Chairman's Note

Bloomberg Business’ Ashlee Vance featured NZ as the place for tech wizards and cool developments in the first episode of "Hello World" released recently. This series explores inventions, scientists and engineers outside Silicon Valley that are gaining global attention. Vance commented that NZ is urgently looking at high tech solutions to diversify its economy from agriculture and tourism. This brings us to the business of Medtech seeing that "Hello World" highlights included NZ’s effort in this sector, occupying two of the five story spots. Airtime was given to the Auckland Bioengineering Institute/MedTech CoRE Investigator Mark Sagar for his work on understanding the cognitive brain in artificial intelligence applications, and Rex Bionics’ founder Richard Little around the robotic legs that help people with spinal cord injuries with their rehabilitation.

It feels like NZ’s Medtech sector is now taking some leaps forward after a period of gestation. Some highlights for just the first three months of 2016 are: Adherium entering the Canadian market with their smart inhaler system, Rex Bionics working with the US Army to use their exoskeleton as a rehabilitation aid for soldiers who have lost their lower limbs, and Pictor successfully gaining a substantial contract in Asia for their diagnostic platform. This is an impressive achievement from the sector that we are sure is just a sample of the many other deals bubbling quietly away.

In the R&D field, Orion Health just announced an MBIE partnership program to develop NZ capability in the new field of precision medicine for treating and preventing diseases based on an individual’s needs in terms of their genetic code, environment and lifestyle. Also on the home front, two of the Standing Trial Population (STP) initiatives mentioned in 2015 and championed by Callaghan Innovation are now up and running – one for assessing technologies for the elderly hosted by the Institute of Healthy Aging at Waikato DHB, and the second specializing in rehabilitation and assistive technologies at AUT and the Burwood Academy of Independent Living. These centers are to help accelerate early validation of technology with identified clinical champions and a readily recruited end-user population.

Our final note is on Healthtech Week in June - NZ’s own showcase of its Medtech sector and a great networking opportunity. Check out the website; registration for each of the events will open soon. Coming to your doorstep as well is a joint public consultation document from Ministry of Health, MBIE and HRC to help evolve NZ’s Health Research Funding Strategy. Don’t miss the chance to have a say in how you would like this ecosystem to evolve.

As usual, do not hesitate to contact the CMDT if you have queries and you think we can help.

Peter Hunter and Diana Siew
CMDT Co-chairs
With health systems under enormous strain globally, demand for eHealth tools and expertise is growing. Population ageing, the rise of chronic non-communicable diseases and higher public expectations are combining to overwhelm existing healthcare infrastructure, calling for a step-change in our approach to healthcare management and illness prevention.

Recognising the potential of eHealth solutions, AUT University’s Professor Valery Feigin - a world renowned neurologist and epidemiologist - has devised a mobile app that helps users manage their health and reduce their chances of experiencing a non-communicable disease.

The Stroke Riskometer™ is an award winning app enabling users to assess their individual stroke risk on a smartphone or tablet. The professional version of the app also facilitates individually tailored self-management of lifestyle risk factors, for the prevention of stroke, cardiovascular disease and dementia.

"Up to 80 per cent of strokes are preventable, if risk factors are managed appropriately," says Professor Feigin. "Stroke is much easier to prevent than to treat, and by making good lifestyle choices we can reduce our chances of suffering from a stroke, while also diminishing our risk of experiencing heart disease and dementia."

The app uses far-reaching mobile technologies to share this message widely and help users to stay motivated as they begin implementing lifestyle changes. The Stroke Riskometer™ is currently used by over 62,000 health conscious people in more than 70 countries, and is endorsed by the World Stroke Organization, the World Federation of Neurology and the International Association of Neurology and Epidemiology.

Stroke burden has increased dramatically in New Zealand and internationally in recent decades. In New Zealand, over 9,000 people will suffer a stroke each year, making it the nation’s third leading cause of death. Prevention is the only feasible means of undermining the devastating impact of stroke, however existing methods of primary stroke prevention are not proving effective.

The Stroke Riskometer™ has been developed and validated in collaboration with an international advisory group consisting of over 50 experts in stroke research and prevention.

The recent version of the app allows the users to share their data. The data collected over one year will provide unprecedented insights into the determinants, distribution and prevention of some of the world’s most widespread non-communicable diseases.

"This unprecedented research has the potential to significantly advance knowledge on the prevention of stroke, dementia, heart attack and diabetes – both in New Zealand and worldwide," says Professor Feigin.

The research conducted through the Stroke Riskometer™ has the potential to be one of the world’s largest studies in this area, and could make a major contribution to health and wellbeing. Professor Feigin and his research team are open to partnering with external organisations, and see research collaborations and additional funding as opportunities that could help maximise the potential benefits of the app.

