DUG Technology

Webinar and investor briefing

31 July 2024

Who we are

DUG is an ASX-listed tech company that provides innovative processing and storage solutions to leverage big data.

DUG's numerical scientists *develop technology and deploy expertise* using software and high performance computing (HPC) for real-world applications.

Founded in Western Australia in **2003**

Offices in **Perth** (HQ), London, Houston, Kuala Lumpur and Abu Dhabi

Diverse patent **portfolio**

250+ employees

>45 petaflops data-processing power

>52 petabytes data-storage capacity

Co-founders Dr Matt Lamont and Dr Troy Thompson

Our 21-year journey

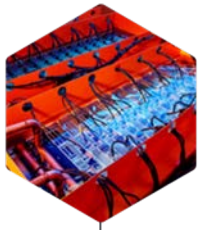
2003
DUG founded

2006
First major discovery

2007
Kuala Lumpur office

2009
Houston office

2013
London office



2016
DUG Cool

2019
Enterprise Data Centre Design Award

2020
Listed on ASX

2023
Record financial performance

2024
Abu Dhabi & India offices

High Performance Computing (HPC)

The assembly of large number of computers to perform massive and complex calculations.

HPC is **not** just hardware. It also requires cooling and a very sophisticated software stack to operate effectively and efficiently.

A HPC environment must deal with numerous, significant challenges:

- Communications, moving and storing data, job queuing/dependencies.
- Handling regular hardware failures (a reality at this scale).
- Power and cooling at scale.
- Onboarding production-ready algorithms.
- Constant monitoring and support.

DUG has spent over 20 years continuously refining its solutions for **every aspect of the HPC environment**: hardware, software and cooling.

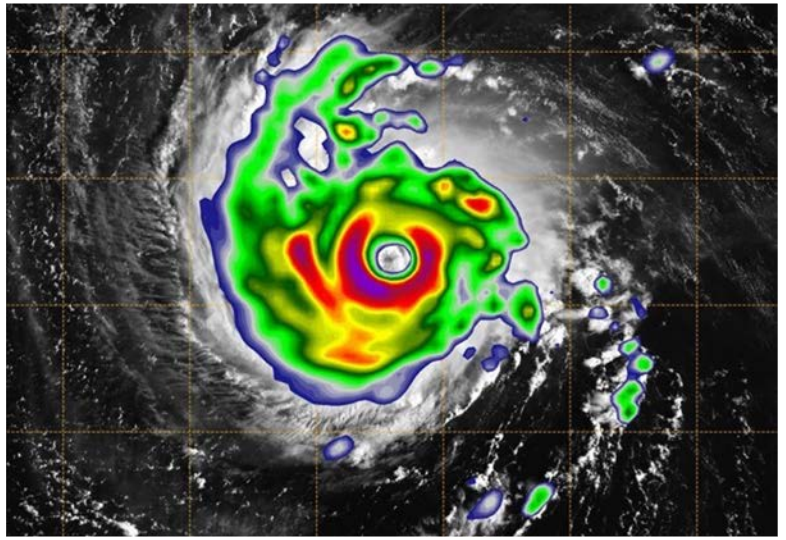
HPC is an extremely powerful tool. To leverage that power requires significant experience and a specialised skillset.

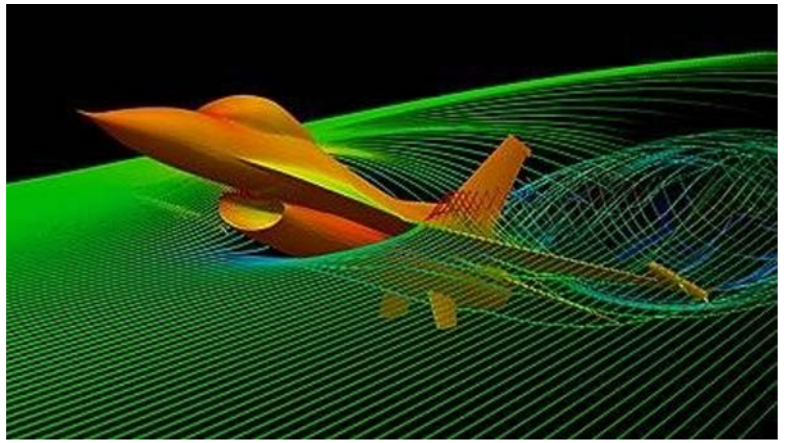
HPC software is unlike that of a phone or a desktop computer. It's the difference between one person sewing a t-shirt at home versus designing and operating an entire clothing factory.

