned in the late 80´s based on the experiences on the largest high-growth market, the USA (especially The Silicon Valley). The major drivers creating an opportunity for Israel to enter the global high-growth industry were:

- Injection of talent due to massive immigration from the former Sovjet states
- Strong technology base in defence and military
- High quality research and the emerging entrepreneurial thinking.

The first attempts (e.g. the Athena program) to engage the industry were not successful due to the lack of commercial players on the market. The people on the OCS (The **O**ffice of the **C**hief **S**cientist) soon realized that the only way to engage the industry was to attract the best people to the Israeli market. This was the birth of the Yozma program[4].

2 Interviews with Norm Kadermann, Bob Ronstadt and Joel Wiggins
3 IDC: The competitive advantage of Israel, 2006; selected interviews
4 Interview with Yigal Erlich

2.2.1 The Yozma Program

The Yozma program was a development program based on the experiences from the SBIC (Small Business Investment Company) from the US. The goal was to create a viable VC industry to Israel. The core tool of Yozma was the launch of 10 new early-stage technology funds (target size 20 M$ each) with initial funds (40–50%) provided by the Israeli government. The public money was used to trigger the funds, not to generate upside. Therefore it had a call option offering all joining commercial investors (fund-of-funds, private equity, VC funds, private investors) an option to purchase the government investment until 5 years of the first closing of the fund with an interest rate of 5%. This proved to be a very successful model[5].

The key success criteria for Yozma was the ability to attract the major commercial players to participate in the launch of the VC industry. Israeli's realized that they had virtually no competence in managing the funds and developing the technology companies. Therefore they attracted the best talent from the US to engage the activities by providing them with considerable upside, tax benefits and other incentives). They were able to commit the major players of the VC industry to join the Yozma funds to create a global network later proving to be valuable for the Israeli companies. The OCS also established a separate fund (20M$) for direct syndication investments to boost the size of initial investments in the beginning. This operation was ceased when the VC funds started actively investing in the Israeli market[6].

The Israelis created the VC industry in a single blow. The Yozma –oriented funds currently manage over 5 bn $ and the Israeli VC market is the largest one outside US; probably the most successful compared to the size of the economy. The fact that 10 active new players were engaged created a vibrant and active early-stage investment market utilizing the emerging talent and ideas available. This was a major building block for the *high-growth ecosystem*. Currently there are over 60 active VC funds operating in Israel including many of the top-tier international VC companies[7].

2.2.2 The Exit Channel

After the Yozma was successfully engaged, the number of Israeli high-growth start-ups started to grow rapidly. The next challenge was to generate exit opportunities. Since there is no local or near-by market for the Israeli companies, they have to be global from the day one. Through the participation of the global investors in the Israeli funds, a clear path to global markets was built. The main market has been in the US (due to the high share of software companies) but recently also far-east and European markets have been emerging. Typically the sales and marketing activities are operated in US and the R&D remains in Israel.

The Israeli government has initiated many activities to attract the leading global companies to the Israeli market. They have engaged new multi-national joint development funds, introduced new tax arrangements and offered special government grants and loans to multi-national companies[8].

There are currently over 40 (44 in the summer 2007) leading global companies operating their strategic research and development centers in Israel. Over 85%of them have been established through M&A activity – only 7 by Greenfield operations. Over 30 bn $ has been invested in Israel through trade-sales, mergers and IPO´s. There are 2 reasons for success:

- *Born Global approach.* Israeli technology companies are typically established solely to the global markets. Through the networks originating years back and especially created during the Yozma, Israeli companies have been successfully relocating to global markets, mainly US. Israelis are willing to tolerate the risk required to create successful global companies. They also understand the value of critical mass and brand creation in global operations.
- *Continuous support from the government.* The government has actively engaged new initiatives to attract global companies to Israel. Tax benefits have been introduced, targeted R&D funding packages have been created and strategic partnerships (e.g. joint funds like the Bird Foundation) have been established to generate new business opportunities.

The Israelis have been successful in attracting the global companies to be a vital component of the *high-growth ecosystem*. Instead of just promoting the sales activities of the technology companies, the Israelis have been able to turn the tide resulting in a huge amount of invested capital in the Israel high-tech industry. Naturally the main reason here is the high-quality competence expressed by the successful companies, but the role of the Israeli government has also been vital[9].

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5 Avnimelech & Teubal: Creating VC industries that co-evolve with growth
6 Interview with Yigal Erlich
7 Interview with Yoram Oron
8 Interview with Mina Goldink
9 Avnimelech & Teubal: Building Venture Capital Industries – Understanding the US and Israel experiences

2.2.3 The Incubator System in Israel

After the emergence of Yozma, the Israelis realized that they need to be able to support the VC industry by business development activities. As in most of the economies, the Israelis established publicly funded network of incubators (the OCS incubator program) mainly focusing on basic business development. These incubators were funded and managed by public sector officials with lack of global business experience. The system increased the number of incubator companies, but could not support their growth.

In 2003 the system was changed. The OCS revised its incubator program by cutting off the direct funding to the incubators. Instead the VC industry took over the incubators. The fundamentals of the Israeli incubator system are[10]:

- *Privatization.* 23 of 24 incubators in the OCS program are mainly owned and managed by VC´s. The incubator network is seen as the major development tool for the challenging seed-phase companies by both parties; the OCS and the VC´s. In practise the incubators are owned by VC management companies, key personnel and in many cases the academia.
- *Competence.* The incubation operations are managed by experienced professionals with background from being a serial entrepreneur or a VC. The key persons have a direct upside on the incubator and in most cases they are allowed to have an upside on the companies they manage. One of the key actions by the incubator is to bring in the new management for the companies when they enter the system. This is typically done as the first action to get the project up to speed. Incubators have a pool of management experts as C-level resources but the incubator managers are also willing to take part-time management assignments from their customer companies.
- *Networking.* The Israeli's have managed to transform the incubator network as a vital part of the high-growth ecosystem. Academia has an active role in the system and in many cases the university is a shareholder in the incubator. This creates a clear incentive for them to force their best cases to the system. This is further promoted by offering academia a significant stake (typically 10–15%) from the start-ups established based on their IPR. Another part of the network are the multi-national corporations. They are vital source of talent (key personnel rotation) and dealflow (spin-offs). In many cases corporations realize that their IPR can grow faster as start-up than as an internal development project (the Cisco approach).
- *Tight selection.* The Israeli incubation system can be seen a "pre-school" for VC funding. The hit-rate among the incubators is 3–5% and the selection criteria is very VC oriented. Currently the 23 incubators have around 240 companies as customers (average 10 companies per incubator). The average number of managers per incubator is 3 resulting in only 3-4 companies to manage per key resource.
- *The leverage factor.* The key structural element in the Israeli incubational system is the leverage factor in funding provided by the OCS. When a company is selected in to the incubator, OCS typically provides the company with a 400 K$ grant (separate decision though) including a special collateral and a royalty deal. In addition the VC´s involved commit a minimum of 100 K$ (typically 300–400 K$) to the company. In reality the company receives a total funding of 500–800 K$ for the maximum incubation period of 24 months (6 month milestones). The OCS funding includes a call option for the VC´s involved enabling them to purchase the collateral at any given time to increase their ownership in the company. This arrangement makes the incubators a very lucrative and effective tool to manage the "window of opportunity" challenge so difficult in the early stage.

