Health Tech

Business Opportunities
in Stockholm-Uppsala

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Stockholm
The Capital of Scandinavia

Content

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Health Tech is an emerging field that provides new types of services and products for lifestyle changes and health care.

Positioned at the interface between traditional life science and ICT the Health Tech industry has a broad audience of costumers, ranging from individuals to health care providers and insurance companies.

Health Tech includes concepts like Digital health, e-health, Life Log, m-health, Quantified Self, Tele-health, Wearables and Well Tech.

Today, technological innovations are transforming health care on a global scale and creates irresistible business opportunities along the way.

Prolonged life expectancies and growing numbers of patients with chronic diseases, along with the fact that people are becoming more and more interested in assuming more personal control of their health and wellness, have led to a situation where countries all over the world are facing ever-increasing demands for healthcare services. Unfortunately, the other side of the equation, the healthcare funding, isn't keeping up. Something has to happen, and that something is Health Tech.

Before we show you a selection of promising companies that we think will be part of the Health Tech revolution, let's have a look at some of the reasons why so much of this interesting development is taking place in the Stockholm-Uppsala region. And why we think you should get in early.

1. Why Stockholm-Uppsala?

Stockholm-Uppsala is by no means the only place where the Health Tech revolution is brewing. It is however, one of the few places where you find both a world leading ICT cluster and a very strong Life Science cluster in virtually the same spot. Everything needed for interdisciplinary cooperation to succeed is within easy reach and key personnel can't help but bump into each other on a regular basis.

The Unicorn Factory

Stockholm-Uppsala is home to one of Europe's most important tech communities and some of its fastest growing startups. Dubbed the "Unicorn factory" by the Financial Times, the region has the most unicorns per capita in the world after Silicon Valley. But it didn't happen overnight. Stockholm's tech scene has developed over decades into what today is a world-class, mature startup hub. Good technical and business schools, a critical mass of people eager to start their own businesses, events and meet-ups, co-working spaces, a supportive government, angel investors and VCs, the talent needed to turn ideas into viable businesses – it's all in place and working in favor of the region's entrepreneurs.

The Life Science cluster in Stockholm-Uppsala on the other hand is one of the leading ones in Scandinavia and one of the world's most productive. The close ties between industry, academia, society and healthcare ease the development of ideas into commercially viable products. Five of Europe's finest academic institutions, among them Karolinska Institutet, with world renowned research and education in medicine, engineering and biology play their part too. Add the large medical databases and the basic principle in Sweden that the individual researcher owns the result of his or her research and you get the perfect conditions for new and profitable ventures.

The Health Tech trinity

It doesn't stop there. What really provides the perfect conditions for Health Tech is the unique mix of healthcare institutions, medical industry and digital know-how found in Stockholm-Uppsala.

It's in the intersection of these three crucial sectors where many of the new ideas come to life. Add a population of tech-savvy early adopters along with authorities willing to try new technology to alleviate rampant health care costs and you get a perfect test market for new Health Tech products and services.

Global outlook

The Swedish market is small in comparison to other European markets. This may at first glance seem like a disadvantage, but the upside is that it forces the region's startups to adopt a global outlook from day one, since the home market will never suffice. To help even more innovative startups to grow in global markets, The Structural Fund Partnership Stockholm County has granted Stockholm Innovation & Growth and collaboration partner Stockholm Science City Foundation, SEK 40 million over three years for the development project "Growth & Internationalisation".
The project aims to develop:

- Cooperation between small and large companies in the region.
- New financing platforms for growth that will increase the availability of venture capital.
- Matchmaking activities between emerging growth companies and people who want to start working in such companies.
- Industry-specific efforts to develop interaction between emerging growth companies, academia and new communities in areas such as health care, games and the music industry.
- Soft landing opportunities in other countries that can facilitate for Swedish companies to establish operations in new markets.
- Cooperation between relevant actors in the region working with growth and internationalization consulting.

