aws

Amazon Web Services

Public Sector Innovation

FOREWORD

AWS underpins and powers many of the services we use every day, through our hundreds of thousands of customers across Australia and New Zealand.

Each month, hundreds of thousands of active customers, and tens of thousands of AWS Partners rely on Amazon Web Services' operational excellence. Enterprise customers include BHP, Qantas, Kmart, and Medibank, digital native businesses such as Atlassian and Canva, and government and public sector organisations, such as Australia Post, CSIRO, the Australian Bureau of Statistics, and the Australian Taxation Office.

Since opening our first office in Australia over a decade ago, and New Zealand 10 years ago, AWS has continued to make investments to help Australian and New Zealand organisations innovate, grow, and unlock the potential of the Cloud.

We continue to commit ongoing investment in local infrastructure to help Australian businesses and governments drive rapid innovation and deliver greater productivity, resilience, and services for customers and citizens.

Direct investments made by AWS, along with outstanding customer and partner outcomes, create a flywheel for innovation and growth. Beyond the thousands of people we employ directly in Australia, we also support a number of Australian and New Zealand AWS Partners and small and medium sized businesses, with local staff, who are trained in delivering business outcomes on the AWS Cloud.

While leading-edge digital infrastructure and services are important, it is what people do with them that will create the next unicorn, develop the next vaccine, harness renewable power, and unlock our future prosperity.

In this book, we share some incredible stories from our customers. I hope you enjoy reading these stories of creativity, ingenuity, invention, and innovation.

Iain Rouse
Country Director, Public Sector Australia, New Zealand & Oceania Amazon Web Services (AWS)

01 CUSTOMER OBSESSION

"Our approach is to apply mechanisms that foster customer obsession, high-velocity decision making, and continuous experimentation."

Sara Armstrong
Senior Manager
Worldwide Innovation & Transformation Programs
Amazon Web Services (AWS)

Swinburne Online
Know Before You Go (KBYG)

Using data to address pressing challenges associated with health, well-being and social inclusiveness

There is always a learning curve between theoretical education and its practical application. This curve becomes steeper when you are someone who is learning a practical skill such as nursing and attends classes solely online.

In 2020, Swinburne Online collaborated with Swinburne Data for Social Good Cloud Innovation Centre (CIC) - powered by AWS - to create Know Before You Go (KBYG). KBYG provides a safe space for students to apply their knowledge, grow their skills and gain confidence before entering the workforce. The KBYG learning tool gives nursing students a 360-degree interactive view of the Swinburne Simulation Lab (a virtual ward), so they can familiarise themselves with the in-person training experience before visiting the lab in person.

Creating the simulation lab was a collaboration of vocational learning advisors, learning designers, program managers, students, and researchers with expertise in transformative media technologies, such as virtual and augmented reality. According to a UCLA study, surgical students who train using virtual reality significantly outperform those who don't (+230%). Those who study nursing virtually at Swinburne Online have access to the simulation lab, giving them the opportunity to experience and solve real-world nursing challenges in readiness for joining the workforce.

Infoxchange
Digital Innovation

Applying technology solutions to reduce
disadvantages in the community

Infoxchange

Brian McLaughlin

Infoxchange sought a better way to connect people seeking
social services for homelessness, mental health, family violence
and other social challenges from government departments
able to help them. This process invariably requires disclosing
sensitive information, including personal circumstances,
to government departments.

Using Amazon's innovation methodology, the team invented
refxchange – a system to capture help-seekers' details once
and securely manage the information, thus avoiding them
retelling and reliving difficult experiences while delivering
much-needed support.

"The Amazon Working Backwards process provided clarity around where we could focus our efforts to deliver the greatest impact."

Brian McLaughlin
Chief Operating Officer
Infoxchange

"Working Backwards is Amazon's hallmark methodology. It is used to create new products and services by empathising with the people who are most impacted by a problem, and using their experience as the focal point for innovation by working backwards from their needs. We care about sentiment and about making something that is lovable.

Our team of Digital Innovation Specialists run Working Backwards Engagements with our customers, ensuring that as we work backwards from people's needs, we help refine new products and services that will truly make a positive impact in people's lives, today, and for the future."