The Israeli incubation system is widely regarded as the most efficient in recent evaluations (PWC, IDC, Teubal & Morris[11]). The key is the revised focus for growth companies only, including the heavy involvement by the VC´s. When compared, the systems in Finland and Israel operate differently.

Finnish incubational system is almost totally based on project funding, which has lead to project manager -based faculty whereas Israeli model is based on business professionals (serial entrepreneurs, executives, VC experience).The major difference is the number of companies served by the system. In Finland, the goal of the system during the last few years has been to increase the number of companies in the incubators – with success though. However, the amount of funding raised shows that the Finnish incubation system has too many lifestyle entrepreneurs as clients. Other challenge is the fundamental role of the real-estate management. Incubation services are seen as an additional component for real-estate management whereas in Israel real-estate is seen as an additional component for the incubation operations.

10 Interview with Rina Pridor
11 Schefer & Frenkel: The Evaluation of the Israeli technological incubator program and its projects. Frenkel, Schefer, Miller: Public vs. Private Technological Incubator Programs

Metric	Finland	Israel
Number of incubators	26 (Tekel Members)	23 (Certified by OCS)
Number of annual high-growth start-ups	Approx. 100	Approx. 500
Number of companies in process	2 400 Tekel Total avg. 24 (Yrke) / incubator	230 Avg. 10 / incubator
Number of companies per incubator manager	10-15	3-4
Entry Hit-Rate	30-40%	3-5%
Survival Rate	Not measured, estimated at 80-90%	Measured, 40-50%
Funds Raised by the graduates in 2006	No information available, estimated at 5-10 M$	Measured, 250 M$ (220 M$ 1H/2007)
KPI`s used	Number of companies processed Employment factor	VC funding acquired Survival rate (3/5years)
VC Involvement	Low, occasional	Part-of the system, ownership
University Involvement	Low, occasional	Part-of the system, ownership from the incubator and from the companies
Corporate Involvement	Low, occasional	High, active networking Dealflow source
Upside Generation	No upside opportunity	Ownership from the customer companies (up to 5%, regulated)
Typical manager profile	Program Manager Business developer with limited experience	Serial Entrepreneur, VC
Annual investment by goverment	N/A	25 M$

Figure 4. Comparison of the incubation systems.

Another model of commercialization used successfully in Israel is licensing. The licensing company of The Hebrew University of Jerusalem (among the TOP 100 globally in the Shanghai university ranking) called Yissum operates successful licensing operations with annual revenue of 40M$. [12]Yissum licenses the IPR portfolio of the university (5000 patents) mostly to the leading corporate players present in the Israeli market. They also partner actively with these companies to assess the strategic research areas for the university based on market information.[13] Yissum runs 2 parallel business models:

- *Licensing model* based on royalties. Models include direct licensing and royalty-based licensing.
- *Start-ups* based on the Yissum IPR. These companies are founded within one of the incubators in the OCS incubator program to ensure the VC involvement and management talent. No company is established by Yissum and the research group alone.

2.2.4 Summary on Israel

The major difference between Israel and Finland can be seen on the ecosystem[14]. The Israelis have been able to create a prosperous ecosystem with strong global involvement whereas Finland is lacking some of the major cornerstones. In Israel the value of competence – especially serial entrepreneurship – is thoroughly understood and valued. The whole system is designed to support global growth in order to create more success stories as people learn from their experience. (Figures 5 and 6)

In Finland, the cycle looks different. Since the ambition level is low and we lack the experience from the success stories, it is difficult to attract the global players and their competence to Finnish market. This again lowers the odds for success stories promoting the ecosystem.

The major difference between Israel and Finland is the attitude of the governmental players. In Finland, the government is looking for direct involvement in the high-growth ecosystem supported by the strive for direct ROI for investments. The assumption is that most value is generated by the system itself[15].

In Israel the government involvement is mostly indirect supported by the strive for indirect return. The assumption is that the most value is generated by the commercials players in the ecosystem.

12 In Finland the annual estimated annual licensing revenue from university-based IPR is less than 5 M€.
13 Inteview with Nava Swersky Sofer
14 Interview with Yoram Oron
15 Interviews with selected persons in Israel

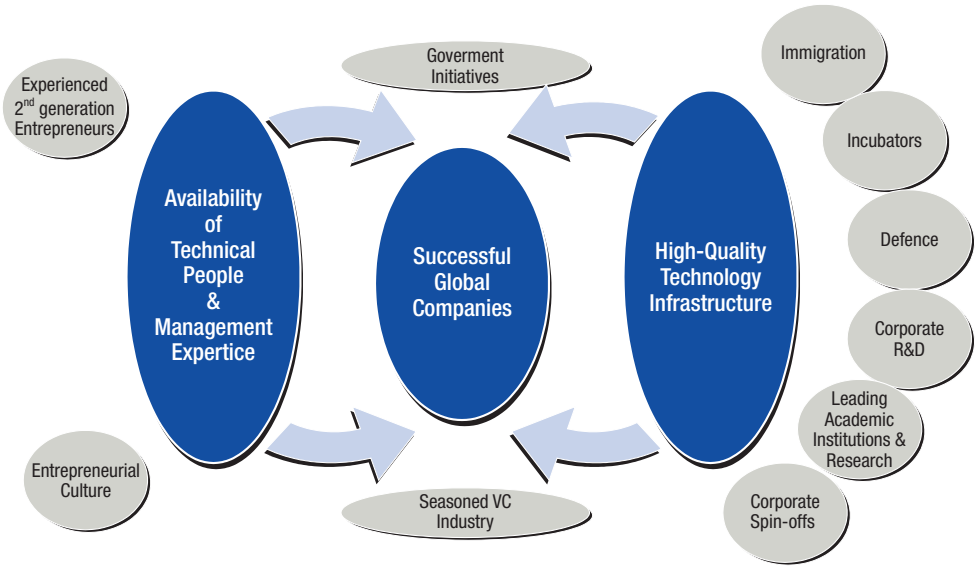

Figure 5. The Israeli high-tech ecosystem.