Who uses HPC and why?

HPC has many different applications and is used across a broad range of industries:

- Meteorology: weather & climate modeling
- Healthcare & medicine: pharmaceutical discovery
- Engineering: building, aircraft, ship and road vehicle design
- Astronomy: interpreting observations and predictions
- **Oil & Gas exploration: seismic data processing and reservoir simulation**





What we do

Services

- Multi-parameter FWI Imaging
- Seismic data & Geoscience processing
- Data science & management

Software

- Analytic software development
- Algorithms and optimisation
- Big data processing and visualisation
- DUG Insight in 35 countries

High Performance Computing (HPCaaS)

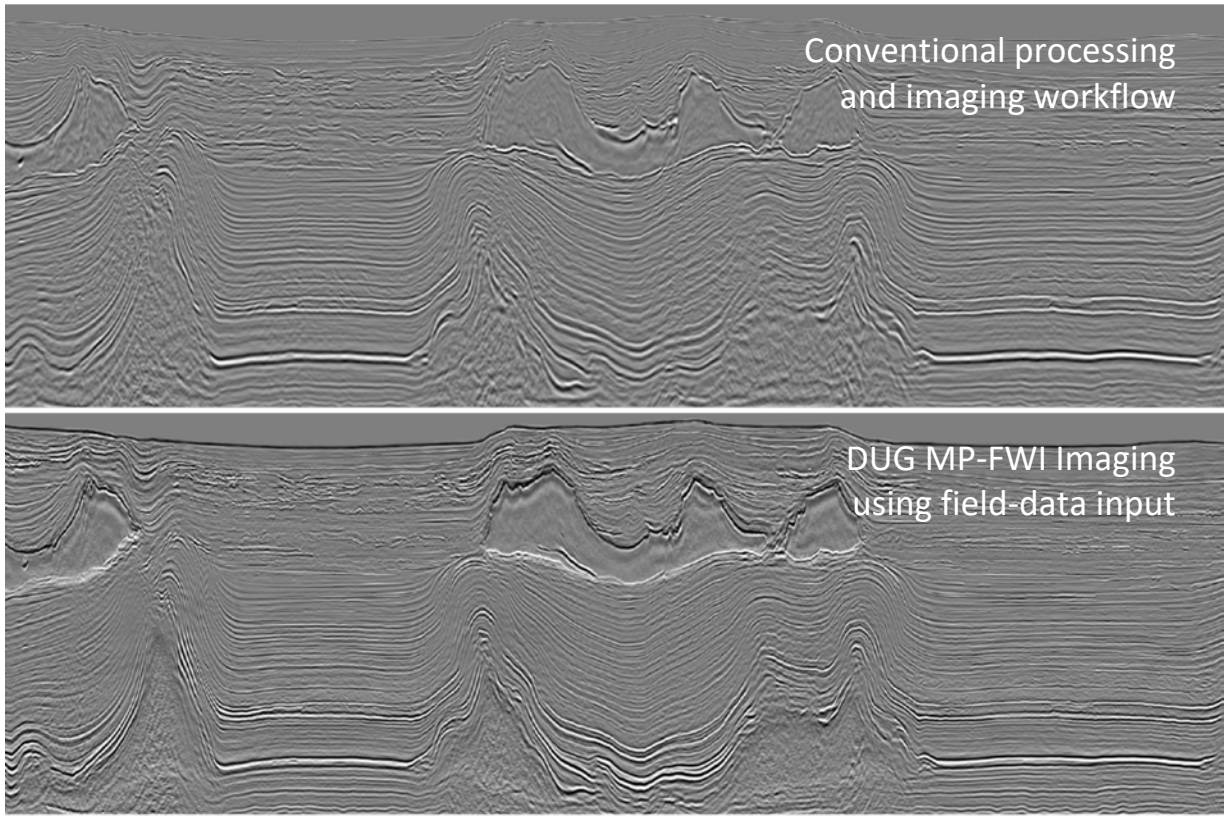
- Powerful, bare-metal compute & storage
- Complete, integrated HPC environment
- Patented DUG Cool immersion technology
- Design, own, operate some of the largest and greenest supercomputers on Earth
- Big data processing supported by experts

Multi-Parameter Full Waveform Inversion (MP-FWI)

DUG's proprietary MP-FWI technology is a complete replacement for the conventional processing and imaging workflow and is achieving unparalleled results.