Kimberley Williams
Head of Worldwide Public Sector
Cloud Innovation Programs
Amazon Web Services (AWS)

AIMES
Collaboration with the University of Melbourne

Innovation collaboration puts Melbourne residents first

Majid Sarvi

The University of Melbourne and the Australian Integrated Multimodal EcoSystem (AIMES) collaborated to make Melbourne more liveable by combating traffic congestion and pollution. The team participated in a Working Backwards Engagement to clarify and validate their ideas through the mechanisms Amazon uses to innovate. This workshop resulted in a project using artificial intelligence to predict and manage traffic congestion up to three hours before it occurs.

AIMES is now the world's first living laboratory on the streets of Melbourne, testing integrated transport technology to deliver sustainable urban transport outcomes.

"We applied new ideas and innovation to create something useful for everybody."

Majid Sarvi
Director of AIMES
University of Melbourne

VALD Performance

Machine learning accelerates patient recovery

VALD

Gavin Lenton

VALD's innovative human measurement technologies used by elite sporting teams, clinics, universities, hospitals and defence departments, provide insight into human movement, performance, injury risk and rehabilitation.

VALD wanted to help tech-savvy patients correctly complete their exercises at home, and return to full function quicker than someone would with traditional exercise prescription methods. Traditional methods require practitioners to manually create at-home exercise plans and check in with athletes to see if they successfully completed them.

An Amazon Working Backwards Engagement clarified and validated VALD's ideas, using the same methodology Amazon uses to innovate. Through this workshop and process, AWS developed a machine learning model to assess athletes' movement quality using human pose estimation from an uploaded recording of them completing their rehabilitation exercises.

Human Pose Estimation (HPE) captures a set of coordinates for each joint (arm, head, torso, etc.) to describe a person's pose accurately. The program overlays an ideal exercise form onto a mobile phone screen and uses the camera to highlight variances in real-time.

"Working Backwards helped us workshop solutions to barriers for end user adoption of body tracking solutions."

Gavin Lenton
Product Lead
VALD Performance
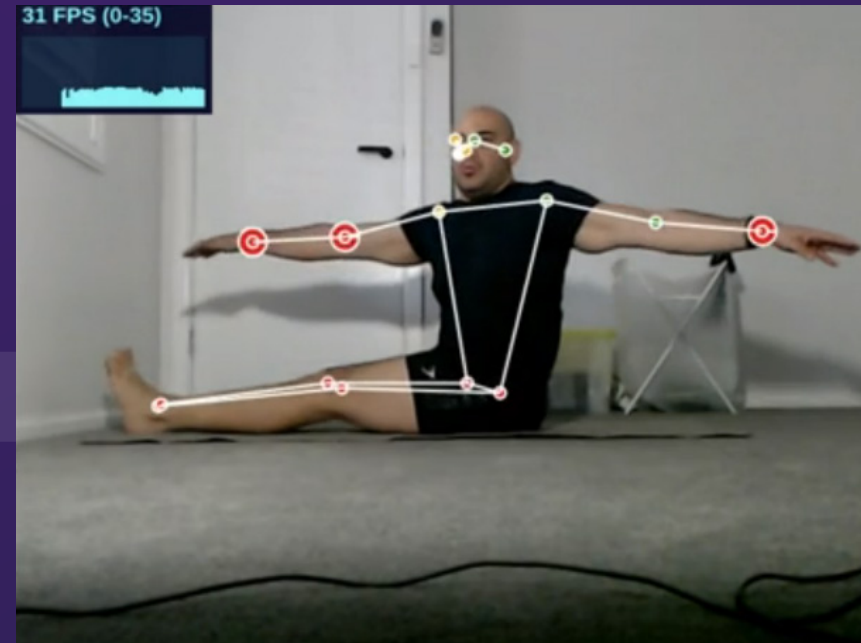
Real-time live movement from a webcam to a pre-recorded video alerts patients when their limbs drift from the correct position.

University of Auckland

Leveraging Working Backwards
for HackDays

Morgan Nicolasen

The Digital Services team at the University of Auckland (UoA) run an annual HackDays event. AWS shared the Amazon Working Backwards approach with HackDays participants, outlining how they could leverage it to solve challenges.

