BC Platforms CEO Tero Silvola on Data's Transformational Impact for Healthcare Systems & Life Sciences R&D

With the blockbuster era receding and the regulatory bar rising, data and technology is crucial to helping drug developers navigate a more complex environment

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CEO Tero Silvola introduces BC Platforms' powerful data and technology platform for personalized medicine and drug development and the 'infinity loop' between the interconnected sectors of healthcare and life sciences that the company serves. Silvola also highlights how BC Platforms leverages the Swiss innovation ecosystem and why the next five years could be truly transformative for data harmonisation and access globally.

Could you begin by talking us through your career trajectory as a serial entrepreneur at the intersection between software and healthcare?

Indeed, my industry is a combination of biology and technology. I had a "second high school," like many Finns, at telecommunications firm Nokia, but have always been interested in healthcare.

In 2001, I started my first company, along with colleagues from Nokia, focusing on medical imaging. Our aim was to build an enterprise focusing on all the multimedia in the healthcare system. We grew quickly and successfully exited the company at the end of 2009.

After that experience, I started a healthcare services company. With the vision of transforming the way that healthcare services are provided, we founded an orthopaedic hospital in Finland, Hospital NEO, initially for sports medicine, but then expanded to include neurology, neurosurgery, paediatrics, and dental care. Eventually, NEO was acquired and is now part of the Mehiläinen Healthcare Group.

Around that time, in 2012/13, I was introduced to the BC Platforms story when, together with a colleague from IBM, I was engaged in scouting and analysing which areas would emerge to dictate innovation in the personalised and precision medicine space. We ended up speaking to BC Platforms, which at that point was very much academically led. Almost every employee held a PhD in biology or bioinformatics and the company was conducting its own research programs. However, we felt that, given the uniqueness of the company's platform and technical capability, BC Platforms would be able to grow much more quickly by focusing on providing value to healthcare and clinical decision makers as well as those conducting pharmaceutical R&D.

What problem did BC Platforms set out to solve and where does it fit into the wider ecosystem of data management?

It is important to understand that we address two separate markets: healthcare and life sciences. We often speak about an 'infinity loop' between these two interconnected sectors; everything we try to solve in healthcare will serve life sciences, and vice versa. The innovations and capabilities that we develop in life science research will ultimately speed up the use of those innovations in healthcare practice and make them more effective.

In terms of how we transitioned from and transformed the healthcare side, our aim was to ensure that genomic data is utilised as effectively as possible and make precision medicine a reality. The production process of genomic data has gone through a massive change in the past ten years. When we started with BC Platforms, the unit cost for producing the complete DNA sequence for one sample was in the millions of dollars. However, today the price tag is around the same level as an MRI image; below USD 1500 per sample and declining. Therefore, we predict that there will soon be an explosion of integrated genomic and clinical data. Our job is to make sure that service providers such as hospitals can integrate and provide a workflow from these tools to actionable insights as effectively and reliably as possible.

Our role is highly connected to the life sciences, ensuring that the data generated gives clinical decision makers the opportunity to give the right medicine, at the right time, at the right dosage, to the right patient; thereby maximising treatment outcomes, accuracy and quality.

The biggest value that we bring to life science research is related to time. With the blockbuster era receding and the regulatory bar rising, data and technology is crucial to helping drug developers navigate a more complex environment. BC Platforms feels that the combination of data and technology is the lifeblood of the infinity loop in practice.

Use cases start from the discovery phase, where genomic data is a key asset in target identification and association analysis. In the preclinical and clinical phases, our platform can assist with biomarker development or the patient stratification for clinical trials. We are also able to assist with external control arms reducing the cost of expanding patient access to a therapeutic.

Why do deep-pocketed pharma companies not build these capabilities internally and what kind of expertise does BC Platforms provide that they cannot?

BC Platforms' mission to become the world's largest federated data network. Therefore, it is crucial that we are embedded into healthcare practice globally. When we are part of the data production workflow, we are able to understand what that data is about, how it is being produced and harmonised, and can make it comparable across healthcare institutions and practices. Therefore, when pharma has a need for this data, they can use a standardised, compliant interface.

Having an intermediary data broker is a benefit for pharma companies for several reasons. Firstly, it saves them time and money. Additionally, the fact that we are a neutral platform allows the pharma companies to avoid the potential bias inherent in approaching healthcare systems for data themselves. Thirdly, it removes their worries around privacy and regulatory implications related to data access; we standardised and streamlined the process of accessing data every pharma company follows.

How far away are we from the 'dream world' of a truly federated and harmonised data access system?

I foresee a big transformation coming within the next five years. It is clear that the COVID-19 pandemic has accelerated developments dramatically. The fact that patients have not been able to physically attend clinical trial sites has emphasised the need for automated and intelligent solutions, including those driven by AI.

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Additionally, the pandemic has taught healthcare decision makers and politicians that diseases do not respect national borders and demand for international data sharing has therefore increased immeasurably. Today, these stakeholders are much more receptive to the changes that are needed, although differences between countries and continents obviously still exist.

There have already been big steps forward in terms of data harmonisation. For example, the pharma industry, together with the EU and the NIH in the US have been able to agree on a standardised clinical language, OMOP.