"Sweden is a small country and anyone with an idea knows that they have to go global. That's why so many global companies are born in Stockholm."

Bonnie Roupé
CEO & Founder, Bonzun

State support for Health Tech

In order to implement new technologies and processes, economic investment isn't enough. There's also a need for removing legal stumbling blocks and changing heavily regulated environments with risk-averse, process driven cultures that has been in place since hundreds of years. In order to speed up the transformation, the Swedish government has set a goal to become the world's best country in the area of e-health by 2025. As a result, several prerequisites for implementing a digital transformation of health care are currently being changed or are already in place in the Stockholm-Uppsala region.

Insurance companies are getting in on the action

The really big savings from Health Tech will come from treating people with chronic diseases, which account for a significant part of Sweden's health care costs. Factor in the fact that private health insurance has tripled over the last ten years in Sweden, and it's easy to see why the insurance industry is one of the major drivers behind the Health Tech transformation. Medical insurers have realized what the traditional health care systems haven't; that the most substantial savings from the new health technology will come from prevention rather treatment. Expect further involvement and investments from insurance and Life science companies shortly.

"Today AI technology has many applications. It is behind the recommendations that streamed media services make based on consumption habits, in the assistants in our phones and as advisors in areas such as healthcare and legislation. And consumers believe it is here to stay."

Ericsson ConsumerLab
10 Hot Consumer Trends 2017

AI - it's everywhere

Artificial Intelligence (AI) is quickly becoming one of the hottest topics in Health Tech. This is due to a rapidly increasing availability of information in digital format, technical progress in so-called deep learning and machine learning as well as platforms that make the technology available. In turn, this creates new and exciting opportunities in everything from drug development and cancer research to decision support and clinical trials. The region's biggest player in ICT – Ericsson – named AI as the number one trend in their "10 hot consumer trends 2017"-report. They are not alone in their faith in AI. Harpreet Singh Buttar, an analyst at Frost & Sullivan predicts that "By 2025, AI systems could be involved in everything from population health management, to digital avatars capable of answering specific patient queries."

A numbers game

Though perhaps not the most glamorous part of the new gold rush, the unsung hero of the AI revolution is data. Lots and lots of data where AI can derive, structure and analyze information from different types of sources, both structured and unstructured. And nowhere are large, longitudinal medical datasets more readily available than in Sweden. The Swedish national personal identity number ("personnummer" in Swedish) was introduced as early as 1947 and is probably the first of its kind covering the total resident population of a country. It's widely used for everyday purposes in Swedish society, not least in the healthcare system, and makes it possible for researchers to follow patients literally from cradle to grave, something that is more or less impossible elsewhere. Add the strong Swedish tradition in computing and automatic data processing along with the early adopter mindset prevalent among Swedes and it should come as no surprise that giants like IBM, Microsoft and Amazon are already ramping up their AI-efforts here.

Some interesting AI-related companies from Stockholm*

- *Coala Life* adds machine learning to its portable product and cloud service for self-measurement of the heart.
- *Aifloo*, a Kista start-up, develops an AI-based security system run in a pilot in care homes.
- *Shim* has attracted venture capital for the development of an intelligent consumer product, the chat bot Shim, which "Helps you get to know yourself and strengthen relationships with people you care about."
- *Furhat Robotics* builds a social robotic head that uses a proprietary operating system for "social intelligence".
- *Gavagai* is developing a tool optimized for analyzing text data from open answers in questionnaires, a process that is usually done manually and is very time consuming.
- *SAS Institute* is a major Swedish international analytics company, which has launched a commitment to AI for the Swedish healthcare industry.
- *HealthiHabits* uses a combination of AI and machine learning to discover healthy habits and helps users achieve sustainable behavioral changes.
- *Brighter* focuses on diabetes systems for the international market. AI is in their pipeline and they have active collaborations with AI companies.
- *Lifesymb* develops real-time motion analysis using machine learning and 3D cameras.