It really has changed the game.

- Unsurpassed imaging using field-data input
- Rapid turnaround time
- Superior physics



DUG Cool: Industrial immersion cooling, at scale

DUG has been delivering innovative, immersion-cooling solutions for over a decade and is now commercialising this elegantly simple, scalable and safe cooling solution.

- Low Power Usage Effectiveness (low is good)
- Reduce water usage by over 25%
- Reduce power usage by over 50%
- Increase compute density with over 50 kW per rack
- 85% less embodied CO_2
- 85% less synthetic refrigerants

Global footprint

Key markets

Oil & Gas

A leading service provider for 21 years. Currently the primary driver of revenue and earnings.

DUG's technology helps clients make more timely, well-informed, operational decisions. DUG's products and services have contributed to numerous significant discoveries.

Enterprise

Increasing demand for HPC from industries with proliferating data.

DUG has established agreements with numerous organisations (education, research, applied science) to support their data processing and storage needs.

National Security & Space

Actively progressing opportunities by leveraging capabilities developed by servicing the oil & gas industry.

In particular, competencies in numerical data, software and HPC solutions.

Our ambition

At the forefront of technical excellence and innovation

- Global leader in data processing, storage, visualisation and management
- World-class, sustainable supercomputing technology
- Leverage expertise in applied data science to realise opportunities in emerging markets
- Continued focus on R&D to foster innovation

Deep Client Relationships

- Our top 10 clients accounted for 41% of revenue for the last 18 months
- Long relationships with large clients, across multiple product lines
- Relationships developed have led to larger, longer-term projects with major clients
- Important recent client wins supplementing long-standing relationships

Top 10 customers by revenue and by relationship length (FY23 and H1 FY24 combined)

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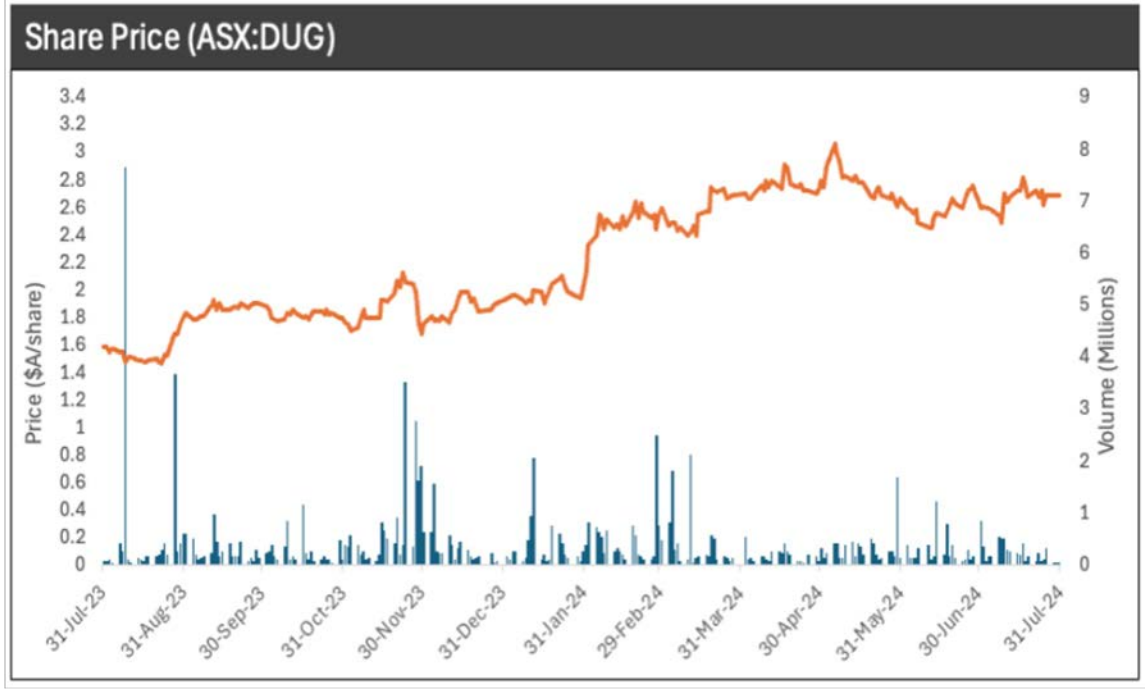
All amounts are in United States Dollars (US$) unless otherwise stated.

