

Kessler Labs – Arcturus One Pager

Problem

- Certification for flight-critical compute is slow, manual, and fragmented, consuming 50–70% of engineering time and delaying programs by months.
- Every spacecraft, UAV, and safety-critical system rebuilds its certification workflow from scratch, duplicating years of hardware, software, and verification effort.
- Teams manually generate traceability, testing, and documentation artefacts across disconnected tools, driving cost overruns and integration failures.
- Fragmented hardware and tooling prevent reuse, forcing organizations to re-qualify everything for each mission, inflating avionics budgets by 25-40%+ and slowing delivery.

Solution – Arcturus

Our platform, Arcturus, lets teams *certify as they build*, turning months of manual certification effort into days of automated evidence creation. Instead of rebuilding workflows from scratch, teams get a single platform where hardware, software, and testing all produce certification-ready artefacts by default.

- Ship missions faster: avionics that come with built-in traceability and reusable compliance evidence, eliminating years of qualification and re-certification.
- Reliable and certifiable: unified suite that guarantees deterministic behavior and provides safety-ready libraries for control, guidance, and onboard AI.
- Test once, use everywhere: automated testing that generates certification-ready reports as teams iterate.
- One platform: the same hardware and software tools extend to telemetry, communications, payloads, and autonomy, replacing scattered tools with a single ecosystem.

Beyond space: The same certification headaches exist in automotive (ISO 26262), medical devices (IEC 62304), industrial robotics (IEC 61508), mining (ISO 17757), and more. Arcturus is positioned to become *the* cross-industry certifiable compute platform.

Why Now?

Hardware and AI tools let small teams build sophisticated avionics faster than ever, but certification hasn't kept pace. Modern spacecraft, defense systems, UAVs, and climate-critical infrastructure need edge compute *now*, where even small delays hit missions, revenue, and national capability.

Fabrication costs have collapsed, opening the door for new entrants, just as regulators tighten safety standards and demand deeper, more consistent evidence. Teams can't rely on bespoke, hand-built certification pipelines anymore; they need a repeatable, automated pathway that matches modern development speed.

Arcturus sits at this intersection as the first unified compute platform built for an industry that must move faster, prove more, and deploy safely.

Team

Patrick Bellamy – Ex-Flight Software @ Rocket Lab; led University of Melbourne Rocketry to international success; IAC-published. Expertise in flight-critical software + leadership of teams of 100+ engineers.

Jack Ulbrich-Baker – Ex-GNC @ Rocket Lab; led Monash Rover Team; IEEE-recognized publications. Deep control systems expertise and hardware execution + leadership of teams of 100+ engineers.

Jack and Patrick met whilst working at Rocket Lab. The two were united over projects resulting from fragmented certification and testing pipelines. Once back in Australia, the two reunited to tackle this bottleneck. By leveraging their unique technical insight, industry networks, and experience leading top international student engineering teams, the two are primed to rapidly deliver, test, and deploy the Arcturus ecosystem at scale.

Market Opportunity

- The global space economy is projected to grow to \$1.8T by 2035 (McKinsey, 2023).
- Over 70,000 satellites are expected to launch this decade (Goldman Sachs, 2024).
- Defense autonomy & AI systems are growing at ~13% CAGR (Grand View Research, 2024).

Arcturus directly addresses the compute gap in these markets:

Sector	Market Size	Certifiable Compute Opportunity
Satellites & Launch	\$200B+	\$7-10B+ (Satellite + Launch Avionics)
Defense Autonomy	\$120-180B	\$10-20B+ (C2, ISR, UAV swarms)
Automotive Safety	\$600B+	\$90–160B+ (ISO 26262 systems, ADAS/robotaxi)
Medical Devices	\$1.3T	\$90–160B+ (surgical robotics, imaging, infusion)
Industrial, Energy, Adjacent Infra*	\$800B+	\$55–150B+ (industrial automation, power grids, rail, maritime, mining)

*Adjacencies include power & rail signaling, maritime robotics, and autonomous mining systems.

TAM: \$250–500B+ by 2035

Arcturus begins with aerospace and defense, a \$15-30B beachhead market today, but every one of these high-growth markets relies on certifiable compute. This positions Arcturus to become the universal certifiable compute platform.

Roadmap

We are raising AUD 300k to deliver the FPGA dev board, software platform V1, and first beta deployments in early 2026. This positions us for an institutional pre-seed round in 2026 to productize the platform, expand the team, and establish US presence. The roadmap below outlines how each stage builds toward silicon tape-out and widespread adoption.

Angel Round (Q4 2025)	Pre-Seed (Q2 2026)	Seed (Q3 2027)	Series A (2029)
FPGA dev board functional prototype Software platform V1 with ≥3 deterministic libraries (control, autonomy, inference) Testing harness with demo videos 100+ beta EOIs; boards deployed to 5 testers Engage certification consultants/agencies	Productize platform → software platform V2 with ≥10 production-ready libraries First 3 FTE hires (certification, hardware, business dev) US relocation IP filings (architecture + certification framework) Bespoke offerings for first non-beta startup customers.	Expand to 8-12 industry pilots across defense and space Publish modular certification framework applied to ≥2 industries 10+ FTE Hires RTL (chip design) + fabrication partners locked. Prime + government Pilot programs seeded	First silicon tape-out (production-ready Arcturus chip) Space and defense heritage: ≥2 demos Software ecosystem: ≥100 active developers, ≥20 certified partner libraries ≥3 licensing/strategic partnerships; roadmap toward ISO/IEC/DO certification across industries