*Source: Artificiell Intelligens och machine learning för sjukvård och life science, Henrik Ahlén, Alfa Bravo, Stockholm Science City Foundation, Feb 2017

2. Recent Investments in Stockholm-Uppsala

The Nordic Web, a digital publication keeping track of investments and startups from the Nordic region, published a new report in January 2017. According to the report, interest and investment in Stockholm continues to rise, with a total of 247 investments made in 2016 compared to 90 investments during 2015 – an increase of 175%. In relation to the other Nordic countries, Stockholm strengthens its position as the capital of Scandinavia, representing 54% of the total amount invested in the Nordics.

"In 2016, 1 in 3 investments that were made in the Nordics were made in Stockholm, up from the 1 in 4 in 2015. This is despite investment increasing across the Nordics, meaning that Stockholm continues to outpace them all."

Neil Murray
CEO, The Nordic Web

Health and Wellness investments in Stockholm-Uppsala Jan-Feb 2017

Company	Investment (USD)
MedUniverse*	1-3M
Magnea	<0.5M
Winningtemp	<0.5M
Fitness Collection	<0.5M
Coala Life	3-5M
Belly Balance	<0.5M
Noseoption	<0.5M
Irris	10-20M
Competencer	<0.5M
Natural Cycles	5-10M
Coala Life	1-3M
Airunum	<0.5M
WeMeMove	0.5-1M
Lifesum	10-20M
Werlabs*	3-5M
KRY	5-10M
Fitness Collection	0.5-1M
Aifloo	1-3M
Bluecall	Undisclosed
Shim	<0.5M

Source: The Nordic Web
*For more information on these companies, see following pages.

3. Why you should invest

Fifteen years ago everyone wanted to work for the big telecoms in Stockholm's "Wireless valley". Today, many of the most creative minds from that era are working together in other areas like the mobile and gaming industry, transaction technologies, streaming music and of course, Health Tech. Quite a few are going it for themselves. Many for the second or third time after having started companies that by now have become global businesses. This of course means that they have found out what works and what doesn't. If that isn't a good reason to get in early, we don't know what is.

In summation, this is why we think you should look closer at the Health Tech sector in Stockholm-Uppsala:

1. Unique business opportunities
The challenges within health care are real and need to be addressed. This is a huge industry ripe for disruption.

2. The trend is clear
The number of Health Tech investments in the Stockholm-Uppsala region rose from 11 in 2015 to 20 in 2016.

3. Portfolio weighting
The fact that investors are allocating a greater percentage of their assets into Health Tech shows confidence.

"It's a very vibrant scene with many interesting start-ups and innovative technologies. As a pan European VC it's a must to look at the Stockholm region for exciting opportunities."

Karlheinz Schmelig
Managing Partner, Creathor Venture

4. The Hot List

The Stockholm-Uppsala Life Science Investment Hotlist is a project supported by the European Union and features a carefully selected list of investment cases. The list is curated by Invest Stockholm and is intended as a tool for investors focused on disruptive commercial innovation in life science. It's updated continuously and to qualify for the list, the companies must offer a product or service, based on unique research that will lead to a commercial solution with global potential. They must also have established themselves in the market with a finished product or service, alternatively, be close to the commercialization phase.

On the following pages you find a selection of startups from the Hotlist that are poised to change the health care industry as we know it.

"We've seen a dramatic increase in the number of investment enquiries in this sector over the last few years"

Ylva Hultman
Head of Life Science, Invest Stockholm Business Region

Biosync Technology

Challenge: Stress is an epidemic of the 21st century, causing financial loss and decreasing the quality of life of millions. The WHO estimates that stress costs the US economy $300 billion dollars a year. The picture is similar in Europe, where stress is the second most frequently reported work-related health problem. As many as 50-60% of all lost working days are attributed to work-related stress and the number of people suffering from stress-related conditions caused or made worse by work is likely to increase. Stress also has a direct impact on prevention and the treatment of major chronic diseases such as Diabetes, Cardiovascular Diseases, Chronic Pain, Multiple Sclerosis, and Asthma. Yet, stress is not addressed in our daily lives.