Appendices and Case Studies

Corporate summary



Corporate Structure	Units	
Share Price (as at 26 July 2024)	A$/sh	2.69
Shares on Issue	#m	118.1
Market Capitalisation	**A$m**	**317.7**
(+) Financial Debt[1] (as at 31 Dec 2023)	A$m	15.6
(-) Cash at Bank[1] (as at 31 Dec 2023)	A$m	17.2
Enterprise Value	A$m	316.1

DUG included in S&P/ASX All Ordinaries index (XAO) on 18 March 2024 & S&P/ASX All Technology Index (XTX) on 18 December 2023

Board of Directors	
Frank Sciarrone	Non-Executive Chairman
Matthew Lamont Ph.D.	Managing Director
Louise Bower	Non-Executive Director
Mark Puzey	Non-Executive Director

Substantial Shareholders	
Dr Matthew Lamont	18.2%
Regal Funds Management Pty Ltd	15.0%
Perennial Value Management Limited	10.8%
Thorney Investment Group	5.8%
Top 20 Shareholders	**70.5%**

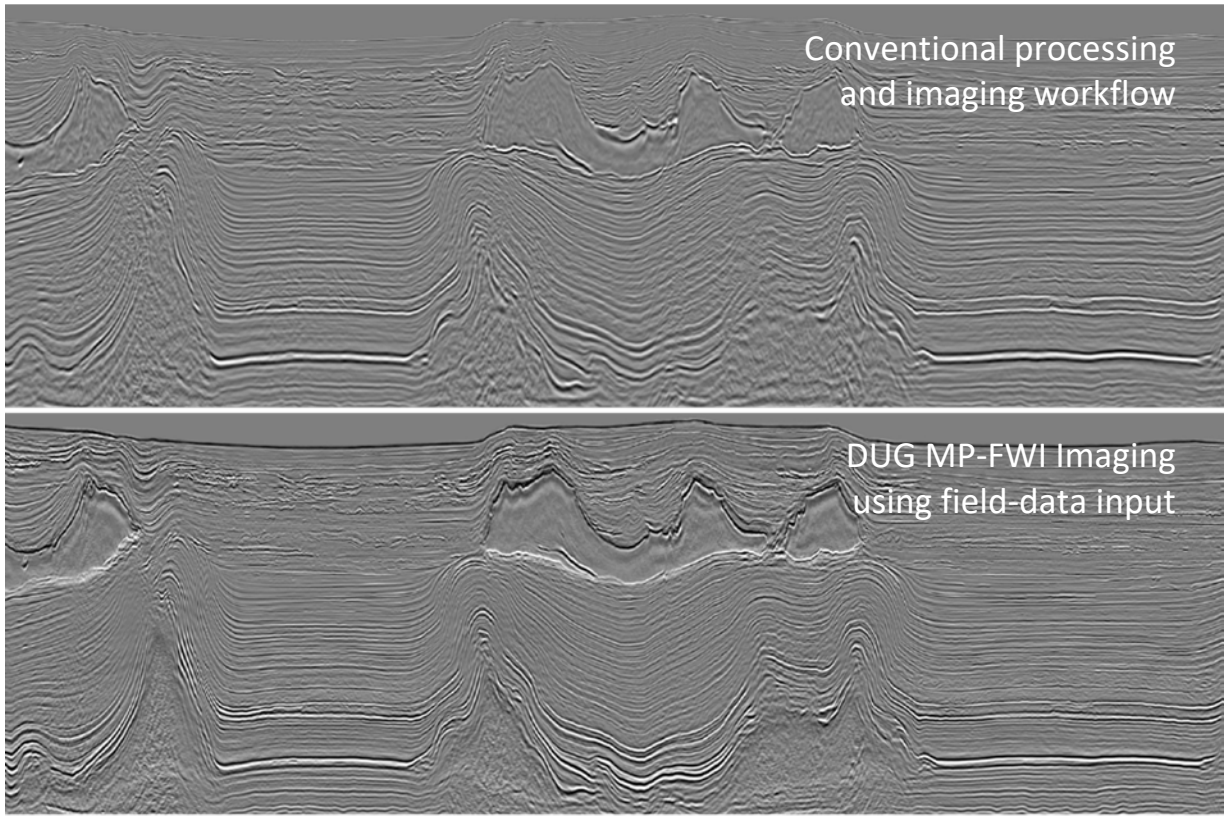
[1] Exchange rate of 0.6806 applied, numbers correspond to audited figures, Financial Debt excludes AASB 16 leases.