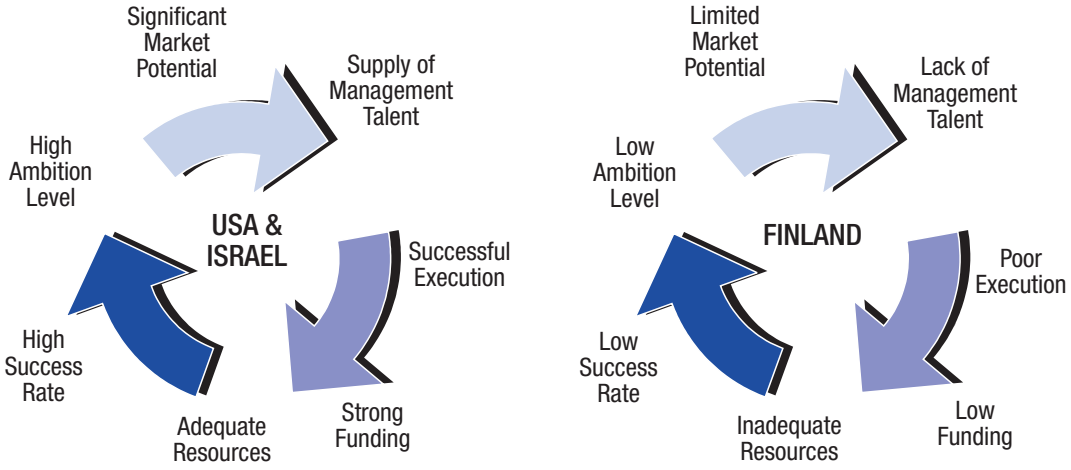

Figure 6. Prosperous vs vicious cycle.

2.3 Findings from the US

There are several business development model found in the US which could be adapted in Finland. The common nominators for all models are:

- Tight Selection
- Strong Industry Focus
- Strong focus on business competence
- Vital role of the VC Industry.

The most common incubation structure in the US can be called a hybrid incubator. It is a public-private operation, where a public sector party (state, city, municipality, regional development organization) offers the basic facilities (office space, laboratories, development environments etc.) to the incubator. The incubator is run on commercial basis focusing on the business development of its clients. The resources working for the incubator are typically well connected, experienced business people and the operative costs are covered by the incubator companies in the services they buy. Close cooperation with VC industry is a key to successful operations. They key metrics are entry hit-rate, VC funding raised and retention rate (3/5 years). Very good example is SW Business Incubator from San Jose CA. They have had 125 companies as customers during the last 11 years (currently 14 clients). In total these companies have raised 650 M$[16].

16 Interview with Chuck Erikson

Another model is an incubator with a separate fund. A good example here is the Acceleration Company in Seattle, WAS. It is a life science incubator where 7 VC´s have committed a fund of 21 M$ (3 M$ each). When a company is accepted into the incubator, it typically received an initial investment of 1 M$ from the fund. That money is used to prepare the company for the initial funding usually provided by the VC´s involved in the fund. The Accelerator Company has been operating for 3 years and has served 6 companies during that period[17].

The third model is a university-based commercialization company. For example MIT runs a commercialization company investing from a separate fund to proof-of-concept phase 100-200 K$. After this phase, the companies should be ready to close their first seed investment, typically from a bunch of business angels. The selection process here is also rigorous. As of summer 2007, the company at the MIT had funded 67 companies, out of which 11 had been able to raise VC funding totaling 90 M$.

All of the models are focused on supporting high-growth start-ups. Therefore the key performance indicator is the VC funding acquired.

The experiences from the US system cannot be implemented in Finland directly. Since the system is strongly market-driven, it requires a strong network of global players and a large home market. The role of the public sector is to facilitate the growth opportunities – not to interfere with the concrete activities.

2.4 Summary of Benchmarking Findings

The common nominator from all successful incubation operations is the strong focus on growth companies. It translates into tight selection criteria, low hit-rate and the development of VC capability. The understanding of risk-reward matrix is critical.

Since Finns avoid risk by nature, they tend to invest in low risk – low return companies. These companies are usually referred as lifestyle companies. The Finns typically set a maximum level of risk to tolerate to improve the returns of their investments. The US typically assesses a minimum risk they must take in order to maximize their reward potential. This is the reason why US VC´s typically invest most of the disruptive cases and Europeans (including Finns) don't. By limiting their risk, the Finns efficiently limit their upside potential.

The most successful early-stage ecosystems are based on the understanding of the risk-reward matrix. Therefore

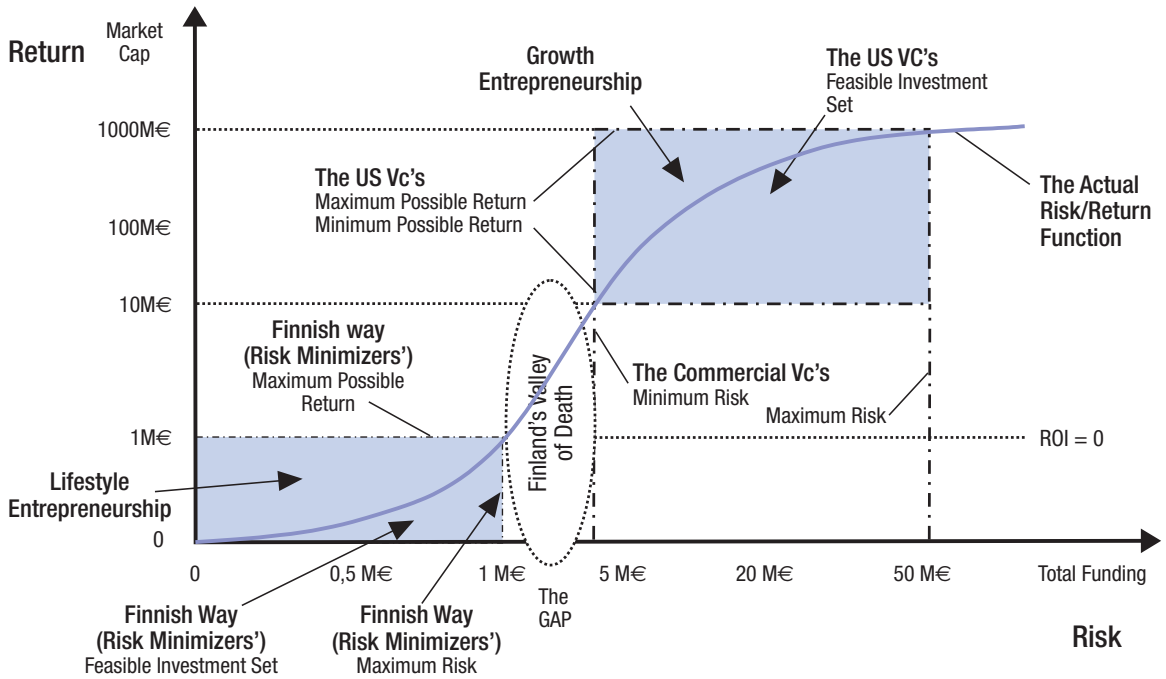

Figure 7. Mentalities of risk and return – the matrix.

