

Cite as: Rabab Nasrallah, Accurate Identification for Global Impact, Innovation & Impact, 2021

URL: iai.digital/2021/simprints

Accurate Identification for Global Impact

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Abstract: Simprints is a non-profit technology company based in Cambridge. The company was founded in 2012 to address the lack of reliable identification systems in international development. The focus has been geared towards low-middle income countries (LMICs) where accurate and comprehensive data collection is paramount for addressing global health, poverty, and policy issues. Today, through partnerships with multinational organisations, including BRAC, Mercy Corps and Watsi, Simprints' employees - who strive for value and impact - are at the core of its success. In 2011, 1.5 trillion USD was the estimated global expenditure for addressing sustainable development goals (SDGs), and over 80 billion USD estimated shortfall in addressing social welfare, healthcare and education alone. It is therefore paramount to accurately allocate funds for transformative effects of eradicating global poverty and addressing health problems. The founders of Simprints developed the Vero scanner, which through biometric identification, wireless networks and the cloud, as well its offline usage capabilities, has achieved unrestricted reach. Simprints provide a platform for their partners' frontline workers who collect accurate information to build the evidence base required for informed resource allocation and progress reports.

Keywords: Biometric identification, Simprints, Data collection, Global impact

1. The success story

Simprints is a non-profit technology company based at The Bradfield Centre in Cambridge. In low- and middle- income countries (LMICs), where vital registration, surveillance, and health record systems are underdeveloped, improved modes of data collection are required [1]. To date, several publications have compared methods used for data collection via remote surveying, including short message service (SMS), computer-asked telephone interview (CATI), interactive voice response (IVR), web surveys, self-administered questionnaire, and face-to-face interviews. However, a dominant issue is the reliability and accuracy of the data collected. Simprints have developed the Vero scanner, integrated with the Simprints ID App software to

streamline the process of data collection by adding biometric identification. The fingerprint-based technology was engineered for use by governments, non-profit organisations (NGOs), etc. to reach people in the developing world. The portable identification device is ergonomic; can connect to android devices using Bluetooth; powered by a lithium ion battery to mitigate issue of connectivity in remote areas; in addition to being dust- and water-proof (Figure 1), all of which are robust features required for frontline data collection in underprivileged areas.

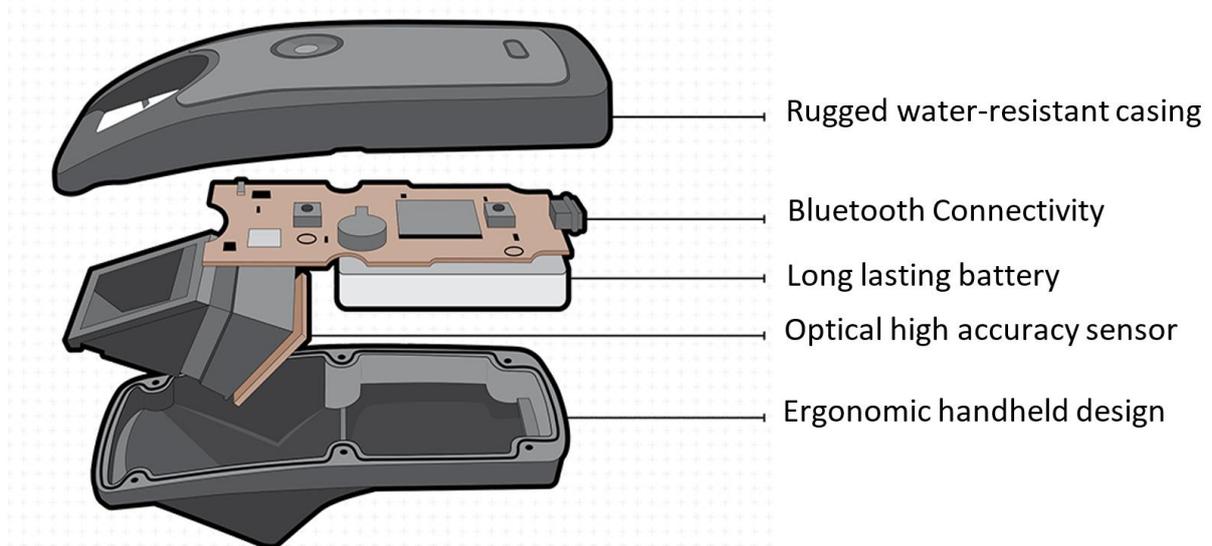


Figure 1. The Vero scanner [2].