Solution: Biosync Technology has developed a portable biofeedback system comprising a stress sensor that measures skin conductivity connected to a mobile app, a web app and a cloud-based IT system. The system uses a graphical interface through which users can learn about which social and practical situations increase their stress levels, turning Biosync's solution into a tool for daily life stress management and self-learning. In combination with the company's unique algorithm for data analysis, the system offers great potential in various applications, e.g. cost savings by primary and secondary prevention of stress related diseases, improved chronic disease management, sports.

Blodkollen

Challenge: People are becoming more and more health conscious. But wellbeing has until today been focused on how we look or what we eat, with too little emphasis put on how our bodies respond to our lifestyles. In today's society, individuals who aren't already showing symptoms of disease have limited access to thorough health checks and detailed feedback from physicians, nutritionists and fitness experts. This state of affairs limits people's ability to act proactively in order take responsibility for, and enhance their wellbeing – something that could potentially save society vast sums in health care costs. It also poses problems for those who want to optimize the results of their exercise and dietary efforts.

Solution: Blodkollen (Swedish for "the Blood Check") makes blood analysis available to anyone who wants to take charge of his or her own health and wellbeing. Different types of checks are offered online and the blood analyses are performed by more than 100 third party clinics throughout Sweden. By having their blood analyzed, people get insights about key health parameters and objective feedback on what's good about their health and life style, what needs attention and what can be improved. This gives Blodkollen the potential to save money for both public health institutions as well as customers by bringing knowledge about their health status before they go to the doctor. It also gives the doctors more time to focus on the specific help they can provide as professional physicians.

MindApps

Challenge: Despite ever-higher global living standards, mental health problems are one of the main causes of disease worldwide. It's estimated that one in six people experienced a common mental health problem in the past week. One of the main problems is stress. About three out of four Americans regularly experience physical or psychological symptoms caused by stress. Almost half feel that their stress has increased over the past five years and that they are lying awake at night due to stress. Yet, societies' resources for treating these problems are quite inadequate.

Solution: There is ample evidence that mindfulness and meditation are effective tools for preventing and reducing mental illnesses and stress as well as improving mental health and sleep. Stockholm-based MindApps offers its users the benefits of mindfulness through The Mindfulness App, which now counts more than two million users. As opposed to competing apps and programs, MindApps connects different experts in e.g. meditation to the platform in order to offer a wide variety of high quality courses, apps and programs. The app is sold using the freemium business model and customers are gradually being converted into subscribers. MindApps are also developing "MindGym" a comprehensive digital platform accessible from smart phones, tablets and computers that offer courses, programs and modules within the area of mindfulness and health in its wider sense.

Bonzun Health Information

Challenge: Every day, approximately 800 women die from preventable causes related to pregnancy and childbirth. Yet, many health care facilities lack obstetric doctors and are insufficient for patients. Another issue facing pregnant women is that they often have no-one to turn to with sensitive questions and crowded waiting rooms make them hesitant to go to the hospital with minor queries. Unfortunately, this lack of information all too often leads to preventable pregnancy and infant deaths. Mothers themselves are affected too: China has the highest amount of suicide among women in the world, a fact the WHO links to the country's lack of support during pregnancy.

Solution: Bonzun's app is the first complete e-health app for pregnant women. It offers pregnant women (and expecting fathers) access to pregnancy specific research, information, symptoms checkers and test trackers that help them establish whether the changes to their bodies are normal or not. This helps them understand their symptoms; establish whether they should be concerned and aims to put their minds at rest. For women with limited access to health care, Bonzun's app can be a life-changer. The app has been downloaded 1.3 million times since Jan 2015 and was nominated as China's Top Mobile and Internet Startup 2015.