17 Interview with Barbara Harley

they focus their activities on the best companies looking for high upside. This again promotes growth through talent rotation and the influx of capital.

2.5 The Finnish Findings

2.5.1 The Purpose of the Finnish Innovation System

There are two fundamental findings in this report. ***Firstly***, the performance of the Finnish innovation system must be evaluated against its fundamental target for existence. So, is the purpose of the Finnish innovation system to?

- To enable growth and create winners?
- To support the R&D for corporations?
- To give everyone a fair chance?

If measured against the *ability to enable growth and create winners*, the Finnish system fails. The number of growth companies is decreasing all the time along with the number of global success stories. The system supports a large number of lifestyle entrepreneurs with low ambition to grow due to risk aversion. This leads to the inefficient resource allocation.

When measured as a *system supporting corporate R&D*, the system performance is acceptable. Large corporations like Nokia, Metso and Kone Corporation – to name a few – benefit from the funding provided by Tekes and other governmental bodies. The price/quality –ratio for engineering is still on a reasonably good level in Finland. It must be noted here that these companies are global and typically sales and marketing competence is in a relatively high level. Unfortunately corporate driven innovation economy is severely based on Nokia's R&D investments. The second largest R&D investor in Finland, Metso, invested approx. 2,7% of the amount of Nokia's R&D investments in 2006[18].

However currently the system fails to attract the leading international companies to Finland. That is a major challenge in the Finnish ecosystem.

If the goal of the system is to *give everyone a fair chance*, the Finnish system works nicely. An entrepreneur can get government support in the form of over 100 funding elements provided by more than 10 public offices, the number of initial VC investments per capita is probably the highest in the world per capita (over 10% hit-rate) and the system also supports lifestyle entrepreneurs with no real pressure to grow.

18 Talouselämä TOP 500 2006

2.5.2 The Status of Business Development Activities

Secondly, the fundamentals of the Finnish system are seriously distorted. The short time-span of development activities, direct funding by public sector players and the lack of international competence has created a vicious cycle of non-professional business development activities.

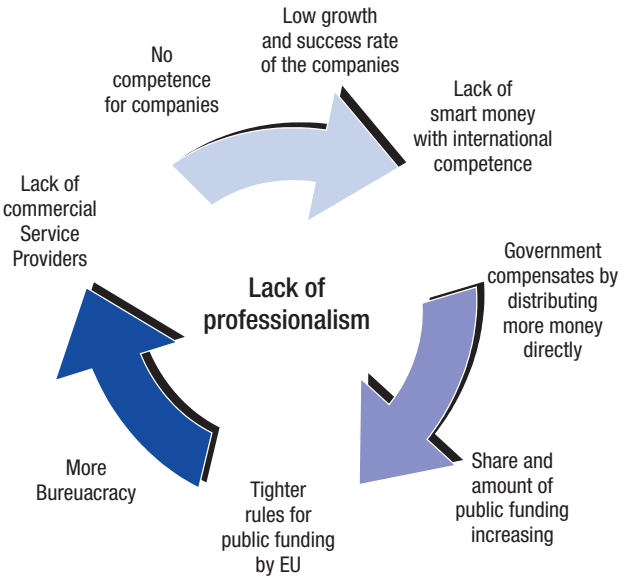

Figure 8. The status of Finnish business development.

The system for Finnish early-stage business development is dangerously self-sufficient: Players in the system are mainly interested in their *own* business development... whereas they should be focused on the development of their customers business

- Huge number of parallel or superimposed projects and programs
- Mostly low impact and high bureaucracy with no real aim for results
- No real competence to help the companies… except on public funding.

The goals of the system are *fundamentally* wrong resulting in a false sense of successful activities:

- *Quantity instead of quality.* Typical example is public funding based on the number of companies accepted in a program or project resulting the lower entry barrier by the coordinating party and ultimately the lack of resources per company.

The evaluation on the success of operations is based on a subjective assessment of the players involved in the system

- Projects and programs are regarded successful, because targets – originally set wrong - are met. In reality no development has happened.

- In some cases, the measures have been altered during the project (from absolute to cumulative) to provide sufficient results.

In general, Finnish start-ups are operating with insufficient resources and cannot source the best talent to help commercialize their technology. Most of the intermediary organizations are directly or indirectly funded by government and lack the competence to help the growth companies. In addition the existing players use the support from the government to offer low-priced services and thereby prohibit the business from the commercial players. One clear indication of the self-sufficient system is the lack of international service providers (e.g. Big 5 consultants or international service providers) from the system because it is virtually impossible to generate business opportunities.

2.5.3 The Status of the Finnish VC Industry

The status of the Finnish VC industry is critical. The number of active funds investing in early-stage is currently less than 10. The total annual value of the VC industry is around 200 M€. Most of the funds have moved to more mature stages or MBO/MBI –investments. To compensate the lack of commercial players, governmental investment agencies led by Finnvera (Aloitusrahasto Vera) and Finnish Industry Investment (Start Fund) have entered the market. They are investing into a large number of companies with average investment being low (In the first 6 months of 2007, public investors invested 88% of the money in seed and start-up). They fail to produce the value-added expected from the VC and in many cases seriously endanger the next funding round. The same thing often happens with business angels as their investments are in a very low level[19].