The Simprints ID App is used on a mobile phone, and achieves more than 228% improvement in accuracy in capturing information from scarred, worn fingers, which are common in most LMIC settings. The system ensures secure data encryption (Figure 2) and back-up using the cloud, and is designed to work offline. All together, the device and system are designed for frontline workers in LMICs to ensure the furthest extent of data coverage and quality of data collection. Simprints have successfully established strategic-, impact-, and tech-based partnerships, to achieve a symbiotic entity that integrates tools from tech partners with targeted resources from strategic partners, to deliver a platform to their impact partners' frontline workers, thereby bringing digital transformation to existing projects around the world.

2. Where did it start and the motivation

It all began in 2012, during a hackathon organised by the humanitarian Centre at Cambridge University, now known as the Centre for Global equality, in collaboration with ARM. The current CEO Toby Norman, was at the time a PhD student at the Judge Business School working on a project related to motivation for community healthworkers, in collaboration with BRAC (Building Resources Across Communities). During this time he saw the identification issue first hand. The hackathon's theme that year was to address "Identification in developing countries". During the challenge Toby and his team worked on the concept of fingerprints for identification. From there, the idea took over a year to develop. Simprints was founded by three Gates scholars based in Cambridge and one masters student based at the Royal Holloway, London. They were brought together by their interest in global health, international development and

social enterprise. Alexandra Grigore, the current CPO, was the fourth founder to join the team. At the time, she was a Cambridge University PhD student working on nanotechnology and biosensors, with a focal interest of developing diagnostic tools to address health issues in developing countries. Alexandra joined Simprints as an opportunity to get experience in the space of social enterprise, and soon came to the realisation that before you diagnose people, you must identify people. Without identification no diagnostics can work or be effective, and no treatment can be effective.

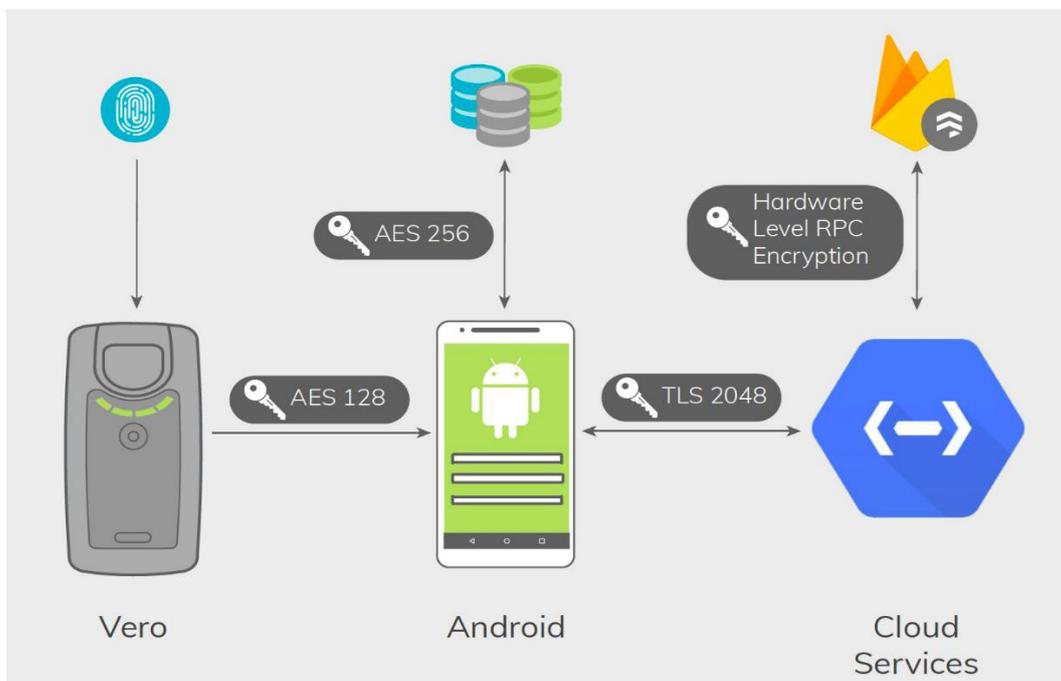


Figure 2. During identification, biometric data are collected from patients by research assistants using a smartphone, a fingerprint scanner, and two mobile software applications – CommCare and Simprints ID. The research assistant first uses CommCare to collect personal and medical information, then uses the scanner to enroll and identify the patients. All data are encrypted during processing operations, including collection, transfer, and storage. Simprints ensure the security of all processing using 128-bit encryption between the scanner and the smartphone [3].