DUG MP-FWI Imaging

DUG's new technology is a complete replacement for the conventional processing and imaging workflow and is achieving unparalleled results.

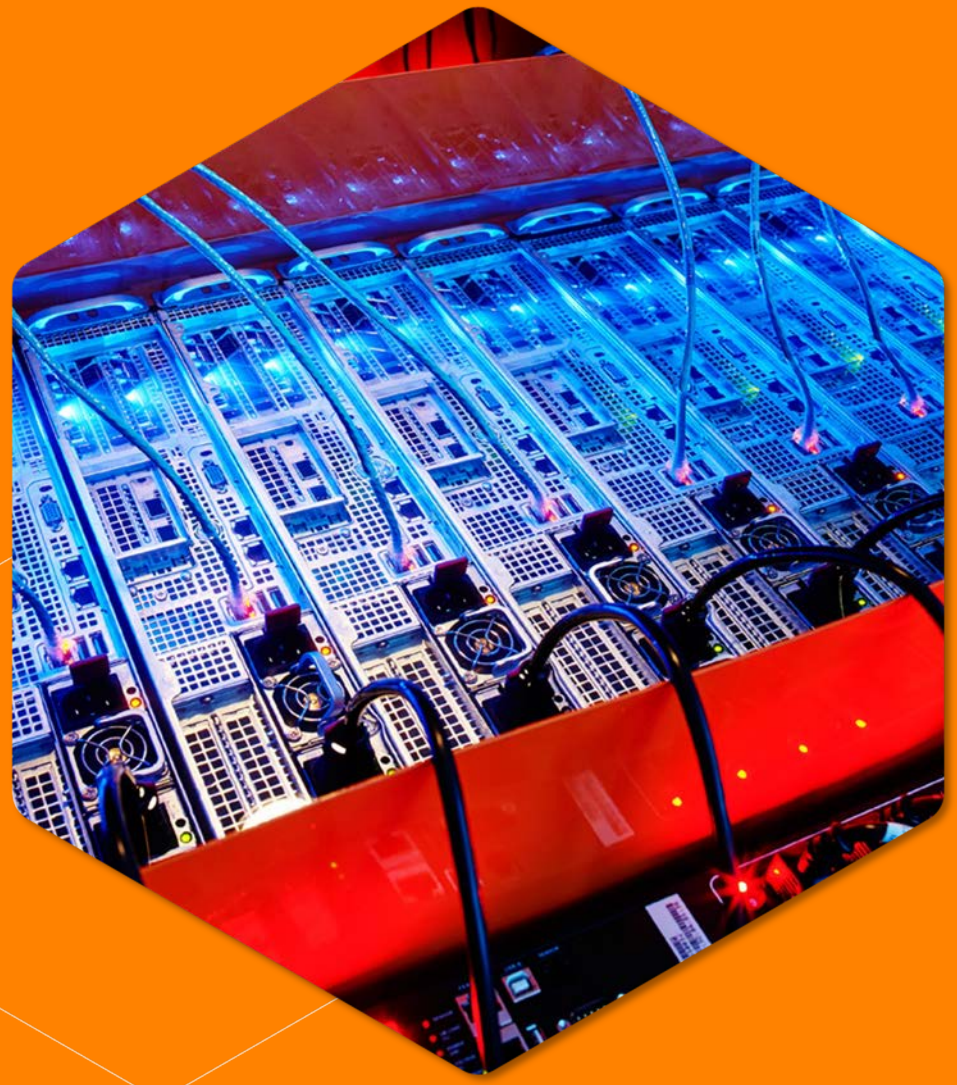
It really has changed the game.

