Chasing the tale of the unicorn

Executive Summary

Albin Skog
Mats Lewan
Michael Karlström
Sergey Morgulis-Yakushev
Yixin Lu
Robin Teigland

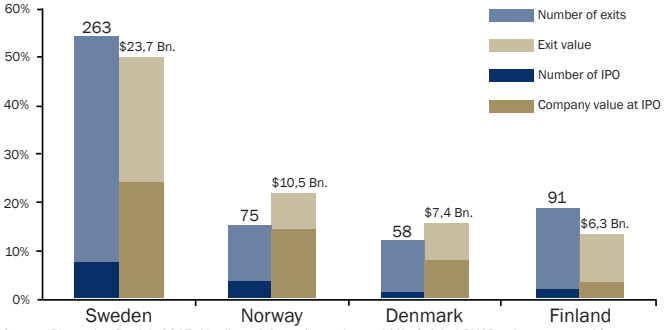
May 2016

STOCKHOLM SCHOOL OF ECONOMICS
CENTER FOR STRATEGY AND COMPETITIVENESS

Stockholm – *"The unicorn capital of the world"*

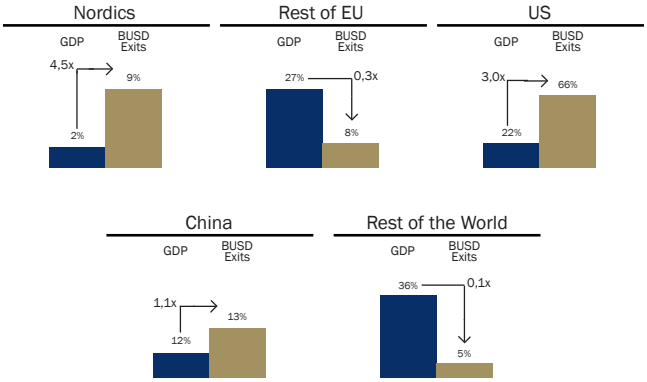
Sweden, and in particular its capital city of Stockholm, is remarkably competitive in the IT-sector. This is especially true when looking at the amount of highly-valued start-ups that Stockholm has produced during the last few years (figures 1 and 2).

Figure 1. Nordic exits and exit value per country 2000-2014.



Source: Blomqvist, Daniel. 2015. Nordic tech is on fire – almost 10% of global BUSD exits over past 10 years. *Creandum*. March 16.

Figure 2. Nordic exits and exit value per region 2000-2014.



Source: Blomqvist, Daniel. 2015. Nordic tech is on fire – almost 10% of global BUSD exits over past 10 years. *Creandum*. March 16.

When counting the number of "unicorns", i.e., high-tech startup companies that achieve a valuation of at least USD 1 billion within 10 years, Stockholm stands out as the city with the most unicorns per capita in the world and as a region second only to Silicon Valley. This is one reason why Stockholm in the international press has been called "The unicorn capital of the world".

Among others, our study reveals

three important factors behind the success:

1) A long history of multinational, engineering-based firms

2) Longsighted public initiatives and supportive government policies

3) The 1990s IT Boom - Not just a bubble that burst

A long history of multinational, engineering-based firms

Sweden boasts an extensive history of numerous multinational success stories, which can help explain today's unicorn boom. On the one hand, Sweden was home to Alfred Nobel who established the Nobel Prizes - perhaps the world's most prestigious awards inspiring innovation, while on the other hand it hosts a wide variety of multinational companies, such as Ericsson and Atlas Copco, that date as far back as the 1870s.

At an early stage, these multinationals realized the limited potential of the Swedish market for their products and focused their efforts on building a global market. The Swedish home base facilitated continuous innovation as it provided the necessary inputs such as highly skilled labor, specialized machinery and a research infrastructure as well as sophisticated demand and domestic rivalry not only on price but also on quality and service. Knowledge spill-overs due to advanced suppliers and related industries further promoted continuous upgrading and innovation.

