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Alan Tsai, general manager, and Carson Chen, chief technology officer of iXensor introduce the startup as an innovative player in the point-of-care diagnostics and digital health space. They jointly discuss the company's exciting platform, PixoTest, which merges ICT and healthcare to deliver quick and accurate results using smartphone technology in the areas of chronic illness, women's health, and infectious disease management.

Mr Tsai, as this is the first time we are meeting iXensor can you please briefly introduce yourself and the company to our international readers?

TSAI: I joined the establishment of my first company, Bionime, in Taiwan in 2003. Bionime is a glucose monitoring company which was IPOed seven years after its creation. At the same time, in 2011 I went to the US to participate in Stanford University's bio-design program for one year. It was at this point where I met Jerry Chen and Carson Chen, the other co-founders of iXensor.

Beforehand, I had been selling glucose monitors for ten years but did not truly understand how the technology fitted into the everyday lives of customers. Our goal was to revolutionize the way chronic illness is managed and create a modern solution using today's technology. Therefore, we came up with the concept of using smartphones to manage blood sugar, and luckily, we were able to find an investor to back up the business and get the project running.

iXensor's PixoTest technology is an innovative point-of-care digital health solution applicable to a range of biomarkers. Tell us more about the PixoTest technology platform and its diagnostic capabilities.

CHEN: We originally started iXensor in glucose management exclusively. However, with our technology platform, we were able to expand our offering and allow consumers to use their smartphone to test for several different biomarkers. In addition to glucose, our PixoTest platform is able to perform diagnostic tests for total cholesterol, HbA1c, and lipid panels as well as luteinizing hormone (LH) and human chorionic gonadotropin (HCG) in women's health. Using a smartphone camera, the change of colour on a PixoTest test strip can be identified, resulting in a very accurate reading.

TSAI: Currently, our technology platform covers three areas: chronic disease, women's health, and infectious disease. In chronic disease, the lipid panel and HbA1c are essential for the management of diabetes and cardiovascular patients. We are looking to extend our biomarkers to other chronic disease. Additionally, in women's health, we have the capability to include biomarkers that make PixoTest a total solution for health management before, during, after pregnancy. In our chronic health business, we follow both a B2B/B2C model while our women's health product, Eveline, is marketed directly to a consumer population.

Finally, in 2017, iXensor cooperated with Taiwan's Center for Disease Control (CDC) in Kaohsiung to help monitor the outbreak of dengue fever. This model for infectious disease can be replicated in other regions around the world like Central America, South America, and South Asia. However, iXensor is still a growing company with limited resources, so we are currently focusing more on chronic disease and women's health management. Nevertheless, we also collaborated with another company this year to develop an Africa swine flu diagnostic solution.

How prepared are healthcare systems to embrace IoT offerings at a large scale? What stakeholder group can be the ones to drive the mobile health revolution forward?

CHEN: The overall transition into digital health will take time, starting with some pilot programs in leading hospitals and medical centers. For example, Jefferson Medical Center network with whom we collaborate is quite advanced in incorporating innovation into its system. Once a pilot program is proven to be successful, it is expanded to the other 14 remaining hospitals. For entire healthcare

systems to complete the smart health transformation, I expect a timeline of ten to 20 years. However, starting with some minimal digital systems can allow hospitals to be early adopters of smart health technologies.

There are two major driving forces in digital health – one of which are the self-insurers, such as private companies who want to take care of their employees and invest in prevention programs. Additionally, national health plans and policymakers like Medicare and Medicaid in the US are leading the wave of digitalization. These programs are more incentivized to try innovations that can provide better outcomes and reduce costs.

Most health systems have yet to fully embrace diagnostics as a core element of its economic well-being with very little money being allocated to the area, less than three percent of expenditure. Do you see this changing today?

CHEN: I agree with this and I do believe that there needs to be more resources allocated to diagnostics. The information gathered from diagnostics is a key indicator of health and is an important aspect of creating care regimens to help patients get healthier. Furthermore, thanks to the internet, access to medical knowledge that patients have is much better than it was 20 years ago. Patients are much more involved in their own health and often use tools like Google to follow up and confirm what their doctor is saying. By making diagnostic procedures more available, not only will doctors be able to enhance the treatment services they can offer, but patients will be more empowered to play an active role in maintaining their own health, ultimately reducing costs in the long term.

What advantages does iXensor benefit from by launching its operations from Taiwan?

CHEN: With my background in Taiwan's IT industry and Alan Tsai's connections in the medical device and diagnostics, iXensor is well-positioned in the market. We are fortunate to have a strong network of collaborators and KOLs to build our recognition in the country and to ensure that our technology is top-notch. Furthermore, Taiwan's expertise in merging ICT with health and biomedical technology allows us to more easily recruit talent. Also, the country's relationship with key markets like Japan and the US are very strategic for our expansion strategy.

