

# **Australian initiatives for Capacity building/knowledge translation from Space technologies to Global Health**

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# Review - Australia's Space Industry Capabilities

- An expert reference group undertook a review of Australia's space industry capability in 2018.
- Report was delivered to the Australian Government
- Identified a vibrant community of entrepreneurs and world-leading research capabilities.

# Emerging technologies

- Emerging frontiers in science and technology could allow leapfrogging into new research and commercial activities.
  - Artificial intelligence;
  - Robotics;
  - big data analytics; and
  - next generation communication technology.

# National Civil Space Priority

- Identify areas to develop technology and applications in emerging fields;
- Encourage research projects that inspire the public and encourage young people into STEM careers; and
- identify niches to leapfrog into the next generation of space industry.

# Case studies

- Digital Earth Australia
- Open Data Cube Initiative
- Australia's Mangrove Observing System

# Space-Tech & Remote Australia

- Northern Territory Department of Environment and Natural Resources provide bushfire mapping services using satellite data.
- Remote Asset Management in WA iron ore mines
- Maintain offshore rigs: using AI, Advanced analytics, 3D printing.

# Space and Global Health

- Australia made significant contribution toward achievement of SDG Goal 11 ie Make cities and human settlements inclusive, safe, resilient and sustainable through **Smart Cities Plan, Smart Cities and Suburbs Program, and** the National Cities Performance Framework.
- The key was civic engagement and active participation by all citizens through big data synthesis and real time information availability.

# Leveraging Apps

- *MyWitness* app turns the smartphone into a digital witness that enable record immediate surroundings and notifies loved ones when help is needed. It combines video and GPS technologies and stores this data safe in the cloud
- The *Circle of 6* app for iphone and Android makes quick and easy to reach 6 friends in your circle. 2 touches let the circle know the location and how they can help with touch icons representing actions to keep your actions private.



# Technology Adaptation

- In 2007, a first pilot implementation of RFID sensors began with tracking patient journeys and in hospitals supported by technology companies, universities and public hospitals in partnership.
- These pilots were scaled up by 2010, with large public hospitals using sensory devices to track patient/medical device journeys from hospitals to home care

# Wearable Devices

- **Wearable sensory devices** (mobile IoT) to remotely manage patient chronic conditions were trialled in Australia since 2007 through public-private and university partnership. In 2017, narrow band IoT chips were able to remote-monitor patients wearing the devices. Patients can also self-monitor their own blood pressure, glucose levels, BMI, heart rate, pulse oximeter and heart conditions, and send through the data on an application platform.
- **mCareWatch** is a device that connects through the ConnectiveCare platform that help people with dementia, disabilities, their family and carers, those with chronic conditions or general health concerns, and people who wish to improve and maintain their health fitness. ConnectiveCare functions range from measuring and reporting hear rate, blood pressure, blood sugar through to activity and GPS tracking, geo-fencing, medical alerts, medication and appointment reminders.

# Technology Adaptation - National

- In 2018, after the National Electronic Health Care record systems, tracking and tracing of patient data to provide end-to-end medical care online is now possible enabled by satellite communications.
- There is connected Medicare services, (GP systems, hospitals, emergencies), Immunisation, dental, imaging, lab reports, aged care services, etc

# Technology Adaptation - National

- Public Health Information Development Unit (PHIDU) is an initiative that has access to real-time data on a national scale (24.6 million population).
- PHIDU is committed to research and dissemination of information on a broad range of health and other determinants across the lifespan.
- The PHIDU data synthesis leverages building infrastructure where it is required.

# Relevance of Telemedicine

- The UNISPACE III resolution entitled, “The Space Millennium: Vienna Declaration on Space and Human Development states that” **... activities of the United Nations Programme on Space Applications should improve public health services by expanding and coordinating space-based services for telemedicine..”**
- The program promotes space-based solutions to healthcare by providing capacity building opportunities in the areas of telehealth and assist Member States in using satellite remote sensing, global positions, GIS and satellite communications to integrate ecological, environmental and habitation data. This data is then used for predictive modelling in disease surveillance.

# Australia in Telehealth

- To best prepare emerging health threats (epidemics), the *Australian Government Health Security Initiative* for the Indo-Pacific region was launched in October 2017.
- This initiative has begun contributing to the prevention and repression of infectious disease threats with the prospective to cause social and economic harm on a national, regional or global scale.
- It was Implemented to promote global and regional cooperation, catalyse international responses to Australia identified needs, applying Australian unique strengths in health and space.