Additionally, a strong engineering culture encouraged a focus on problem-solving through collaboration – a collaboration supported not only through dense formal networks between firms and their buyers, suppliers, firms in related industries and even competitors but also through strong informal networks established through university and close geographical proximity.

This long multinational history has led in part to today's underlying climate that encourages continuous innovation and a driving interest to "make things better", a guiding principle that a product or service is to be primarily developed for the global marketplace, and an international orientation and skillset in Swedish industry, and even in trade unions, enabling individuals to deal with high levels of risk and uncertainty.

Photo: Holger Ellgaard

Longsighted public initiatives and supportive government policies

Swedish governing bodies on different levels have introduced some longsighted investments to facilitate the development and accessibility of IT and the Internet. Two of great importance are the Home PC Reform and Stokab.

Home PC Reform

The Home PC Reform, which became effective in 1998, made it possible for employees to rent a personal computer under favorable conditions, paying for the rent with a pre-tax salary deduction. After an agreed period, often three years, the computer could then be bought at a second-hand market price.

Between January 1998 and December 2001, 375,000 households received their first computer through the reform. As a result, approximately one million individuals, or around 11% of the Swedish population at that time, obtained their first computer. Many of today's entrepreneurs were children in these households at that time and were able to gain their first experiences with computers at a young age – preferring to play with them inside during the long cold and dark winters.

Stokab

The city of Stockholm founded the municipal fiber infrastructure company, Stokab, in 1994.

Following a model almost unique in the world, Stokab built a network in the city based on dark fiber, i.e., unused optic fibers available for fiber-optic communication. The network was then made open for any company to install its own equipment on the network to use the fibers. Stokab then reinvested all profits in further expanding the network.

In the following 19 years, Stokab invested SEK 5.4 billion in the network, resulting in benefits for the municipality, the county, businesses and end users at a value of around SEK 16 billion, or around USD 2 billion at today's exchange rate.

Supportive government policies

While Swedes do pay among the highest taxes in the world, individuals living in Sweden have access to a generous social welfare system. For example, the system provides free education, highly subsidized healthcare and daycare, paid parental leave, and unemployment compensation. This helps take a considerable financial burden off the entrepreneur while potentially encouraging a more risk-taking attitude.

The 1990s IT Boom - Not just a bubble that burst

While the IT boom and bubble of the 1990s encouraged the first wave of IT and Internet startups in Sweden, it is more common to think of the IT boom just in terms of the bubble that burst. Indeed it has been suggested that the 31 most notable IT-related companies listed on the Stockholm stock exchange at the time lost over SEK 300 billion in value during the crash, or USD 36 billion.

However, our study shows that there is a strong connection between the IT boom and burst and the current wave of startup success. While the majority of the startups of that time did not succeed in the long run, the experiences and resources that the people gained and the networks that were created should not be underestimated in terms of their influence on today's competitiveness of Sweden's high technology sector.

Today these experiences of having not only succeeded but also failed combined with money made by various entrepreneurs during the IT boom are being fed back into a well-functioning entrepreneurial ecosystem. Highly connected informal and formal social networks of entrepreneurs and experienced business people, especially in Stockholm, create a conducive environment in which entrepreneurs can easily access the resources necessary to move their startup from just an idea to a player in a global marketplace.

Unicorns & potential unicorns today

Potential unicorns

- FishBrain
- FootWay
- Fyndiq
- iZettle
- KnCMiner*
- LeoVegas
- MAG Interactive
- ShapeUp
- TicTail
- TrueSoftware
- Zound Industries

* Just after our study concluded, KncMiner filed for bankruptcy due to a variety of factors.

Unicorns

- Avito
- Klarna
- Mojang
- Spotify

This report is the first in a three-year study of the influence of the Internet on entrepreneurship and innovation in Sweden.

The first area of our investigation is the unicorn phenomenon in Stockholm. As such, we have examined 15 startups, comprising 4 unicorns and 11 potential unicorns, i.e., startups that are considered to have the potential to reach unicorn status.