TSAI: Being traditional experts in IT manufacturing, we know very well how to manage to cost of production for such products. Taiwan also has a top tier healthcare system. Patients are able to

receive care very quickly for free under universal coverage with highly skilled doctors. However, the challenge which health companies face in this market is the low reimbursement. Compared to the US where health expenditure accounts for 18 percent of GDP, Taiwan is only 6.6 percent. This makes it more difficult to balance the interests of the system and industry in Taiwan.

How difficult do you find it to merge ICT with healthcare within the same organization?

CHEN: At first, it was a challenge to bring together people from completely different industries, however, we have experimented and worked on new ways two increase collaborations. After six years, we have developed a strong work culture in iXensor where our engineers and medical staff can communicate effectively and speak the same language on the project.

How are iXensor's products differentiated from IVD medical devices which already exist on the market?

TSAI: iXensor is able to leverage Taiwan's ICT manufacturing abilities, so we can produce high-quality products in a cost-effective way. Moreover, as a new company, our products are well connected and utilize modern technology like Wi-Fiand GSM. PixoTest is focused on being an adaptable product; it is portable for out-patient care and it can easily be expandable as we develop more biomarker testing capabilities. PixoTest is one device that can be a universal POC diagnostics solutions.

Earlier this year iXensor partnered with Merck as one of ten international startups participating in the 2019 Acceleration Program in Darmstadt. What was the scope of the collaboration and how did this opportunity help to further iXensor's development?

CHEN: Typically, to collaborate with large MNCs it is a very long, bureaucratic process which may take months to arrange just one meeting. In the accelerator program, we had a unique opportunity to begin inside the company and talk to different divisions within Merck to understand what their needs are and speak in-depth about our own project.

Being in the stage that we are, already having a product, it is crucial to begin building our network within the healthcare industry and show what iXensor and PixoTest can offer. Although it has been seven years, iXensor is still a startup with limited resources. We would like to continue cooperating

with MNCs who can help us enter the sector and build our presence.

Looking outside of Taiwan, what internationalization strategy will iXensor follow in marketing PixoTest?

TSAI: Currently, we are already marketing PixoTest in Europe, Asia, and the US. In Asia Pacific, we selected Thailand and the Philippines to be our first distribution markets in the region. In these markets, the easily portable and maintainable PixoTest offers a strong advantage the access to healthcare outside of major cities is fragmented and requires adaptable solutions. In Europe, we work with Italian distributor because many patients go directly to pharmacies for diagnostic monitoring and treatment of their chronic diseases. In each region, we strategically select our markets and focus on applying the benefits that PixoTest can provide.

In women's health, our biggest US partner for Eveline is one of the largest pharmacy chains. Our product is already present in over 5,000 stores. We have also recently received product orders from DM-drogerie markt, a retailer in Germany, for Eveline as well.

We are highly focused on proving the marketing adoption of iXensor's line of products. For a startup, we feel it is very important to prove that our products sell well in key markets. This will help us build a strong reputation within POC diagnostics as a leading product and partner of choice to distributors and market heavyweights.

What strategic objectives are you aiming to achieve in the upcoming five years?

CHEN: Due to the finical burden of healthcare in the US, it is typically the first adopter of digital trends. By making the diagnostic process from the machine to the doChenr seamless, iXensor can connect the dots and allow health professionals to take action quickly. We want to partner with health providers in the US and conduct clinical studies to further prove the efficacy of our innovative solution. Furthermore, we are also seeing great opportunities in European and Asian markets.

TSAI: The priority of iXensor is to be a local system service solution. We cannot bring the best service to international customers by ourselves. Now that we have proven the marketability of our diagnostic tools, we want to stand with the industry giants and leverage their distribution capabilities while we offer them an innovative solution in return. Our goal is to build long-term

mutually beneficial relationships and help our partners close the circle of healthcare.

What has been your motivation in the journey of developing a next-generation digital health company?

CHEN: Before iXensor, I worked at MIT, Caltech, and Stanford. I always found myself wondering how I can transfer the technology I am developing in a way that can benefit society. When I met the other founders of iXensor during my time at the Stanford Taiwan Biomedical Program, the feeling that we are doing something helpful to society is the driving force to continue this journey. We have faced challenges, but this passion and ambition has pushed us on the path of success.

TSAI: With the unique capabilities that Taiwan has in health and technology, I believe that Taiwan has a special role to play in providing more value for the world. Combining our strengths, we can bring new solutions to global health and solve the issues being faced by patients and doctors on an international scale.

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