With further development of the app now underway, it is hoped the Stroke Riskometer™ will lead to significant gains in preventing and treating non-communicable diseases. By early next year, the app will be available in over 8 languages. Currently it is available in English and Russian.
Bigger, Better, Faster, Together: NZTE assisting coalitions

New Zealand Trade & Enterprise (NZTE) is NZ's international business development agency. Their team works with NZ companies to increase their international success by assisting in their global reach and building capability.

Michelle McKenna, Coalitions Manager at NZTE shared the services offered for business lead coalitions. Coalitions are companies with a shared opportunity or challenge intending to collaborate to achieve international growth. Coalitions may form to develop combined offerings or a solution or capitalise on international opportunities. Benefits of coalitions include sharing of knowledge, costs and risks, building capability, market research and investigation of opportunities.

As an example, Michelle mentioned, “NZ companies are really innovative and sometimes quite niche. The challenge is when they go internationally, it can be very difficult to scale. There can be a lot of value in joining up with other companies.”

Michelle and her team’s role is to facilitate and support companies through different stages of collaboration – whether it is just an idea beginning to form or well established collaborations operating in the market. The coalition managers make collaborations work by offering a range of support – from legal structure, strategic advice and governance to capability building services. Additionally, NZTE’s value proposition includes boosting global reach via over 40 international offices, increasing connections to key partners, and distributors in international market and building capability that enhance efficiency, operation or refine strategy.

The critical success factor, according to Michelle, is that the coalitions need to be business lead with clearly identified international commercial objective. The resource and time intensive nature of forming coalitions requires drive, willingness and commitment to convert opportunity into outcomes. “They really need to see the value in coming together,” Michelle added.

NZTE’s coalition team aims to maximise the international opportunities for business lead coalition to grow NZ companies bigger, better, faster, together!

- Jyoti Chugh

RACer Project: Novel sleep apnoea treatment secures commercialisation funding

AUT Senior Lecturer, Dr David White is developing a technology that aims to provide obstructive sleep apnoea (OSA) sufferers with greater comfort and increased hours of sleep.

OSA sufferers will cease breathing during their sleep and often experience blocked airways for up to a minute causing sleepless nights for many sufferers. Over 100 million people suffer from OSA globally with the economic cost in the US alone estimated at over $100 billion.

Joint funding from KiwiNet and New Zealand Health Innovation Hub for Dr White’s, RACer project (Rest Activity Cycler) will be used to further develop and commercialise the technology to help provide an adequate treatment for sufferers.

Professor White states that “this new technology aims to reduce the more serious side effects associated with disease, and with the new funding we are in a very favourable position to go ahead with the commercialisation stage of this project”.

Dr Frances Guyett, CEO of New Zealand Health Innovation Hub, believes this is an exciting opportunity to partner with research to create better health outcomes. Dr Jim Bartley, ENT Surgeon from Counties Manukau Health, is also closely involved in this research as former PhD supervisor of Dr White.

AUT Enterprises Ltd filed a PCT in 2015 with the aim to develop commercial markets in New Zealand and abroad.

Contemporary market treatments such as Continuous Positive Air Pressure (CPAP) are limited in effectiveness, with around 40% of patients becoming non-compliant with the therapy after 12 months due to the discomfort, nasal drying and congestion caused by the use of current therapies.
Virtual reality (VR), also known as immersive multimedia, is rapidly gaining interest from investors, innovators and inventors alike. We have all been fascinated since the era that introduced the concept via arcade games and consoles. The advancement in VR technology has opened endless opportunities – from entertainment to a whole new dimension of education, training and, like MTech Games, to medical rehabilitation.

Brook Waters and Margaret Pickering bring their experience in video game development and VR from Stickmen Media to health focussed projects and co-founded MTech Games in July 2015. Mtech Games was founded to commercialise a wheelchair trainer, in collaboration with Burwood Academy of Independent Living and Callaghan Innovation. The wheelchair trainer is an equivalent of a flight simulator for wheelchair pilots to allow patients to learn and practice their wheelchair skills.

Transitioning to wheelchair use can be a stressful experience with the limited movement causing huge disruption in an individual's life. In a wheelchair, their bodies, the view and the angle they look from is quite different, with the adjustment phase likely to include a lot of damage. The wheelchair trainer helps patients to get acquainted with wheelchair usage while learning navigation in a much safer environment prior to entering the real world.

As part of the wheelchair trainer, the virtual home project 3-D scans the patients’ entire house – to include rooms, furniture, doors and details that mirror reality and allows patients to train in a familiar environment. Elements such as turning room in doorways, placement of ramps etc. are also assessed. Brook Waters adds, “the architect himself can put the virtual reality equipment on and try driving a person’s wheelchair through their home – so they can spot problems before the renovations are made.”