Teams used Working Backwards to innovate solutions to challenges put forward on behalf of the university. Solutions included a system to capture new ideas, a student and visitor identity solution to smooth system access, and an eHive learning platform designed to encourage connection with others.

"One of my team members attended my session and came to me afterwards and actually BEGGED that we implement the [Working Backwards] process for our quarterly planning and major prioritisation events."

Morgan Nicolasen
Practice Manager
Technical Analyst Services
University of Auckland

"The future of tech is inclusive and there's a very special group of people that can help contribute to the solutions. Bring them to the table."

Dr. Nashlie Sephus
Tech Evangelist
Amazon Web Services (AWS)
via TechCrunch

Australian National University

Through the AWS Marketplace, users can make 100 random number generations per second

QU∧NTUM
R∧NDOMNUMBERS
POWERED BY ∧NU

Prof. Ping Koy Lam

Dr. Syed Assad

Dr. Aaron Tranter

The Australian National University (ANU) used quantum science to develop a random number generator. Measuring the quantum fluctuation of the vacuum in real-time generates unpredictable numbers needed for computer games, cryptography, simulations and more. A notable application is in analysing virus behaviour.

To capitalise on the significant growth in demand for random numbers, ANU launched the service on AWS Marketplace to scale ANU Quantum Numbers (AQN), and deliver the service faster and more reliably to active AWS customers. AQN has received more than 2 billion requests from 70 countries since its launch in April 2022.

"Quantum physicists in Canberra have turned a decade-old hobby generating random numbers into a money spinner."

Julie Hare
Education Editor
The Australian Financial Review
The AFR April 22, 2022

There are numerous potential applications for autonomous drone technology.

In the medical industry, a recent autonomous drone delivery simulation showcased the ability of robotic technology to be tested in safe, photo-realistic environments, proving simulations can be rapidly scaled in the cloud to accelerate robotic development for live applications.

The demonstration included a digital twin of the City of Melbourne, which was built in Unreal Engine (gaming graphics engine) and CesiumJS (web-based 3D geospatial visualisation). Microsoft AirSim provided an open-source drone simulator used to simulate autonomous flights between Royal Melbourne Hospital and the city for the delivery of critical medical supplies. Multiple simulations were run in parallel at scale using AWS Cloud.

"We live in a fast-changing world full of unprecedented challenges. Tackling new problems demands new ways of thinking that build upon what we have learned in the past to create something genuinely innovative.

Every day, AWS customers show us the true potential of innovation to improve the lives of Aussies and Kiwis."

Simon Elisha
Chief Technologist | Australia, New Zealand & Oceania
Worldwide Public Sector
Amazon Web Services (AWS)

04 VISUALS FOR UNDERSTANDING USER EXPERIENCES

Amazon Web Services (AWS) innovation programs are designed to inspire, enable, and unlock innovation for our customers and partners.

The flagship offerings of these programs are the Cloud Innovation Centres (CICs) and the AWS Digital Innovation (DI) Program here in Australia, New Zealand, and Oceania (ANZO).

Our programs help public sector organisations unlock strategic problems, and create new mission-critical solutions for their customers and the broader community. In a world of technology, it is people who matter.

In order to take advantage of the latest technology, we make it a priority to bring the voice of the people who would be most impacted by technological changes into the creation process and along the development journey.

These stories showcase real-life examples of how public sector organisations are using deeper empathy and connection with their customers, and utilising innovative technology to imagine and create solutions that make the world a better place for future generations.

Kimberley Williams
Head of Worldwide Public Sector
Cloud Innovation Programs
Amazon Web Services (AWS)

Children's Medical Research Institute

Gaining clarity on next steps in a research program
that analyses the human cancer proteome

CHILDREN'S MEDICAL RESEARCH INSTITUTE

Edith Hurt

When Children's Medical Research Institute (CMRI) introduced its ProCan program to AWS, it faced a significant challenge in identifying a minimum set of requirements for developing a technology solution to meet the competing needs of all stakeholders. ProCan is an ambitious, world-first research program for analysing the human cancer proteome. Scientists must analyse tens of thousands of well-annotated samples of all types of cancer. The aim is to develop a library of information to advance scientific discovery and clinical treatment.