There has been only a few new technology funds raised in Finland after the dot-com bubble. The main reason for the difficulties in fund-raising has been the negative historic returns of early-stage investments in Finland. However, recent studies have shown that fundamentally there is no reason why early-stage funds could not produce significant returns – as is the case in US and Israel. However, the VC industry needs to be re-launched with strong focus on the building blocks of successful VC operations:

- *Solid investment strategy.* The investment strategy is the core of VC operations. Typically Finnish VC´s have been operating with a wide scope of investment areas whereas then most successful funds have a tight strategy. Strategic approach is even more critical. Finnish VC´s are typically technology-oriented looking markets from inside out whereas the best VC´s are business driven and are looking markets from inside out. Finnish VC´s also tend to over-analyze the cases as they are, without looking into the broader opportunity window and the possibility to build a successful case. Therefore the disruptive cases are very difficult for Finnish VC´s to invest in.
- *High-quality dealflow.* The volume of disruptive and unique ideas is low in Finland. There are serious challenges in the ability to commercialize research-based start-ups and corporate spin-offs. In Israel the incubation system serves as the major tool to manage these projects.

- *Management talent.* There needs to be more focus on the management experience. Finnish VC´s are too slow to change the management especially when they would have to replace the founders. Early-stage companies typically develop in phases. To support that at least 3 kinds of management resources are needed; Board level, managerial level (C-Resource) and Entrepreneur-in-Residence (EIR). Another challenge here is created by the high volume of soft public funding available. The good people stay with low opportunity companies since they are not forced to look for other alternatives. This prohibits the vital rotation of talent.
- *Exit Channel.* One of the major challenges for VC industry in Finland has been the non-existing local or near-by exit market. This has been compensated by using 3rd party M&A advisory during the exit window to generate exits. The results have been moderate at best. The Israeli's – however – have taken the opposite approach. They have been able to attract the leading companies in to the Israeli market generating a continuous exit opportunity for Israeli companies. Similar structures and activities must be engaged in Finland as well.

2.5.4 Summary on the Finnish Status

Finland invests heavily in the innovation system. It has been estimated that the total investment into research and development is around 5 bn € annually. The share of the public sector is estimated around 1,5 bn €. The system focuses extensively on the structures, programs and projects designed to develop the system itself rather than the customers (companies and research groups) in the system. Therefore majority of the key measures used to manage the system are focused on the input –side whereas the output/outcome –side measures are hardly used.

The share of exports by the SME companies is very low in Finland (around 20%) compared to the European medium. On the one hand it reflects the strong role of large corporations in Finland, on the other hand it shows that finnish SME´s do not grow and do not operate in international markets.

19 Maula et al: The Prospects for successful early-stage Venture Capital in Finland

One of the major indicators of the quality of operations by the public sector in the growth company segment, is the correlation factor between public funding and VC funding[20].

Public-to-private Correlation	Finland	Israel
Total Correlation Factor	Less than 1 (estimate)	4–5
Incubator Correlation Factor	Around 1 (estimate)	15

Israel currently ranks among the top of the world with an estimated 5$ of VC funding generated from every 1 $ invested by the public sector. The incubator companies in Israel generate 15 $ of VC funding for every 1 $ received from the government. Some isolated analysis suggests that the total correlation factor in Finland is less than 1 but no accurate measurements have been done.

The current system in Finland is self-sufficient and complex. According the study conducted by Boston Consulting Group (1000 executives in the US), 5 major hurdles for innovation environment were identified[21]:

- Development too slow (32%)
- Lack of Coordination (28%)
- Risk-Averse Culture (26%)
- Limited Customer and Market Insight (25%)
- Lack of Selection on the right ideas (21%).

Incidentally, the issues mentioned above are very actively visible in the Finnish system. If Finland wants to increase the number of global growth companies, actions must be taken immediately.

Current innovation system in Finland has not been developed through systematic and thorough benchmarking of globally existing systems, or understanding of high growth venturing mechanisms. The starting point has been corporate-driven development culture and tools. It has been designed by the innovation system operators themselves, who also carry the interest to highlight their own role and success.

20 Figures based on cross-calculations from the existing statistics
21 BCG 2005

3 Suggestions

The status of the Finnish system is alarming – a roadmap to change the fundamentals must be created.

There are no quick fixes available. The Finnish system has been distorted for a long period of time; therefore it can not be fixed overnight. In addition, there are several successful components in the system which must be sustained. A 5-year roadmap focused on the major development areas is needed, but selected activities can be implemented right away.

There are several fundamentals that need to be changed:

- *New rules for the public sector funding.* The current approach for funding is creating a market failure due to the lack of selection in all phases of the commercialization value chain. Too many resources are wasted to the lifestyle companies; direct investments by Avera (and previously Start Fund) create a large number of companies with inadequate resources for growth, lack of business competence and active ownership.
- *The acceptance of indirect return for investment.* The strive for direct return in the public funding also creates challenges. There are too many debt and collateral –based funding elements used by public sector resulting into balance sheet problems in the companies receiving funding. In addition, public funding does not require the infusion of talent into the companies funded which is fatal in the long run for the whole ecosystem. Instead they should understand even the value of failures in the long run
- *Tolerance for risk and failures.* There should be much more tolerance for risk and failures in the Finnish system. Currently an entrepreneur failing in Finland is regarded as the worst kind. In Israel and especially in the US a failed entrepreneur is the REAL entrepreneur. Therefore changes in the legislation for bankruptcy should be considered. The public sector players should also tolerate greater risk and failures to enable better growth opportunities.
- *Importance of the commercial VC industry.* There is a serious shortage of the commercial players in the early-stage VC industry. Instead of the direct investments by the government, focus should be shifted into structures enabling the launch of new funds with strong commitment to create growth companies. A Finnish version of the Yozma program is needed. Government must introduce structures attracting global investors with international contact network.