- Unsurpassed imaging using field-data input
- Rapid turnaround time
- Superior physics



DUG Nomad

- Mobile, modular data centre solution that puts HPC where you need it – DUG Cool in a container
- Forged from decades of experience—an innovative combination of tried-and-tested hardware, software and infrastructure
- DUG's patented, immersion-cooling technology, DUG Cool enables compute and storage capabilities that are both sustainable and reliable
- All components, including the cooling infrastructure, are contained within a single secure, robust enclosure



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Better and greener shipbuilding

- Ship design specialists at Austal perform resource-intensive computational analyses to improve the efficiency and performance of defence and commercial vessels
- Austal required quick access to different hardware and an efficient, flexible HPC platform to meet its increasing computational demands, while reducing its greenhouse-gas emissions
- DUG provided tailored support and bespoke, code-optimisation expertise, ensuring Austal's software and workflows could leverage DUG's HPC Cloud

With DUG's support, Austal has developed an advanced artificial intelligence toolset, DeepMorpher, helping the company's Australia-based designers to explore broader design spaces whilst significantly reducing resource requirements for complex hull optimisation routines

"With the support of HPC provider DUG Technology, we can reduce the timeframe for hull form optimisation in conjunction with computational fluid dynamics by an order of magnitude."

Max Haase,
Development Hydrodynamics Specialist at Austal

Sweetening cybersecurity with advanced artificial intelligence

- Researchers at CSIRO's Data61 are developing artificial intelligence (AI) models to automate the creation of honeyfiles—digital baits designed to protect against cyberattacks
- Data61's existing HPC infrastructure was taking weeks to run a single experiment, impeding the iterative improvement process crucial for developing competitive models
- DUG's HPC Experts ensured a smooth transition to DUG HPC Cloud
- DUG's tailored support and powerful, bare-metal compute, which includes 80GB NVIDIA A100 GPUs, enabled Data61 to run on-demand experiments in parallel

Training times were reduced from weeks to 1–2 days, providing Data61 with the time and resources to explore previously inaccessible research areas while allowing timely publication of results

With expertly-supported access to the latest hardware, Data61 researchers are unlocking the cybersecurity potential of honeyfiles and pushing the boundaries of AI capability

Out-of-this-world processing of astronomy data

- The Square Kilometre Array (SKA) Project is one of the largest international scientific research projects in history
- The Murchison Widefield Array (MWA) telescope had amassed a backlog of data that was being processed using the Pawsey Supercomputing Centre
- DUG HPC experts took two weeks to optimise the academic code used to process the MWA data and achieved run-times that were **125x faster**

DUG's support and HPC expertise allowed the ICRAR team to process their data backlog in three hours, using just a fifth of DUG's supercomputer in Perth

DUG's green HPC was credited for lowering emissions

ICRAR published a paper two years ahead of schedule, with 100+ citations

Sharpening Earth observation capabilities

- Smart-satellite provider LatConnect 60 is working to promote a subscription-based monitoring service to enhance crop management
- To sustain a large-scale deployment of the service, LatConnect 60 required a tailored, cost-effective and efficient solution
- DUG provided the required compute capacity and an optimal software environment for LatConnect 60 to run its workflows and analyses

"We have been thoroughly impressed by the speed and scale at which DUG's HPC offering has been able to support our agriculture analytics services. Data-processing tasks which took us weeks in the past can now be completed in hours. This is a game-changing development for us."

Venkat Pillay, CEO of LatConnect60

Supercharging medical research at Perkins

- Researchers at the Harry Perkins Institute of Medical Research (Perkins) must constantly develop new algorithms and methodologies to keep pace with the rapid evolution of bioinformatics
- Perkins required a fully supported HPC system designed to let them store, process and analyse colossal amounts of genomic data in their unconventional ways
- DUG provided Perkins researchers with tailored HPC expertise and support, ensuring their workflows could leverage state-of-the-art processors and storage systems such as VAST Data's massive scalable storage system that can service any I/O load

DUG's bespoke HPC solution gave Perkins researchers quick and easy access to their huge datasets without computational restriction