What makes a unicorn?

Our first step was to collect publicly available attribute data, e.g., age, gender, board memberships, about the founders, CEOs, and other people holding leading positions in these startups, such as board members, from their founding until January 2016.

Looking at the 15 startups as a snapshot of their mean values over their lifespan, we find that they cluster into four groups (figure 3). This clustering is primarily driven by the average age of the individuals and the diversity of the ages of the group of individuals holding leading positions each year.

However, when examining other variables we find that these four groups no longer hold. For example, when we look at international and gender diversity of the startups, we find a different clustering. Of the four that have a high level of international diversity: Avito, Klarna, Mojang and TrueSoftware, three are already unicorns (figure 4). Judging from this, one could speculate that TrueSoftware in this perspective looks to be in a good position. If we, however, consider the fourth unicorn in our dataset, Spotify, which has an international diversity value of zero, it makes things more complicated.

These findings indicate that there is no one "recipe for success" when it comes to the attributes of the individuals holding leading positions in the startups.

Figure 3. Average birth year and age diversity

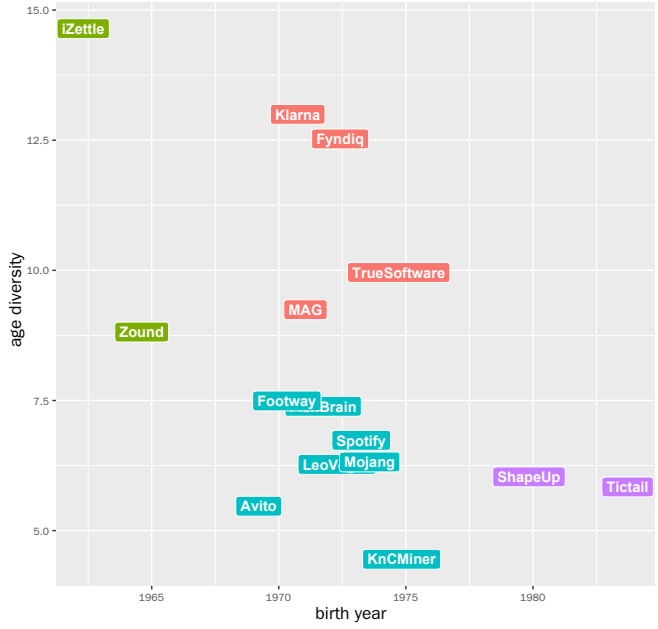
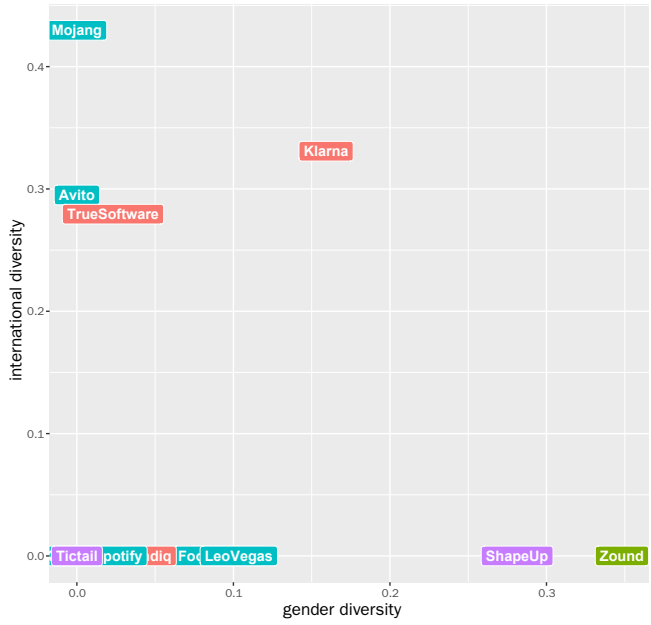


Figure 4. Gender diversity and international diversity



We further explored the development of our 15 startups over time. For example, during the past nine years, the diversity of ages of individuals holding leading positions showed a general tendency to increase in the startups as a whole (figure 5).