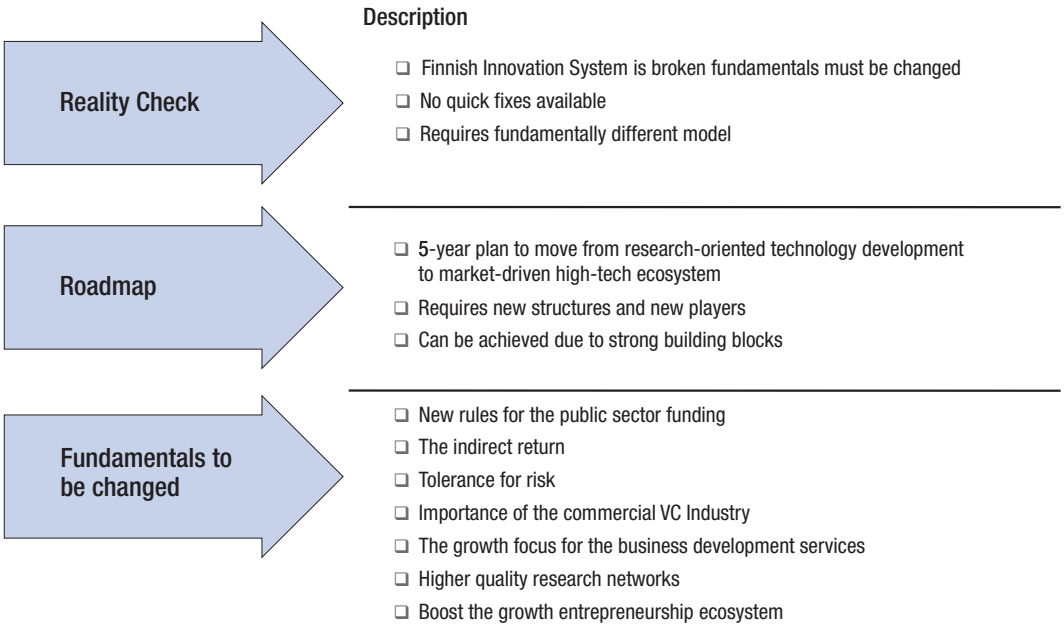

Figure 9. Main suggestions.

- *The growth focus for the business development services.* The current incubator system does not support growth companies. It lacks the vital ingredients like VC´s, corporate players and active participation with the academia. A new concept for incubators is needed. It must be a new player / players since the current incubator network has no competence or resources needed. The role of the VC´s is vital along with strong cooperation with the academia and selected corporate players.
- *Demand for higher quality research networks.* Active networks with the leading research institutions must be established. There are valuable models for commercialization tested and operative in the most successful universities (e.g. MIT, Stanford, Yissum). They will also strongly contribute to the standard of research in Finland. In addition a separate initiative to promote the growth entrepreneurship research in Finland must be engaged.
- *Boost the entrepreneurship ecosystem.* Since there is a shortage on the leading international companies actively participating in the Finnish high-growth ecosystem, actions must be taken. Initiatives to create structures attracting global companies here must be started. These initiatives include tax arrangements, removal of the barriers for foreign capital, attraction of talent and structures to support corporate spin-offs or spin-outs. In addition, the involvement of the business angel networks as a source of talent must be supported.

3.1 Roadmap

There is a need for a roadmap transforming Finland from the research-oriented economy into a market-driven high-growth ecosystem.

Major parts of the roadmap are:

- New roles for the public sector agengies
  - Replace direct governmental early-stage investments with active commercial VC market.
  - Centralize all growth related activities to single party to boost the competence for growth entrepreneurship.
- Restart of the VC industry
  - Engage Finnish version of Yozma.
  - Introduce new tax benefits.
  - Remove barriers from the foreign capital
- Transform business development services
  - Engage a pilot for the Incubator 2.0 program
  - Roll-out Incubator 2.0 program to create 4-5 viable incubators
- Commercial viability of the research
  - Universities
  - Academia centre of excellences
- Transform the finnish early-stage ecosystem to support the infusion of talent from the leading global players.

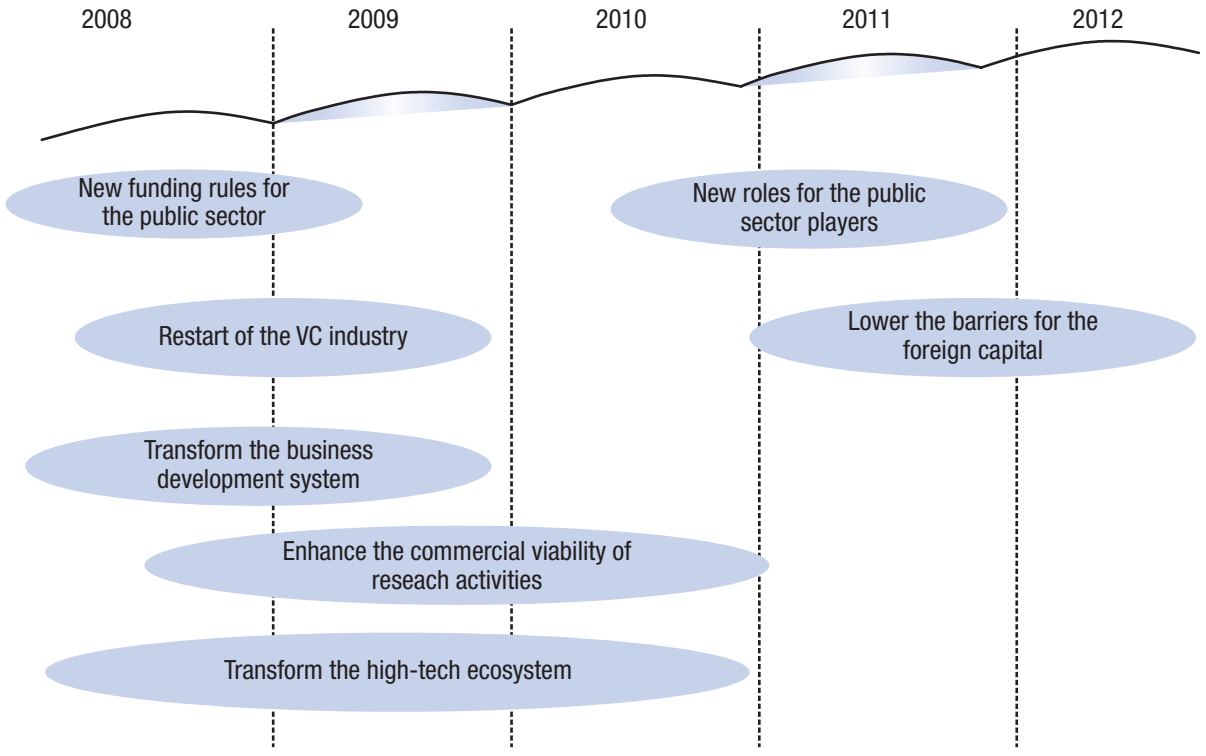

Figure 10. Roadmap.

3.2 Major Actions Proposed

3.2.1 New Rules and Roles for the Public Sector Funding

The growth entrepreneurship operations within the public sector should be centralized to one party to enhance the efficiency of the operations. The main focus should be to combine the public funding with business competence and market intelligence. All funding should work in cooperation with commercial players involved with the companies. There are too many governmental offices currently involved with growth-related activities resulting in sub-optimal operations.

Tekes should also introduce tighter funding criteria. Currently Tekes –funding is not selective enough and it does not require the infusion of talent into the company. The key targets should be:

- To remove the lifestyle entrepreneurs with no growth ambitions from the system.
- To demand stronger management competence from the companies
- To partly or wholly outsource the decision-making on growth companies to a pool of external experts

The new TK&I funding (1,0 M€/company for 3 year period) is a move to the right direction. However, the active ownership and the infusion of business competence should be a requisite for the funding. The proposed Incubator 2.0 model could be a vital tool for Tekes when using this new funding tool.