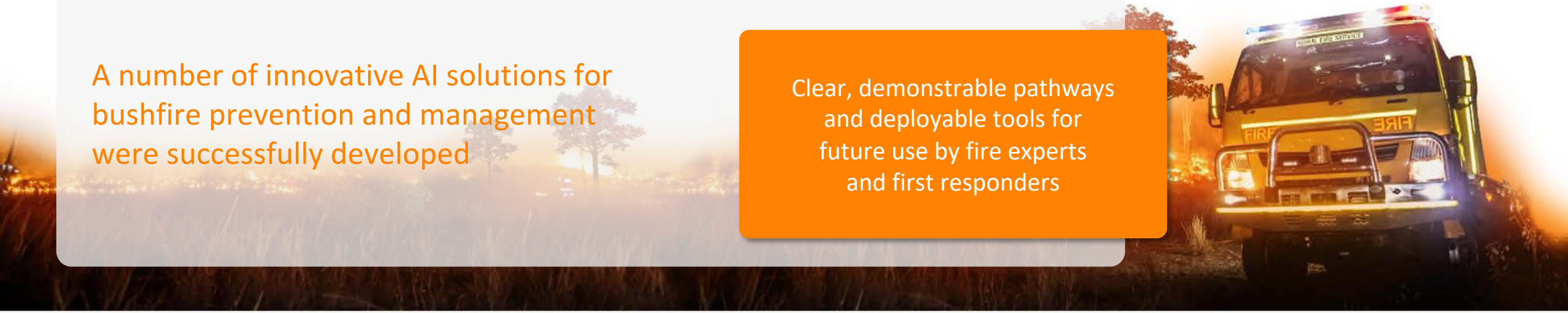
Perkins said: "Trusting the technology to the experts at DUG, we can now get back to our #1 priority - saving lives."

Outsmarting bushfires with AI

- The Frontier Development Lab AusNZ approached DUG to provide the HPC service and support for Data Quest 2020—a research sprint incorporating artificial intelligence (AI) into firefighting
- Predicting and preventing bushfires are arduous tasks due to the complexity of the processes involved, coupled with obsolete tools that require manual input
- DUG supplied HPC resources and data science expertise, enabling the researchers to efficiently test AI-powered systems by leveraging terabytes of satellite data

A number of innovative AI solutions for bushfire prevention and management were successfully developed

Clear, demonstrable pathways and deployable tools for future use by fire experts and first responders



Unlocking new solutions for neurodegenerative diseases

- Biotech company GenieUs Genomics (GenieUs) developed DiGAP™, a bioinformatic tool for analysing whole-genome sequencing
- GenieUs faced long processing times for each sample, and the large size of datasets made unit testing difficult—resulting in a backlog of samples that were impeding research efforts
- DUG provided GenieUs researchers with tailored HPC expertise and workflow-optimisation support, enabling the dynamic allocation of compute nodes and storage as demand required
- DUG also crafted a compliant environment that supported continuous integration with GenieUs' preferred software

With DUG's support, GenieUs researchers optimised the use of HPC resources for their specific needs—improving the speed, scale, and efficiency of their computational workflows

Some parts of the workflow were up to 60 times faster!

Better healthcare for Indigenous Australians

- Computational biologists at Indigenous Genomics (IG) at the Telethon Kids Institute are developing novel healthcare solutions for Indigenous Australians, which entail the analysis of large, complex and sensitive datasets
- The IG research group required a new HPC cloud solution that could deliver both secure data management and rapid processing, while allowing collaboration with research partners
- DUG's HPC Experts optimised their workflows so they could scale up with DUG HPC Cloud
- DUG's powerful, bare-metal compute and storage delivered efficiency, security and privacy

In one study, DUG's tailored HPC solution enabled the IG group to process 1287 whole genomes in 140 hours—a workload that was historically taking many weeks to complete

IG researchers are investigating how the genetic architecture of Indigenous Australians relates to the incidence of type-2 diabetes—driving the improvement of healthcare outcomes for the community

Shining a light on marine conservation

- Scientists at Pendoley Environmental (Pendoley) are predicting impacts of artificial light on marine life using modelling techniques combined with custom monitoring technology
- Pendoley's software was not optimised and difficult to parallelise, resulting in overly long run-times on in-house systems. This was impeding progress and affecting the resolution of results
- DUG provided Pendoley scientists with a tailored solution which enabled them to run projects simultaneously without resource constraints
- DUG's HPC Experts optimised Pendoley's code for performance and aligned resources with project demands, all while prioritising the resolution of results

PENDOLEY ENVIRONMENTAL

With DUG's tailored HPC solution, Pendoley scientists were able to scale, delivering better results, faster

This enhanced capability enables more informed marine conservation efforts—determining the impacts of artificial light on turtle hatchlings, as well as people and other biological receptors