Alexandra emphasized that “Many companies start with a product, however, we started by validating whether a problem worth addressing exists in the market, and what clients actually want. Only afterwards did we start putting together prototypes showing them to people, and raising funds” and believes that this was a big part of Simprints success. The founders started by conducting a survey with more than 30 organisations, asking them, if an efficient system based on biometrics and fingerprint identification existed in this space, would they use it? The result was an overwhelming interest. During the period of validation, market research, and interviews, the company was supported by a multitude of volunteers within the Gates scholars community and beyond. Ultimately, BRAC, an early supporter of Simprints technology, supported the company in applying and securing their first round of funding.



Seamless project setup

Robust identification tools

Data analytics and support

Figure 3. Simprints Technology built to overcome identification challenges, unlock data insights and amplify the impact of mobile data collection platforms. The system is set up with a technology that easily integrates into existing tools for personalised project setup. The tools are designed to work in the world’s toughest settings based on user inputs, and support in data analytics to address gaps in traditional systems [4].

3. The journey so far

Simprints have developed a platform that is revolutionising the way foundations collect data, to guide funds and resources allocation for the biggest global impact (Figure 3).

Being in the Cambridge ecosystem has helped the company in two main areas: (1) Simprints was also part of the Judge Business School Accelerator (accelerate program). Being within Cambridge made setting up a company easier with readable access to advice on investment, talent, finance, access to mentors, etc. (2) Beyond local talent from Cambridge University students, more than 50% of employees come from outside the EU—from more than 15 countries. Cambridge University’s reputation as a world-leading University has helped in attracting highly skilled employees.

The founders believe that a big part of their success is having created a company with a culture that allows people to thrive, learn and be autonomous. According to Alexandra, creating the company goes beyond impact, “it is creating an organisation where at least 30 people come to work with enthusiasm and excitement”. The company operates under an incredibly transparent environment allowing people to work believing in the organisation’s mission, vision and culture. The company has tripled in size in the last year, starting with 10 employees in early 2017, and concluding 2018 with 30. Simprints is founded on individuals who have the sweet spot between technical/skill excellency and social motivation. At the moment, Simprints geographical target areas are Southeast Asia and Sub-Saharan Africa, and they operate with a diverse team filling the gaps of cultural differences. The company is based on working with diverse countries and clients, and therefore having a diverse working culture is very important, thus recently finalising their first hires from Nigeria and India.

4. Look into the future

The company recently started achieving positive results from some of their projects and are in the process of scaling up. The projects so far have been small, with the largest comprising ~100,000 beneficiaries. This year the plan is scaling up at least two projects, starting with Bangladesh (where Simprints first pilot occurred in collaboration with BRAC). They have now secured a transition-to-scale grant, from “Saving lives at birth” competition. This grant will come into effect in 2019, with the aim of reaching 2.1 million mothers and children in the next couple of years. The project is a maternal health care program, incorporating identification with antenatal and postnatal care workflows, to ensure that every mother receives the recommended WHO number of antenatal care visits, followed by a continuity of care throughout pregnancy, delivery, and the first years of life. The pilot is possibly the biggest milestone for Simprints so far, basically proving that indeed accurate identification leads to an increased number of antenatal care visits. Now, working in Bangladesh, the plan is to conduct randomised controlled trials (RCTs) during the scale phase to pin down what the true impact is on the number of lives saved thanks to the platform. Simprints is also aiming to apply part of its funding to a second research project: hardware-less biometrics. An R&D into seeing if the scanner itself can be replaced with a simple add-on, or even by just the camera of an Android device.

The company does not only exist to provide the technology platform for its partners, but to make the link as to how accurate identification can improve various impact indicators. Simprints is working now on identifying these impact indicators and what are the best ways to influence them.

The past two years have been focused on talking to users and clients trying to build the right tech. Simprints have developed a system that works; a biometric indications system designed for frontline workers in developing countries. The next 2 years will be a very critical phase of growth, with Simprints focusing on project outcomes to prove the theory of change, ultimately improving lives. Different projects have different value propositions for clients. Applying both platform and device depend on client needs; accurate data, fraud reduction, fund allocation, etc. However, Simprints does not operate as a system to police, monitor, or control what frontline workers do, it is a platform that should ultimately spot systematic and programmatic issues. For example, people commit fraud due to programmatic issues—lack of significant financial gain, lack of interest in social concept, etc.— and Simprints system is hoped to spot these emerging trends and relay what can be fed back to the clients (NGOs or government), which can then improve their service delivery programmes.

Mid 2020, in collaboration with Gavi and NEC, Simprints announced the plan to deploy the first scalable child fingerprint identification solution to boost immunisation in developing countries [5].

Acknowledgments

Special thanks to the CPO, and one of the founders of Simprints, Dr Alexandra Grigore, for kindly giving her time to talk about the founders journey through Simprints, and feedback on writing the article.

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