The governmental players should use grants as the major funding tool. The current capital loans and collaterals seriously damage the balance sheets of the target companies creating unnecessary hurdles for the next funding rounds.

3.2.2 The Finnish Version of the Yozma Program

As the fund-raising in the early-stage is very difficult, strong and active promotion from the government is needed. The government (e.g. Finnish Industry Investment) should introduce structures with governmental investment with a call option.

The program should aim for 4–5 new early-stage funds each 50–80 M€. The funds should be managed by cross-cultural teams combining the local experience of the finnish system with the global network and market information. There should be active networking with selected parties internationally to provide the bridging opportunity to foreign primary markets (e.g. US, Far East).

The funds should implement a tight focus and solid investment strategy aiming for initial investments of 2–3 M € to provide sufficient resources for growth. In addition, the funds should have a large pool of talent to resource the portfolio companies from the day one.

As the Finnish version of Yozma is engaged, the direct investments without the involvement of the commercial VC´s should be ceased. The current direct investment activity by Avera (and previously Tesi) is blocking the launch of new early-stage VC-funds. It is also slowing the growth of target companies and wasting resources to lifestyle companies. Avera could be a vital player in the new Incubator 2.0 concept in cooperation with commercial VC´s.

3.2.3 Introduction of the Incubator 2.0 Program

A new incubation program should be implemented by Tekes. A pilot incubator should be up and running by the end of March 2008. The involvement of the VC´s is critical. In addition selected players from the academia and research community should be involved.

The incubator 2.0 concept is an answer to the major challenges in public funding:

- Lack of ownership for the money distributed
- Lack of management talent for companies funded
- Lack of global focus and access.

The incubator serves as a tool to provide value-added services and active management of the early-stage growth companies. It combines the vision, network and expertise of the commercial players involved with the leverage provided by public funding. The major benefits from the incubator 2.0 model are:

- Tool for active ownership
- Tool for management expertise requirement
- Tool for VC growth vision
- Manages the network of expertise
- Creates a platform of corporate Involvement.

The incubator should be owned and managed by VC´s in cooperation with Avera. In addition selected corporate players should be incentivized to join the operation. The optimal combination should have a Finnish VC, an international VC and Avera as the major owners. VTT (The National Research Center) and major universities (e.g. HUT) should also be connected to the incubator through ownership. Their motivation is the structured commercialization funnel and upside opportunity when the company accepted is based on their IPR.

Tekes should provide funding for the companies selected using the new (TK&I) funding element for young innova-

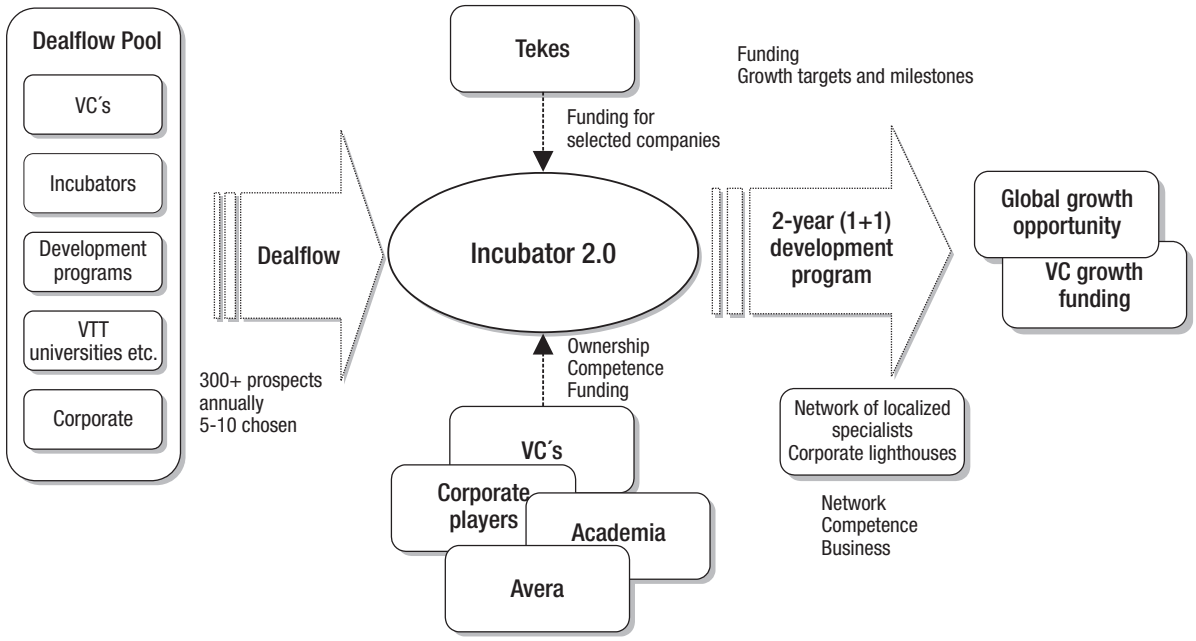

Figure 11. Example of players and roles.

tive companies. The company selection is primarily done by the incubator. The funding committed should be 400 K€ from Tekes (in form of a grant) and 200-400 K€ from the VC´s involved and Avera for the pre-defined incubation period of 2 years. The funding includes tight milestones agreed with the entrepreneurs before the entrance to the incubator.

The number of companies accepted into the incubator is low (max 10 annually) because the support for the companies is extensive. Hit-rate should be around 3-5 %. The major sources of dealflow are regional incubators, research institutes, universities and intermediaries.

The key personnel of the incubator should be either experienced serial entrepreneurs or have a background from VC operations. Key personnel should only have 3-4 cases to manage per manager in order to provide active value-added help – every day. The key personnel should have direct upside by ownership from the incubator. In addition, they should have a carried interest in the funds of the VC´s involved.

The incubator should operate a pool of expert resources to speed the growth of the companies. The pool should cover the 3 phases of development; business concept, execution and management and strategy assessment. The pool should consist of 3 kinds of resources:

- *Senior executives.* Senior executives are mainly mentors or board members focused on the strategic choices.
- *C-level management resources.* These resources are mainly focused on the execution of sales and marketing activities. These resources can also be valuable as Entrepreneur-In-residence in selected foreign markets.
- *Operative hit-men.* These resources are focused on operative tasks, especially in the business concept phase. One of the major issues is to ensure the validity of market data.