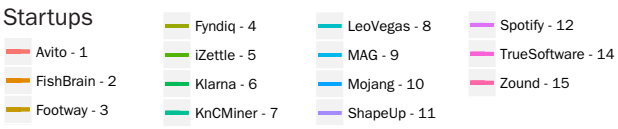


Figure 5. Age diversity of the startups

Network embeddedness

In addition, we found that the startups are quite well connected both directly and indirectly in Sweden.

We examined the networks of the 15 startups by looking at the companies the startups are linked to when an individual holding a leading position at a startup is also holding a leading position at another company. Figure 6 shows the average number of companies that each individual holding a leading position at a startup is involved in while figure 7 indicates the total number of companies to which each startup is linked.

In general, we find a tendency for the startups to increase their network activity on both dimensions through the years.

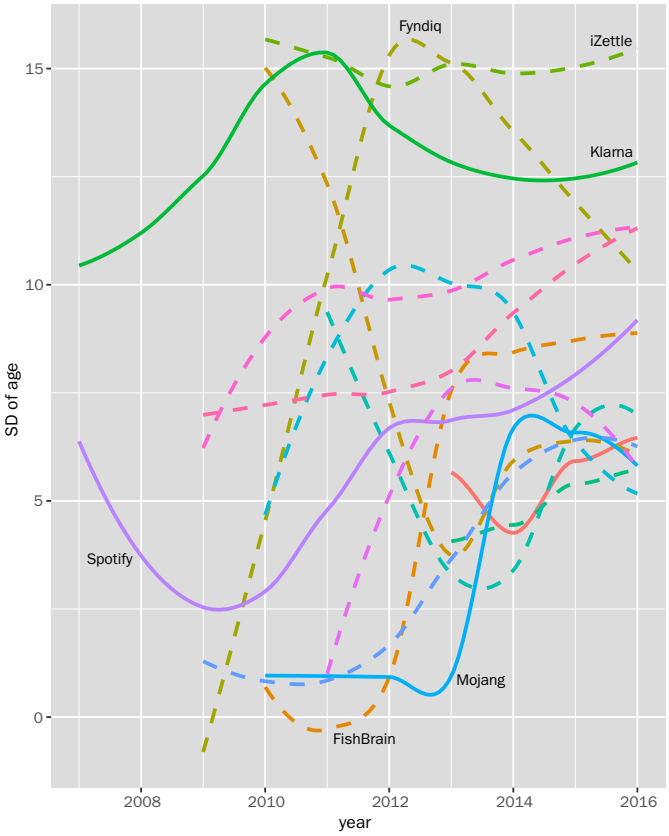
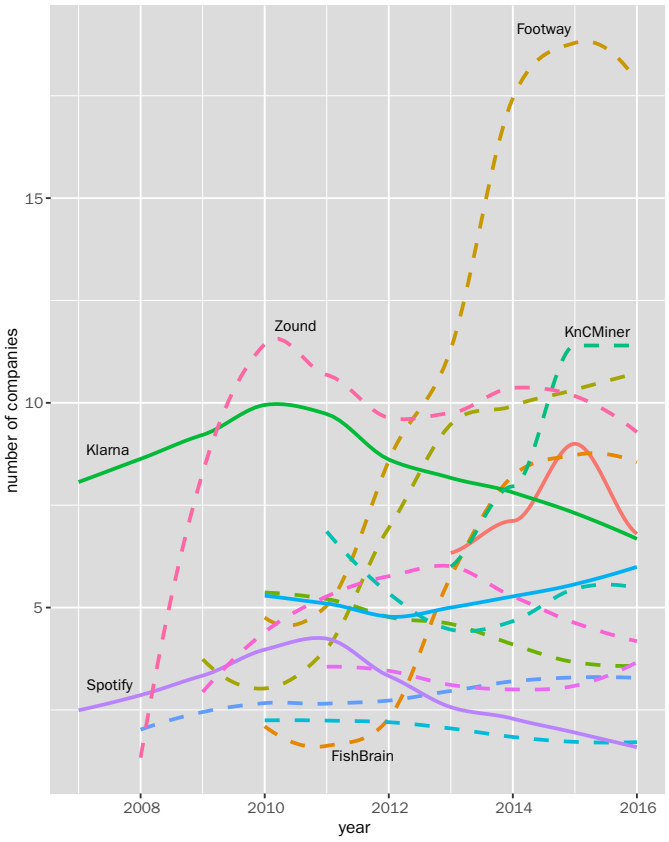
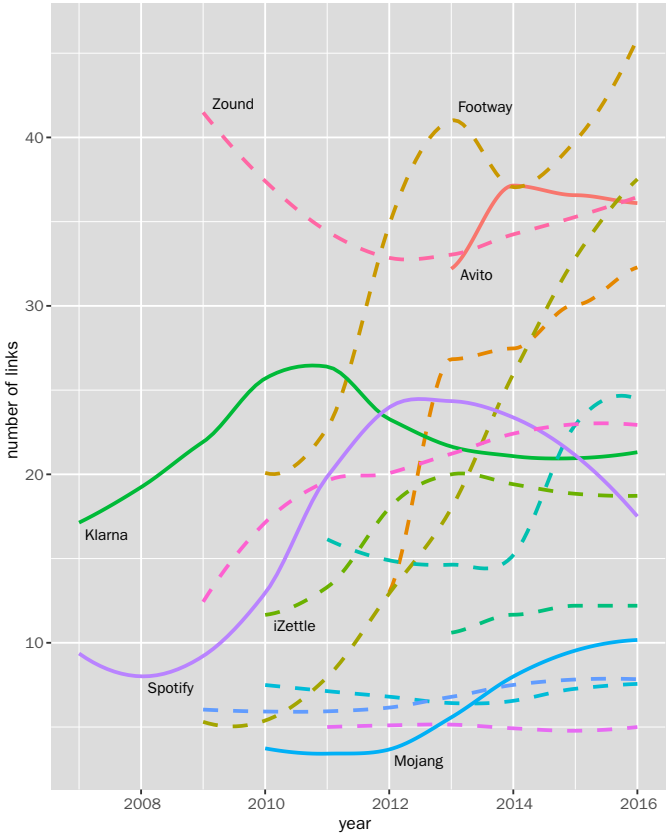