The FDA’s Janet Woodcock told us that Europe is in a much better position than the US on the data harmonisation front due to its socialised healthcare systems and unified data sets. Does this ring true with your experience? Which geographies do you see as being at the forefront of this leap forward in data over the next five years?

There are certain benefits in that regard to public healthcare systems. Investing in predictive methodologies or preventive capabilities makes sense in Europe. Screening and identifying more quickly allows for faster innovation and care and drives better outcomes for the entire healthcare system, including for patients.

Finding the motivation to invest in these tools can be more challenging in the US, where reimbursement for predictive and preventive activities is currently not a given although this may change in future. However, in general, the US healthcare system and legal environment is very conducive and open to innovation.

How does BC Platforms differentiate itself from the competition in terms of both big tech players and SMEs?

Firstly, BC Platforms has over 20 years of history. Over such a long period, we have had many successes and learning points, which have influenced what today is a very precise strategy.

Many of our competitors have focused either on clinical data *or* genomics. However, our technology platform can handle *both*; we are agnostic in terms of data sources. For example, in genomic data, we handle both sequencing as well as genotyping data. From the beginning, our philosophy has been that genomic data has to be analysed together with the clinical data.

Another big differentiator is our interesting combination of highly educated individuals on both the technology and biology sides. The structure of the company today is very different to a standard technology player as our DNA is in biology.

In addition to BC Platforms' technology platform, the company also has a biobank network. Could you tell us about the rationale behind, and progress of, this project?

Our BCRQUEST.com Global Data Partner Network has the potential to be the world's largest of its kind by the end of 2021, with more than 25 million subjects accessible for pharma R&D. This network will cover all haplotypes, not only those from one geographic region, but from Europe, North America, Asia, and potentially also Africa in the future.

We recently signed an agreement with Europe's largest biobank network, BBMRI, which contains all 700 of the publicly funded biobanks in Europe. BBMRI decided to go with BC Platforms after seeing how we had worked with the UK's biobank network in the past, and we hope, in the very near future, to become a standard access point to the entire European biobank network.

Given that you sit in Helsinki and that BC Platforms has quite a global outlook, why did you choose the base the company headquarters in Zurich, Switzerland? What synergies are there to be leveraged from the Swiss ecosystem?

The decision to base our headquarters in Zurich was the result of a long decision-making process, having begun to ramp up the company's footprint and set our future priorities. We are part of a comparatively new industry at the intersection of data with biology, healthcare and the life sciences and therefore we wanted to be located in ecosystems where these different sectors are aligning more quickly. Our aim is to sit next to early adopters who truly understand the benefits of this personalised medicine paradigm shift.

There are a few places globally that meet these criteria. The first is Scandinavia, where countries are typically very fast in adopting new technologies, from second generation electronic patient record systems to medical imaging.

In the USA, Boston on the East Coast and the Bay Area on the West Coast also fit this bill. Both boast massive healthcare and life science ecosystems, with well-established service providers and great talent from the top-quality universities located there. Indeed, BC Platforms' own starting point was at MIT and the Whitehead Institute. Having that connection from the beginning is an important part of our story.

However, after exhaustive research on these locations as well as other hotspots like the UK, we concluded that Switzerland was the best place for us. Switzerland is a country where the Pharma industry is truly driving change and where we have access to decision makers that can ultimately make a difference. Having grown to a position financially where we were able to relocate, we took the decision to move the company headquarters to Switzerland in 2015. So far it has proven to be the right one!

Immediately after that decision, we also decided to strengthen our team in Boston, where we conduct a lot of our commercial activities. Additionally, for the Asian market, Singapore has a lot of the characteristics we look for, and so in 2017/18, we established our regional headquarters there. This strategy has really accelerated our growth.

With healthcare and the life sciences potentially opening up to data much more in the next five years, perhaps with a push from COVID-19, what are your goals for the company over this period?

In healthcare our strategy is to work with industry best practice institutions. There are more than 40,000 hospitals globally, but we try to identify the leading institutions that have the vision, the

resources, and the capabilities to invest in precision medicine. So far, we have identified between 100 to 150 big healthcare players that may be able to drive this change. Ultimately, it is very important for BC Platforms to be embedded in these key opinion leader sites across the globe to access this very valuable data.

Our second important strategic target is to showcase the value of our platform and data-combined delivery to pharma. We try to understand the latest trends in each therapeutic area and where pharma companies want to drive data insights from.

The third target is to invest more in new capabilities. It is self-evident that data is also a source for new machine learning and AI capabilities, but there is going to be strong international competition for the top leadership position. Having our own understanding of how data can be utilized for AI and machine learning algorithms to benefit Pharma R&D will be extremely important. There are different methodologies that can be used when educating AI tools. The traditional strategy is to collect data in one location, then let the AI learn from that. However, we want to do this in a federated manner, not moving the data beyond the hospital system firewalls, which adds greater security and privacy for governments and regulators.

What would be your final message to our international executive audience on behalf of BC Platforms?

The overarching message is that data *will* transform both healthcare systems and the life sciences R&D process. This will happen through greater connectivity between healthcare systems and the life sciences. To achieve this, two major assets are needed: a best in practice technology asset in combination with the data. These two components are the lifeblood of innovation and are at the foundation of personalised medicine.

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