External resources should always be long-term – preferably they should be capable for continuing to work with the company even after graduation. Projects looking for incubation should be unique, disruptive and have a window of opportunity. Incubator should accept projects ranging from idea phase into initial revenue phase.

The costs for the operations should be covered by Avera, VC`s and the service fees paid by the companies accepted. The services offered range from basic operative support (financial, legal, technical) to outsourced part-time management services. These services are mainly offered by third-party partners but part-time management assignments can be executed by the incubator resources as well.

The success criterion for the incubation is based on the ability to create VC capable companies. Key metrics should be Hit-rate, VC funding raised (total, average, cumulative) and retention rate (3/5 years).

The incubator program should be managed by Tekes. Every incubator accepted must comply with the requirements defined above. The program should run for 5 years initially in order to ensure transparency of the operations and the ability to generate REAL measurable results. After that the program should be extended in 3-year periods.

3.2.4 Other Suggestions

Research partnerships. Finnish universities should engage closer relationships with leading universities. They should especially learn from existing models and structures for commercialization. The most potential targets are Yissum, MIT and Stanford.

Boost for the ecosystem. Separate actions are needed to attract the leading global companies to join the finnish eco-system. This should be promoted by tax arrangements and targeted financing instruments to international companies.

4 Conclusion

The emerging globalization generates pressure to create more growth companies in order to:

- Generate more jobs
- Attract foreign investments
- Create successful companies
- Attract international talent to Finland
- Ensure the success of the finnish economy in the long run.

High growth business development is absolutely vital for Finnish innovation economy. Our innovation economy's risk profile is alarming. New path has to be built on totally new players, there are no alternatives. It has to be built on professional and upside-driven services of high growth venturing, and if required competencies has to be brought from abroad, so be it.

There are signs of trouble in the Finnish high-growth ecosystem caused by the lack of commercial players and a self-sufficient system:

- Struggling ecosystem
  - Hardly any lighthouse companies
  - No global leaders (Fortune 500) actively present
  - No rotation of talent to prosper growth
- Severe Attitude Challenge
  - "Money takes care of problems"
  - Technology domination... still!
  - Risk vs. Reward
  - Failure vs. Success
- Lack of competence
  - Serial Entrepreneurs
  - International Business Experience
  - VC Industry
- Approach on funding by the public sector creates a market failure
  - Very low selection
  - Limited resources wasted to lifestyle companies
  - Risk aversion and management by volume.

There is a clear need for a totally new approach to support the growth companies. Existing system is clearly struggling to do that. The major areas needing change are:

- New rules for the public sector funding.
- The acceptance of indirect return for the public investments.
- Tolerance for risk and failures.
- Importance of the commercial VC industry.
- The growth focus for the business development services.

- Demand for higher quality research networks.
- Boost for the entrepreneurship ecosystem.

The current system in Finland is based on the export-driven approach on corporate development with heavy involvement by the public sector. It does not address the fundamental problems for growth companies; the lack of ownership on funding and the lack of management talent. The governmental players must accept that they cannot engage direct activities without the strong role from the market forces.

Finland needs to implement a growth-oriented system including strategic targets and strategy-driven KPI`s to manage the system. The current cost-based approach does not work in the globalized economy where the world is flat. The system must be changed to value the role of commercial players and therefore create structures to enable the success of global activities.

Actions are needed immediately. The major actions proposed are the new rules for public sector funding, restart of the VC industry and the introduction of the incubator 2.0 model.

5 Appendix

5.1 People Interviewed

Person	Location	Experience
Norm Kadermann	San Jose, USA	Ex-CEO Austin Technology Incubator
William Paulin	San Diego, USA	Experienced business executive CEO PaulinNealAssociates
Robert Ronstadt	Boston, USA	Prof. of Entrepreneurship at Pepperdyne Ex-CEO IC2, Texas, USA
Joel Wiggins	Kansas City, USA	CEO Enterprise Center Johnson County, KC, USA Ex-CEO ATI, Texas, USA
Chuck Erickson	San Jose, USA	CEO San Jose SW Business Cluster
Barbara Harley	San Jose, USA	Ex-CEO Stanford Technology Incubator Ex-CEO US Market Access Center
Jack Savidge	San Diego, USA	
Ram Mohan	Santa Clara, USA	CEO Inbac Ex-CEO NEC Business Incubator
Douglas Crawford	San Fransisco, USA	Commercialization Director, UCSF, USA
Mikko-Jussi Suonenlahti	Doha, Qatar	Managing Partner, Qatar Capital Partners Former partner of 3i, Boston, USA
Peter F Bougdanos	Helsinki, Finland	Private Investor
Jonathan Miodowski	Tel Aviv, Israel	Commercial Attachea, Finnish Embassy, Israel
Rosibel Ochoa	San Diego, USA	Commercialization Director, von Lieblig Center, San Diego, USA
Rina Pridor	Tel Aviv, Israel	Director of incubation program, OCS, Israel
Israel Shamay	Tel Aviv, Israel	Director, International Projects, MATIMOP, Israel
Azi Hemar	Tel Aviv, Israel	Ex-Director International Projects, OCS
Mina Goldink	Tel Aviv, Israel	Director International Projects, OCS
Yifat Oron	Haifa, Israel	Chairman of the BOD, TEIC, Israel Partner Vertex VC, Savvyon, Israel
Yoram Oron	Savvyon, Israel	Founder and partner Vertex VC, Israel
Yigal Erlich	Tel Aviv, Israel	Founding partner Yozma Funds Founder of the Yozma -program

Haim Kopans	Jerusalem, Israel	Partner JVP Studio
Nava Sversky Sofer	Jerusalem, Israel	Commercialization Director, Yissum
Peter Harman	Cambridge, UK	CEO UK Business Incubator
Mary Shephard Spaeth	Linköping, Sweden	CEO Transmera AB
Richard White	Auckland, NZ	Head of the incubator program
Adam Bennet	Wellington, NZ	Head of the incubator program
KP Wilska	Austin, USA	Venture Partner, Austin Ventures Ex-CEO Nokia Inc.
Jussi Harvela	Espoo, Finland	Serial Entrepreneur
Pekka Rissanen	Tampere, Finland	Founder Finnish co-entrepreneurs
Pasi Sorvisto	Oulu, Finland	CEO, Oulu Wellness Institute

5.2 Information Sources

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Suomalainen Unelma	Pekka Himanen	
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The Science Park Evaluation Handbook	Ed. Ken Guy	
A Systematic Review of Business Incubation Research	Sean M Hackett David M Dilts	
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