Figure 7. Total number of companies that startups are linked to

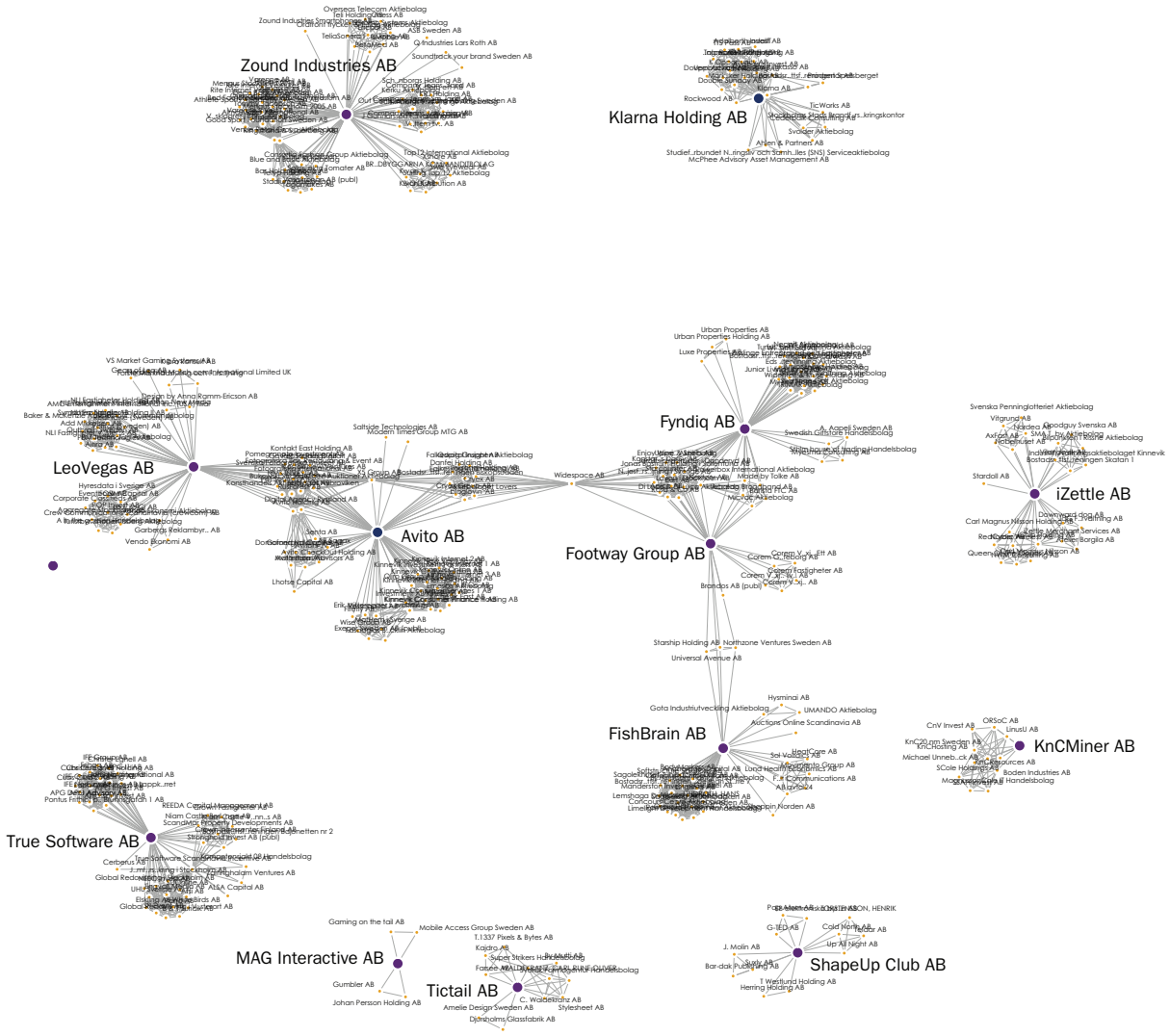
Figure 6. In how many companies each person in a leading position is involved





Connected to each other, to some extent

Figure 8. Social network visualization of startups connected today through the cloud.



To further understand the startups' networks, we also collected network data about all the other companies to which the 15 startups are linked. We called this set of second and third level connections the "Cloud".

We find very few direct connections among the startups. This indicates a broad set of individuals involved within the startup ecosystem. However, when we expanded our investigation to include the indirect connections created by individuals holding leading positions together at a third company, we do find a more connected network with seven of the 15 startups interlinked (figure 8).

A small group of experienced key individuals

Furthermore, we examined to what degree approximately 100 influential individuals from the first wave of IT boom companies were active in the current second wave. We found some direct and indirect connections indicating how a few actors can provide the necessary resources such as capital, experience, and know-how within a startup network (figures 9 and 10).

