Interview: Callum Bir – Director, Health & Social Services APAC, Microsoft

"The biggest opportunities for transformation lie in delivery of care."

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Callum Bir explains Microsoft's vision and strategy for leveraging the transformative power of technology in healthcare, particularly in terms of its world-leading capabilities in Artificial Intelligence.

While Microsoft is ubiquitous, our readers may not be familiar with your role in the healthcare sector. To begin, could you give us an overview of how Microsoft approaches healthcare?

Microsoft approaches healthcare by looking at opportunities to transform the way healthcare systems work for the better. When we look at overall healthcare spending, we see the biggest opportunities for transformation lie in delivery of care as this accounts for the largest portion of cost and resources. More broadly, we have identified four broad topics where we see significant potential for technology to transform healthcare.

The first topic is how patients engage with care providers. Today, these processes are very sub optimal and inefficient. Great improvements could be driven by simply automating appointment booking and scheduling processes to improve efficiency, with more disruptive ideas involving the use of AI and chatbots to engage with patients remotely – this last example I take from a Singaporean startup that Microsoft is working with, RingMD. Within the hospital setting, engagement with patients is currently far from optimal from the perspective of holistic care and

wellness and we see huge potential for technology to help shape patient pathways and journeys through healthcare systems, and to contribute to a better quality of care. Post-hospitalization, we also need to look at how to update and transform mechanisms for follow up and chronic care and, as many have discussed, mobile and telehealth technologies could greatly reduce the frequency that chronic patients need to actually be hospitalized.

The second topic is using technology to empower healthcare workers to achieve more. Aside from Australia and New Zealand, all of Asia, including Japan and South Korea to an extent, have low doctor and nurse to patient ratios. There are just not enough medical professionals relative to demand. Really, when you consider the USD 7 trillion spend on healthcare globally, the greatest portion of that cost is for time; much of which is wasted, and in this case we can even measure and quantify how much time medical professionals use. So the real question is how can we use technology to help optimize the use of medical professionals' time? Certainly there are broad opportunities for this – for instance using AI to better coordinate care and implement population health management, as well as just providing basic solutions for communication and collaboration between medical professionals. As healthcare systems in Asia Pacific are built out to provide access to more patients, there will be many opportunities for providers to pursue some of these newer opportunities from the get go, and in these aspects they may be able to "leapfrog" many more developed healthcare systems; in fact, doing so will be necessary if governments are to try to meet the massive demands that will be placed on scarce healthcare resources.

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Third, we look to areas where the efficiency and efficacy of clinical operations can be improved. With the data we have available, or which can easily be collected by sensors networked into a healthcare system in an Internet of Things (IOT) sense, healthcare could be much more data-driven, predictive, and preventative. While healthcare is supposed to be evidence based, in reality many processes are still managed retro-actively in many clinical situations – for example, treating patients for hospital acquired infections is usually only done after they are infected rather than prophylactically. According to the WHO, nine percent of hospitalized patients in Southeast Asia will acquire an infection in hospital, compared to five percent in the US where providers are penalized for hospital-acquired infections and have since invested USD hundreds of millions to use data to predict which individuals are at a high risk of infection and intervene preventatively. If you take this concept further, we envision using broader technological and AI solutions to help create the same level of rigor that you might see at a US academic medical center, but in the Asia-Pacific region and without the same skillsets. Technology could democratize that, and help guide rigorous and sophisticated clinical care with far lower resource requirements than are used to deliver similar

care manually in more developed markets.

The fourth and final topic we look to is the efficiency of healthcare administrative operations, which are often so wasteful they need to be disrupted. Across emerging markets, there is an incredible amount of manual record keeping and administrative processes, and these processes are massively inefficient. Automated business solutions could quickly and easily help to eliminate a significant amount of waste, and are also highly scalable.

How do you engage with partners to work towards these goals?

Microsoft does not supply finished products for the end user in general, rather we are a platform and resource provider. Whether through AI, data management, or analytics, we provide the plumbing or infrastructure and the platform level innovation to make other developers' disruptive ideas work.

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These developers and companies that use our infrastructure and resources typically fall into three categories; established software developers that aim to sell software as a product, healthcare IT providers like Philips who use our platforms as a base for building their own systems, and disruptive startup companies. These companies are not interested in building up an entire platform to make their idea work, as their core competencies are in their business model innovation and application expertise. The challenge today is that many types of technology have become democratized, and most companies that might work with Microsoft have other options. Startups, developers, or medtech companies usually have to choose a core platform technology, so our first challenge is leading them to Microsoft in this regard, and as such we have a presence onsite at most major third party incubators, including Block 71 here in Singapore, and run our own onsite incubator here at our Asia-Pacific headquarters. This is also very much a guiding challenge for Microsoft as a whole, as we continuously work to invest in developing technologies and solutions to make us as relevant to disruptors.

Considering startups, we go to great efforts to support their development and accelerate their growth, and a lot of what my team does is looking at how we can leverage our own business platforms, infrastructure, and all of our business capabilities from sales and marketing to regulatory affairs to accelerate their development. Microsoft is a very large established business with a comprehensive global reach; today, we do business with nearly every company and have a footprint in every hospital in the world in some form. We touch the lives of almost every individual on this planet, whether you are a student or professional who uses some of our ubiquitous business productivity solutions, or a mother who delivered a baby in a hospital which had Microsoft enabled medical technologies. As such, we have the access and ability to make an impact at a societal

level, and are able to access the highest levels of government to implement and execute technology transformations from the top down where applicable.