Gnosco

Challenge: As many as 500 people in Sweden die every year due to malignant melanoma and the cost of skin cancer care in Sweden exceeds SEK1.6 billion annually. According to the WHO, the incidence of both non-melanoma and melanoma skin cancers has been increasing over the past decades. Currently, 132,000 melanoma skin cancers occur globally each year. Early detection of melanoma is crucial for disease prognosis. Melanoma specialist skills should therefore be within easy reach for the general practitioner during the patient's first consultation.

Solution: Stockholm based Gnosco's product Dermicus is a CE-certified telemedicine platform specifically aimed at more efficient communication between specialists and general practitioners. Besides handling patient cases faster and more efficiently, Dermicus is also an E-learning platform. The system includes a mobile phone, an application, a customized dermatoscopy and a server platform. The General Practitioner (GP) uses mobile teledermatoscopy to send clinical data and pictures through a mobile application to the platform. Gnosco has developed two products: Dermicus Mole and Dermicus Wound. The former puts Melanoma specialist skills within easy reach for GP's. The second does the same for patients with Slow-healing wounds – another big drain on healthcare resources that accounts for 2-4 % of the Swedish health care budget.

Mando Group

Challenge: When people try to lose weight, they are told to eat less food and exercise more. But most weight-control programs address the wrong aspect of food intake: When people eat their meals quickly, they don't feel full; quite the opposite, they feel hungry all the time and overeat – with the added drawback of a slowing metabolism. And exercising makes you hungrier yet, again causing overeating. By slowing the rate of food intake, using feedback from our Mandometer®, we can normalize the food intake eliminating chronic hunger.

Solution: The Swedish Mando Group, a healthcare provider for eating disorders and obesity is currently developing a consumer version of its successful clinical treatment for obesity and is launching the service in Q3 this year. The product includes Mandometer®, the medical device teaching people how to eat, a portable scale for relearning how to eat and an app with a smartphone as the user interface. The app displays the user's eating pattern, plotted against the ideal. It is an easy-to-use, clinically proven method to achieve a sustained weight loss using behavioral modification as the key ingredient. The fact that the eating pattern is reestablished into the natural eating mode, means the user will have practiced and learned what is natural for the body and it is easier to stay with this pattern than to deviate and thereby relapse and gain weight again.

Mimerse

Challenge: The World Health Organization estimates that, globally, 450 million people are experiencing a mental or behavioral problem at any given time, making psychiatric illness one of the leading causes of ill health and disability. Psychological conditions and mental health disorders cost an estimated $2.5 trillion globally in lost productivity and medical expenses. Many mental disorders can be treated without the use of drugs, but techniques like cognitive behavioral therapy, exposure therapy and general psychotherapy do not scale, are too expensive or have too few providers for them to be viable alternatives for millions of sufferers.

Solution: Mimerse aims to automate, democratize and disrupt mental health by leveraging the power of Virtual Reality. The company builds augmented and VR-experiences in the form of self-help apps that measure, manage and treat mental health disorders. The treatments are self administered, automatic and scalable and sold directly to customers in order to circumvent the clinical establishment. Costs are very low – order of magnitude cheaper. The only requirement is access to VR, a technology that is becoming more and more commonplace. Mimerse's treatments are evidence based (the company tests its apps in randomized controlled trials) and the effects are easy to monitor as Mimerse can gather data on the real world performance of its apps. In June 2016, Mimerse conducted the "Face your fear" VR experiment, in cooperation Samsung Nordics.

Gleechi

Challenge: Every year over 15 million people suffer from strokes, with more than 50% suffering from long-term disability. Rehabilitation often requires the patient to meet with a physiotherapist several days per week, which is a major problem for many patients. The most common reason for patients not recovering is due to lack of motivation since rehabilitation requires the patient to perform monotonous repetitive exercises several times a day. Attempts have been made to enable patients to perform exercises in front of their computer using sensor systems to track the patient's movement. However, these solutions are still limited to simplified body exercises and are not able to let the patient practice more complex exercises, such as hand and finger movement.