Figure 9. Direct connections between first and second wave

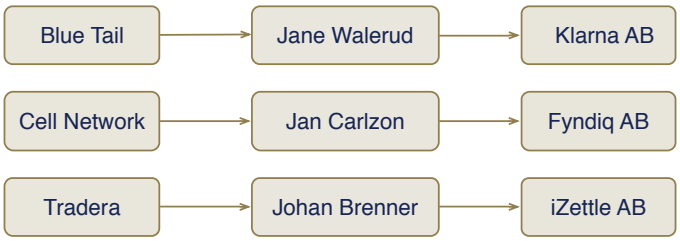


Figure 10. Indirect connections between first and second waves

First wave company	Individual	Cloud	Second wave startup
Cell Network	Markus Bäcklund		MAG
	Magdalena Bonde		Spotify
eTrade, Tradera	Johan Brenner		iZettle, MAG, Tictail
eTrade	Mattias Miksche		LeoVegas
HiQ	Hans Karlsson		Avito, Klarna, Mojang
	Ken Gerhardsen		Fyndiq
Icon Medialab	Magnus Lindahl		iZettle
	Erik Wikström		FishBrain, ShapeUp, MAG, Tictail
Jobline	Lars-Henrik Friis Molin		FishBrain, MAG, Tictail
	Per Sunnemark		Spotify
Sendit	Hjalmar Winbladh		FishBrain, MAG, Tictail
Spray	Johan Ihrfelt		FishBrain, MAG, Tictail
Tradera	Daniel Kaplan		Klarna

Stockholm's startup geography

In Stockholm alone there are more than 22,000 technology companies, and 18% of the city's workforce is employed in technology-related roles, with the most popular job being a programmer.

Rapidly expanding

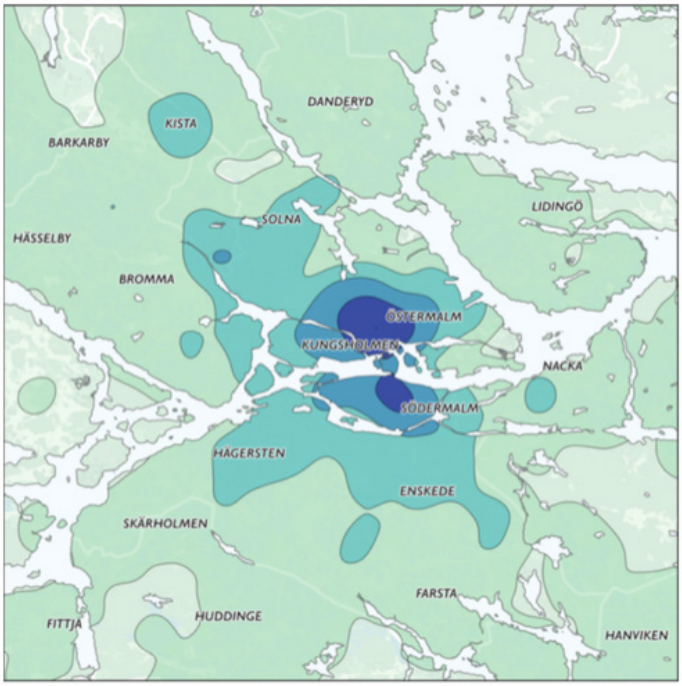
Since 2008 21,000 of the 43,000 employment positions in the ICT & Digital sector have been created (figure 11).

Heavy concentration

Companies are heavily concentrated all within a distance of around 6 km within central Stockholm (figure 12).

This heavy concentration of companies interspersed with universities, government and public sector organizations, incubators, accelerators, and co-working spaces along with a large number of restaurants and coffee shops within the same area does much to facilitate informal networking within the city.

Figure 11. ICT & Digital Startups in Stockholm founded 2008 or later, darker shades indicating higher employment density.