Involving representatives from stakeholders including oncologists, medical researchers, data scientists, and pathologists in empathy mapping facilitated a deep dive into their concerns. Then applying the Amazon Leadership Principle "Invent & Simplify" allowed the ProCan team to explore a potential Minimum Loveable Product to support each stakeholder.

Outputs from the end-to-end process of inventing the ProCan solution included a mock press release, frequently asked questions (PRFAQ) and visuals, which together helped to crystallise the concept. A solutions workshop fostered the pragmatism needed for testing and validating ProCan, keeping the team on track for success.

"**The AWS approach has fast-tracked and provided certainty to the quality of the Atlas Proteomic Database, which is a significant deliverable for ProCan.**

The outputs, especially empathy maps and stakeholder visuals, are valuable to us and we will continue to refer to these as we think about the commercialisation of ProCan."

Edith Hurt
Operations Manager
ProCan

"It's not an experiment if you know it's going to work."

Jeff Bezos
Founder and Executive Chair
Amazon Web Services (AWS)

"The Sydney Children's Hospitals Foundation (SCHF) introduced Big Data for Small People to the AWS ANZO Public Sector Digital Innovation team and we were taken through Amazon's Innovation methodology.

It was of particular interest to us to understand how to move from the minimum viable product that we had mapped, to Minimum Lovable Product."

Dr. Justin Skowno
Creator, Big Data for Small People
Paediatric Anaesthetist

"The Working Backwards component brought together stakeholders from the clinical side, as well as from the philanthropist side. This helped to create great diversity of thought. The process itself forced us to look and think about the project from many novel angles.

The AWS team took genuine interest and time to conceptualise how AtriumDB, the purpose-built database created by The Hospital for Sick Children in Toronto, could be deployed on AWS. We are looking forward to continuing to work with AWS as we scale Big Data for Small People."

Sydney Children's Hospitals Foundation

One of the largest and most trusted kids' health charities in Australia, Sydney Children's Hospitals Foundation (SCHF) raises funds to help provide all children with access to the best possible healthcare, whenever and wherever they need it.

In 2020, the SCHF launched the Greenlight program, designed to support innovative ideas that would change the game for children's health. It revealed the depth of talent of paediatric specialists, and the diversity and quality of their research. It also engaged philanthropists who could share insights and shape research ideas that they thought could be brought to life.

The AWS ANZO Public Sector Digital Innovation team ran Amazon's Working Backwards engagement to help each clinician and researcher understand what their Minimum Lovable Product could be, who their stakeholders were, and to innovate at the edge. In using Amazon mechanisms and mental models such as two-way doors, the AWS ANZO Digital Innovation team was able to support Greenlight participants in thinking big and to look around corners.