Solution: Gleechi develops the software VirtualGrasp that enables hand interaction in virtual environments. The technology is coming from several years of research at KTH and enables stroke patients to do rehabilitation tasks for their hands in front of a computer. VirtualGrasp is the only solution on the market for visualizing for fine finger movement and accurate grasping, thus enabling patients to perform relevant and motivating exercises in front of their computers in their homes. The predictive software enables patients to perform tasks in the virtual world that they are not able to do in real life, thus accelerating the rehabilitation process through the concepts of visual amplification.

MedUniverse

Challenge: Faced with an evolving digital and regulatory landscape, the life science industry is struggling to find effective solutions to access health care professionals with educational information and marketing messages. The life science industry is obliged to inform and educate their target groups about new treatments and devices. The US pharmaceutical industry alone spends more than $24 billion each year on marketing to healthcare professionals. However, the current methods neither involve HCPs nor collect data from interactions in a systematic way.

Solution: MedUniverse is a tailor-made patient case tool for the life science industry. Clients from the pharmaceutical industry can easily create interactive and visually compelling patient cases to engage, inform and gain insights from their key target groups, typically specialist doctors and other HCPs. In participating, HCPs can update their knowledge and at the same time take part of aggregated results from peers, which in the long run supports improved patient outcomes. MedUniverse is currently working with many of the leading global pharmaceutical companies on a worldwide basis.

Invicta Medical

Challenge: Sleep apnea is a common disorder that causes people to stop breathing for short periods during sleep. These periods are called apneas and can occur hundreds of times during the night and can last from a few seconds to minutes. Left untreated, sleep apnea can have serious and life-shortening consequences: high blood pressure, heart disease, stroke, car accidents caused by falling asleep at the wheel, diabetes, depression and obesity. It's estimated that there are 100 million sleep apnea sufferers worldwide, as many as 80% go undiagnosed and untreated. Harvard Medical School estimates that the economic impact of sleep apnea amounts to USD150bn annually, in the US alone. The compliance with the current 'gold standard' treatment (CPAP) is less than 50%.

Solution: Invicta Medical Inc. is a medical technology company that is developing a non-invasive, therapeutic medical device that computer controls the upper airways to treat sleep apnea and snoring.

Werlabs

Challenge: In the Western world, as much as 70% of health care budgets are spent on treating chronic disease; type-2 diabetes, stroke, cardiovascular disease etc. Many of these diseases could have been prevented through lifestyle changes, better diets and more efficient exercise. Unfortunately, the health care systems of today are geared more towards reactive treatment than proactive prevention. People who don't already show symptoms have limited access to the data they need in order to measure, track and analyze their health status, which prevents them from making changes with positive effects on their health.

Solution: Werlabs offers health analyses via blood testing. The company's offer consists of a comprehensive blood analysis and an interactive digital journal of collected health data analyzed using both human and machine intelligence. Compared to traditional health analyses, Werlabs can reduce the time for the patient to get results from 1 month down to 1 day. The company has built an infrastructure for blood sampling and blood analysis using existing health care facilities and labs, which negates the need to develop its own tests. Werlabs is quicker, cheaper and more comprehensive than traditional health check-ups.

For more information, please contact:

Ylva Hultman-Erlandsson
Head of Life Science
+46(0)8 508 280 65
ylva.hultman@stockholm.se

Åsa Andersson, PhD
Medical Advisor
+46(0)70 472 8048
asa.andersson@extern.stockholm.se

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Invest Stockholm Business Region
invest@stockholm.se
+46 8 508 280 00
www.investstockholm.com
www.stockholmbusinessregion.se

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