

e-Health in the Philippines and how Open RAN can ‘speed up’ accessibility

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The Philippines health system is in urgent need of digital transformation, as highlighted by the COVID-19 pandemic. The Philippines also has huge disparities when it comes to accessing health services, particularly in areas classed as GIDA – geographically isolated and disadvantaged areas. Adding to this is a mismatched data collection strategy which sees the Department of Health unable to collect health data in a timely and accurate fashion. This is further complicated by the lack of integrated software applications, lack of specialized training, and others. However, despite these challenges, pioneering doctors have already been making gains with ICT incorporation in the medical industry. The Internet of Medical Things (IoMT) is rapidly evolving and has the possibility to drastically reshape medical care as we know it. In the Philippines, two such doctors are Dr. Portia Grace F. Marcelo and her husband Dr. Alvin Marcel. This past month, they sat down with AORA to share their work on developing a unique piece of medical equipment utilizing open interface software to improve both primary care health services and trauma services – benefiting doctors and patients alike.

Sixty percent of Filipinos die without seeing a health professional. The reasons why are multifaceted – geographical challenges, lack of resources and doctors at the primary health care level, major delays in interventions, and more. All these widen healthcare inequality and have serious economic consequences. Seeing the challenges doctors face in the ER led Dr. Alvin Marcelo to develop the RxBox in 2007 as a means to send patient information from the ambulance to ER systems. However, lack of internet connectivity and other connectivity challenges hinder its success. As a primary health care doctor, Dr. Portia saw how the RxBox could support improved care at this level and alleviate management issues at the same time. Trialing it at the community level with modifications began.

The [RxBox](#) is an eHealth platform, eHealth program, and eHealth intervention ICT tool. It combines medical diagnostic capabilities with a patient’s electronic medical records (CHITS-EMR) and tele-medicine consults with specialists at larger hospitals and specialist centers. It also has a capacity building component to improve medical professionals’ digital competency resulting in increased use of the device. The RxBox demonstrates cost effectiveness while producing high quality care at the frontlines. Two key features are its mobile use application and offline data entry capability, allowing information to be inputted and stored until internet access is available for uploading. Particularly important as internet connectivity is still a challenge in rural areas.

As a positively disruptive technology it has achieved many ‘wins’ for the Filipino health sector. The technology demonstrated for the first-time interoperability of systems using FHR Fire. Proving open accessibility can happen.

Over twelve specialists across cardiology surgery, OB GYN, internal medicine, family medicine and more have been connected with the goal to localize healthcare at the primary level but Dr. Portia does not want to stop now, *‘we have to grow into wider health sectors, such as diabetes. We are looking forward to incorporating bio-tech. What are the major killers of Filipinos and how can we detect it early and provide more support?’* Dr. Portia.

The RxBox has also proven itself as a versatile piece of technology going from the ER to general practice at the primary care level in a more stable environment. Upon collecting data and listening to patient needs the RxBox shifted in 2012 to focus on maternal and child health while supporting the campaign to control non-communicable disease. Then in 2020 it shifted again to support COVID-19 interventions. Who would have thought that multiple diagnostic tools could fit in one small box? *“It is a ‘game changer’ anytime a patient is connected to the RxBox this represents the health of communities.” Dr. Portia.*

So how can Open RAN support and build on technological innovations such as this? Firstly, we need to understand Open RAN, 5G, and private networks, and what it means to open the internet. 5G is the 5th generation and latest in advanced communication technology to provide faster and lower latency coverage while supporting a greater number of devices. It is expected to have a significant impact on a wide range of industries including healthcare by enabling new applications and services. Yet, most Internet Service Providers (ISPs) are unable to provide widescale and affordable internet because of how the system is currently set up. Currently, it is based on traditional radio access networks, or RAN, built on proprietary hardware from a single vendor. This makes it difficult and expensive for network operators to integrate products from different vendors, upgrade their networks, and introduce new services. Open RAN – disaggregated radio access networks, on the other hand utilizes open interfaces and standardized hardware and software components designed to work across vendors. By separating the hardware from the software, we can use general purpose processors (GPP) and activate them with open-source software using the RAN intelligent controller (RIC) to manage the system. This can reduce costs and speed up ICT infrastructure development. And finally, a private network is essentially a wireless communication network using a technology designed for a specific organization or group of organizations, it is not publicly available. A network based on Open RAN utilizes standard interoperable hardware and components from multiple providers while being 5G capable. This allows organizations the ability to build their own private networks while also using the power of the latest technology – and from this come applications, such as the RxBox, but designed specifically for them.

The RxBox was introduced because many primary care centers across the country did not have adequate medical diagnostic technologies or internet. This disempowers doctors and patients. As networks open up and become more accessible through cross using software and hardware how much more improved can Filipino engineers make the health system when working in collaboration with doctors such as the Marcelos? Join the Asia Open RAN Academy to educate yourself and study use cases now. The future is OPEN!

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