Solutions tested and validated included a demo Learning Health System that enabled clinicians and researchers to use and share clinical data in real-time.
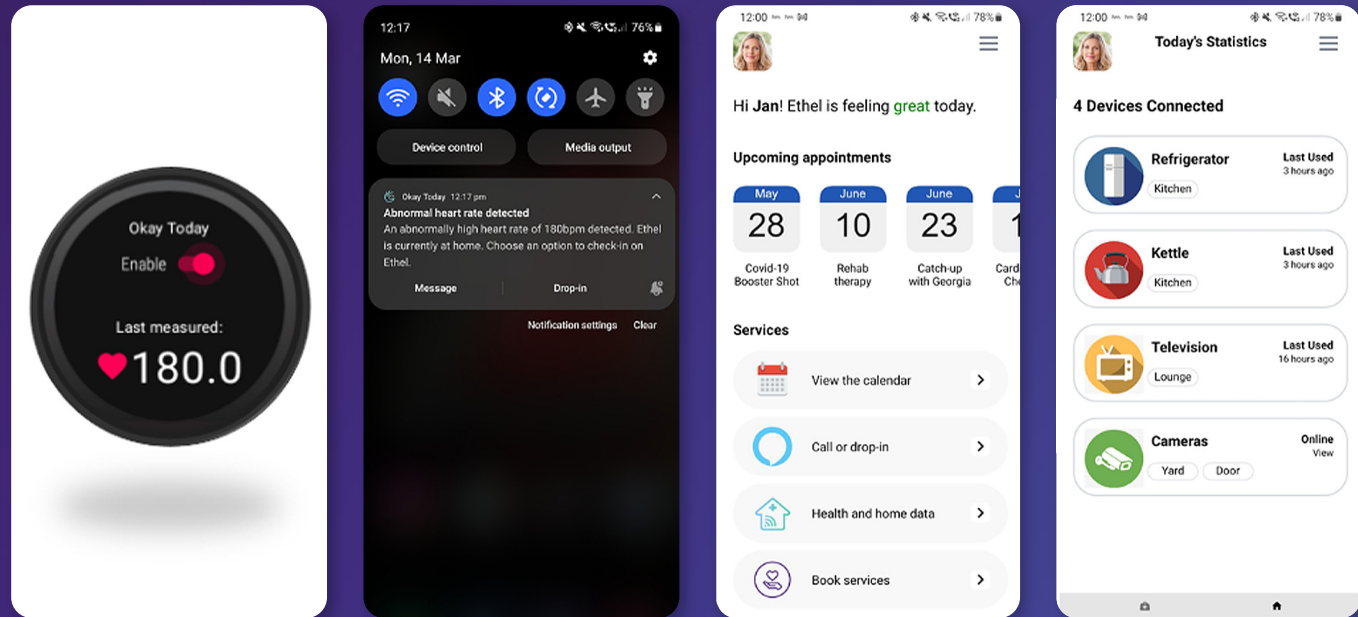
Illawarra Retirement Trust

Ross Gallagher

Illawarra Retirement Trust (IRT) engaged AWS to help redefine aged care in the home. The project would empower those living at home to lead independent lives.

The Amazon Working Backwards engagement validated IRT's ideas based on Amazon's mental model for innovation. It also guided IRT in creating a proof of concept.

The resulting solution includes a centralised mobile-app-based hub for scheduling services, voice-enabled technology in the home, sensors on home appliances, and wearable devices delivering valuable health data.

Aged care well-being monitoring using wearables and home sensors

AWS built a solution that provides reassurance to carers or seniors that are ageing independently in their homes by providing insight into their health and well-being through commercial-off-the-shelf wearables and IoT sensors in the home to determine physiological and daily routine anomalies.

"This project was one of the most engaging, collaborative, and invigorating I've been involved with during my professional career."

Ross Gallagher
Executive General Manager
Home Care and Retirement Living
Illawarra Retirement Trust

06 BRINGING IT ALL TOGETHER

The principles of customer obsession, working backwards, diverse perspectives, visuals for understanding customer experiences, and rapid experimentation to validate or fail ideas quickly are among the most powerful drivers of innovation.

As a result, these organisations are creating applications, using data in progressive ways, and changing the future of citizen experiences.
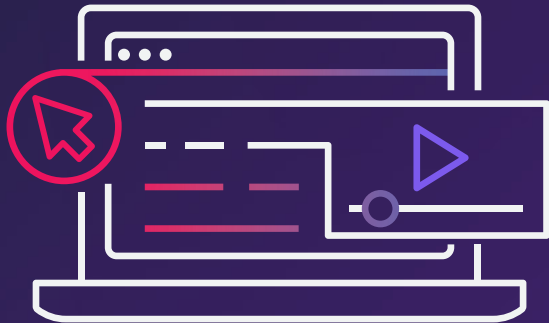
Get in touch today and take the first step towards developing solutions for your organisation's unique programs.

We look forward to hearing from you!

Talk to us at
aws-anz-marketing@amazon.com

Stay inspired. Discover how our innovation programs help public sector organisations define solutions for their customers.

Scan the QR code to view more customer stories.

aws

"The same proven
mechanisms of innovation
applied to different
organisations produce
profoundly different
results. This never ceases
to amaze and inspire me."

Iain Rouse
Country Director, Public Sector
Australia, New Zealand & Oceania
Amazon Web Services (AWS)