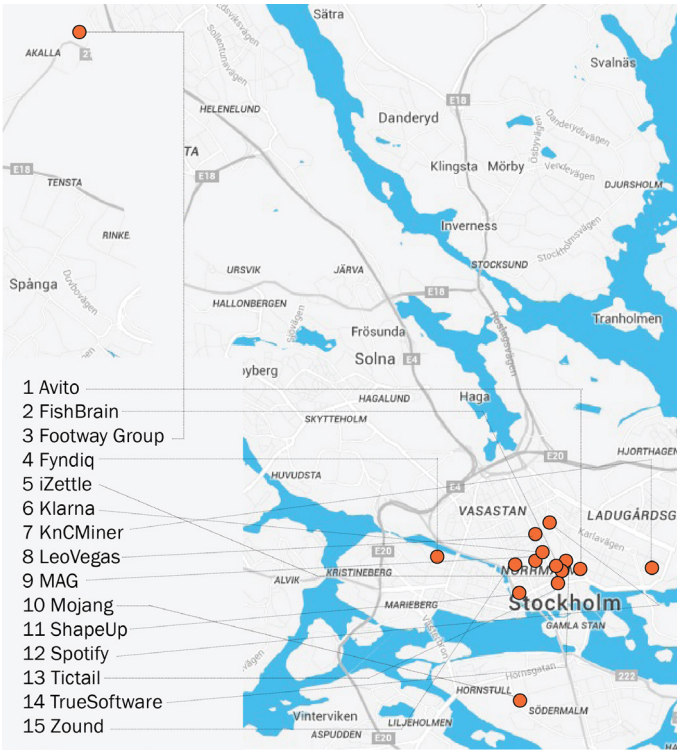
Source: Sölvell, Örjan, Fohlin, Carl & Protsiv, Sergiy, Ekosystemet ICT & Digital: kartläggning av styrkeområden i Stockholmsregionen, Länsstyrelsen i Stockholms län, Stockholm, 2015.

Not too small, yet not too big

One aspect highlighted by many is Stockholm's trusting, "pay-it-forward" culture, characterized by serial entrepreneurs sharing their expertise and reinvesting in startups as well as by experienced business leaders, entrepreneurs, students, and others both from Sweden and abroad sharing knowledge informally at a variety of networking events.

Thus, while Stockholm is large enough to host the right multi-disciplinary skill set, it is still small enough to accommodate a highly open culture and trusting relationships that allow for deep levels of knowledge sharing and collaboration, even among competitors.

Figure 12. Locations of unicorns and potential unicorns in Stockholm



A stone's throw away

Of the 15 startups, 11 are located very close to each other - just a 10 minute walk, in the Norrmalm district in Stockholm's inner city (figure 13).

Figure 13. Closeup of the location of unicorns and potential unicorns in Norrmalm (numbering is the same as in the previous figure).

Read the whole report on iis.se

This is the Executive Summary of the longer report which you can download at iis.se.

Part of an ongoing project

This report is part of a three-year project from 2015 to 2018 financed by IIS - the Internet Infrastructure Foundation. We plan to extend our investigation beyond the 15 startups to other companies in Stockholm as well as in other cities such as Gothenburg, Linköping, Malmö, and Umeå.

Feel free to contact us

If you are interested in contributing or joining our project in some form or fashion, please drop us an email. And if there is anything you think we have misrepresented or failed to cover, please let us know.

Author contact

Albin Skog:
albin.skog@hhs.se

Mats Lewan:
mats@matslewan.se

Michael Karlström:
michael.a.karlstrom@gmail.com

Sergey Morgulis-Yakushev:
sergey.morgulis-yakushev@hhs.se

Yixin Lu:
y2.lu@vu.nl

Robin Teigland:
robin.teigland@hhs.se

Graphic design:
Albin Skog

Center for Strategy and Competitiveness

The Center for Strategy and Competitiveness (CSC) was founded in 2005 and focuses on five research tracks: Strategy and Market Systems, International Business, Knowledge in Networks, Clusters, and Competitiveness Policy.

CSC works in a trans-disciplinary tradition involving theories from Strategy, Management, International Business, Economic Geography, Economic Sociology and Economic History.

CSC is a research center at SIR, Stockholm School of Economics Institute for Research. SIR is a national research institute for the economic sciences, with a focus on Business Administration in the broadest sense.

More information on CSC can be found at http://www.hhs.se/en/research/centers/csc/