In what niches do you feel Microsoft should be at the top of the list as platform provider for innovators and developers?

Microsoft has made significant investments in developing AI, where we have 6000 people globally working to democratize AI platforms and make them highly accessible to startups. This hasn't been done before, as in the past companies had to reach a certain size to hire PhDs to develop their own AI systems and then invest in significant computing power to make it work. Now through our Microsoft Cloud we are offering everyone access to our AI platforms, and we even have a program whereby startups can get free credit to access these platforms until they can make money. Interestingly, according to a recent CB insights report healthcare is the largest investment category for AI globally. Seeing as Microsoft has significantly over-indexed investments in AI, we aim to play a significant role in this emerging and dynamic space. From our discussions with startups, VCs and inventors, it is also apparent that AI is one of the most dynamic investment categories in the APAC region at present.

However, as exciting as this activity is, we do foresee a challenge or hurdle that we will have to overcome in the healthcare AI space, which is the availability of data. AI is only as powerful as the data it has access to, and while we can get access to a lot of data, significant work will need to be done to get the breadth that will really allow AI to transform healthcare. In this sense, I mean that the big AI-driven revolution will come in conjunction with the creation of a true IOT within healthcare systems and facilities, where huge numbers of sensors in hospitals, including every patient monitoring device and hospital bed, are networked together, alongside patients' mobile devices with applications for instance. Given the scale of healthcare investments taking place throughout the region at present I see significant potential for healthcare systems in the Asia Pacific region to leapfrog more developed, established systems, as new infrastructure is built out. It may seem expensive from some perspectives, but when you consider the amount of time that could be saved by having automated recording of sensor data such that physicians and nurses could greatly reduce the amount of paperwork they had to do, it's clear such investments would be recuperated relatively quickly.

What are some examples of how markets in Asia can "leapfrog ahead" in terms of technology?

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Singapore certainly has the attributes and resources needed to really be at the forefront of healthcare in general, and digital and AI-driven health specifically. The government has plenty of capital, is very progressive and forward-looking, and has clearly prioritized innovation in medicine and patient-centricity. In terms of planning and execution capacity, Singapore is almost unrivaled; they have already laid out a 2025 development plan in incredible detail, which was shaped by some of the best minds in the world. The foresight of the government can also be seen in the progress of the Smart Nation program being led by Dr. Vivian Balakrishnan, Minister of Foreign Affairs. This clear intention, focus, and willingness to invest, combined with the concentration of regional headquarters of life science and technology companies and the abundance of talent leaves Singapore in a great position to reach the forefront of leveraging technology, data, and AI to enhance healthcare. Moreover, Singapore is clearly the closest nation to becoming a “Silicon Valley of Asia”.

However, more opportunities for greater societal and social impact exist in the emerging markets. For instance, in many countries in Asia, there are communities where women have never had any access to healthcare and much of this can be around entrenched cultural norms that prevent women from seeing a male physician. In this type of situation, virtual healthcare can really begin to challenge some of these norms and break down these access barriers – just posing the question of whether it would be different for a woman to consult a male physician via video conference begins to start such conversations. Thus, it is in these situations where we see the greatest potential for technology to have truly disruptive and transformative impact.

In this regard, Digital India is the initiative that is clearly leading the way in terms of scale and vision. Digital Bangladesh is also looking to use IT to challenge some of the same issues around empowering women. Listening to Narendra Modi speak about Digital India is really incredible, as it is clear that the vision his government has at the highest level is incredibly transformative and far-reaching; as an example, his administration has signed an MOU with RingMD to use their telehealth solutions to bring healthcare services to 883 million people in India who don’t have access to healthcare, throughout the 110 000 common internet service centers they are creating throughout rural India. When you consider the scale, scope, and all of the adversity that must be overcome to drive such changes in a market like India, it is truly incredible to see such a strong political vision to affect such changes. It may take some time to fully implement such solutions, but I think we will certainly see substantial progress made before the end of Prime Minister Modi’s current term.

What do you see Singapore’s role for driving ICT disruption as in the wider APAC region and how will Microsoft help in this?

Singapore has a developing startup ecosystem, and has the potential to be a very competitive innovation hub at the global level. Already, we see many disruptors are attracted to Singapore and

are headquartered here, and benefit from Singapore’s role as the business hub of Asia-Pacific in many ways.

Looking at how Microsoft can help to accelerate innovation and activity within the Singaporean ecosystem, and how we can help create real social impact beyond just revenues and growth, we have to look at what is lacking. Certainly we can support many disruptors’ efforts, given our global footprint, and as a commercial and technological distributor through our existing platforms and service lines. We can also provide financial support through our Microsoft Ventures fund which has recently established a presence in Singapore; however in this respect, we see that Singapore has an excess of capital relative to innovation happening, and thus we would rather focus on bringing R&D and innovative ideas to Singapore over capital.

Regarding what we can contribute to Singapore as an innovation ecosystem, you have to look at the collaborations we currently have with government and academia. The Singaporean government and Economic Development Board have made big data, advanced analytics and AI top R&D priorities for the country and are funding a lot of research in these areas. Microsoft is proud to be collaborating with the National University of Singapore on research projects in several of these areas, and are looking to ramp up our efforts in the areas where we see more interest from public stakeholders. We also have similar collaborations taking place with government entities including Ministry of Trade and Industry and the EDB itself. Microsoft constantly seeks to bring new tools and platforms to innovators to give them the tools they need to develop new technologies, and we will seek to partner with major public entities to pioneer new systems.

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