MTech Games are also developing rehabilitation software products to facilitate community re-integration for wheelchair users. First software is a virtual mall, where the wheelchair user takes a virtual shopping trip to a mall. “You will start with a shopping mall that is empty and find your way through it, and we will build up to the mall that has a Christmas crowd in it – to navigate wheelchairs around lots of people,” Brook Waters.

The second task is catching a bus that Brook and Margaret recognise can be a very traumatic environment for a new wheelchair user. This scenario enables wheelchair users to get on the bus, perform a 3 point turn and navigate around the possibility of impatient passengers. The rehabilitation project allows individuals to familiarize themselves with wheelchair use in a safer and less stressful manner through the simulation of such tasks.

When asked about their plans for other medical rehabilitation, Brook and Margaret expressed interest in exploring other VR applications in this field. “We are looking at medical professionals to actually come to us….they know the problems, we don’t necessarily know the problems. We like projects where somebody knows how to solve the problem, then we can develop the appropriate product and commercialise it. It’s important that what we build gets out into the world.”

Recently Brook and Margaret met with the Human Engineering Research Laboratories (HERL) at the University of Pittsburgh. HERL are a premiere research group in wheelchair use and conduct ISO standard evaluations of wheelchairs in the US, and are the providers of modified wheelchair designs for the Veteran’s Administration. Talks were highly successful with HERL agreeing to apply for grants for US trials of the VR wheelchair trainer, as well as co-author a paper on the uses of VR for rehabilitation for wheelchair users.

MTech Games team are pioneers in VR development for medical rehabilitation and in creating products that to deliver great outcomes for the medical industry, professionals and patients alike.

- Jyoti Chugh
**Other News & Events**

**CMDT Seminar: Navigating NZ’s MedTech Landscape**

We invite you to join us for CMDT Networking event on Thursday, 7th of April. Hear about the MedTech ecosystem in NZ and latest activities from industry, research, healthcare providers, and government. The speakers for this event are Diana Siew, MedTech Sector Manager at Callaghan Innovation and Michelle McKenna, Coalitions Manager at NZTE.

Click [here](#) for more information and to RSVP.

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**MedTech Sector Review**

NZ companies are invited to provide their views and insights into their company for a survey of health technology companies. Your participation will help to provide a better understanding of the health technology industry in New Zealand, its strengths, opportunities and challenges. The aim is to identify factors that influence our commercial success in order to support growth and the innovation ecosystem.

We are currently interviewing a randomly selected sample of companies to gain detailed understanding of the industry.

If you would like to volunteer to be interviewed, or to provide any comments or suggestions, please email: Kevin.Sheehy@navigator.healthcare or Jyoti.Chugh@callaghaninnovation.govt.nz

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**NZ HealthTech Week 2016 is coming up in June**

NZ HealthTech Week 2016 is scheduled for the 17—23 June. It is a platform to showcase the activities of the Medical Technology sector in a week of high profile events. It will bring together medical technology companies, entrepreneurs, universities, health providers researchers, government and the investor community.

Keep an eye on the [website](#) for updates on the programme and registrations!

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**Healthcare advancements from World War One**

The inventions below are credited to the world war one period where the necessities on the battlefield mothered these very important inventions:

1. Portable X-Rays: Resulting from the overwhelmed medical services in 1914, ability to get diagnostic tools to the frontline was very important.

2. Thomas Splint: Still used in war zones today, the fracture stabilizer meant that 80% of the soldiers with broken femur bones survived.

3. Sun Lamps: Undernourishment of Germans because of the war led to increase in rickets. Noticing that the children suffering from rickets were also pale, a Berlin doctor named Kurt Huldschinsky put four children under mercury-quartz lamps that emitted ultraviolet light. The treatment worked.

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**Health and Fitness Innovations from 2016**

A range of smart ideas in Health tech and personal fitness have been showcased in first quarter of 2016. Here are the top five that we found exciting:

1. Muse Brain Sensor: Wearable device with a variety of sensors to strap around the head that measures wearer’s emotional state.

2. SmartyPants: Not smart pants, but a frying pan and scale that counts calories through an app using its database and the built-in scale.

3. Samsung Welt SmartBelt: Monitor your daily steps and the belt tension to tell you how much you are overeating for health tracking right from the waistline.

4. Withings Thermo: Smart Thermometer that uses 16 infrared sensors to take thousands of measurements when pointed at a forehead.

5. Digitsole footwear: Smart shoes that connect to a smartphone app for automatic shoe tightening, calorie tracking, food heating and adjusting shock absorption.

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**Let us know what you think...**

For any feedback or any story you would like to contribute to our quarterly CMDT newsletter, or if you would like to contribute your ideas for seminars, workshops or any other events, please email: Jyoti.chugh@callaghaninnovation@govt.nz

Don't forget to keep an eye out on what's happening at: [cmdt.org.nz](#) or follow us on twitter at @medtechnz