



# Investor Presentation

September 2021





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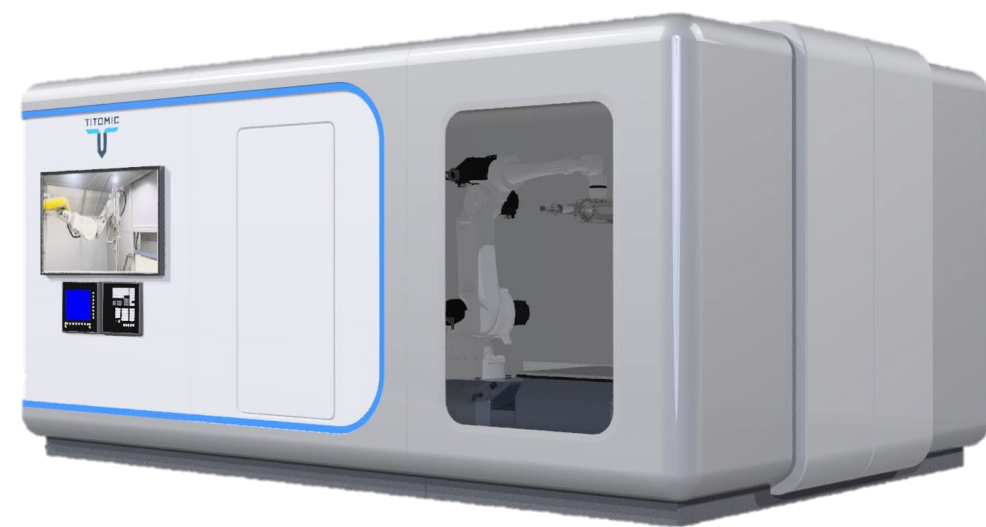
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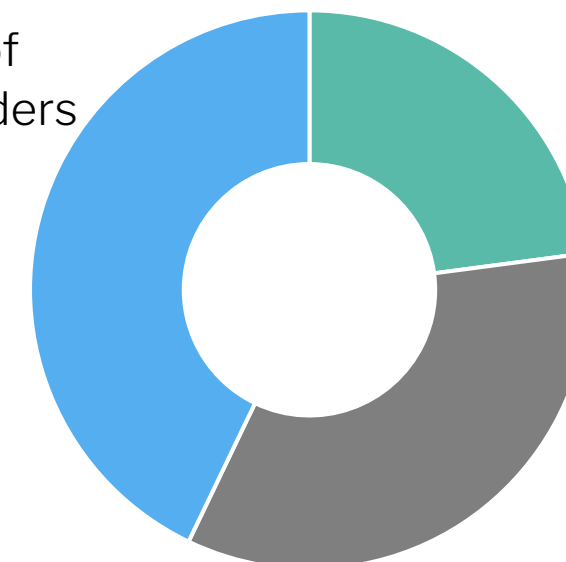
# Titomic snapshot

- Founded in 2014 to develop a new type of additive manufacturing process, developed with the CSIRO, using cold-gas spraying of metal particles to produce 3D structures
- This patented process is known as Titomic Kinetic Fusion (TKF), which Titomic has exclusive rights to commercialise
- Set to be a global leader in providing cutting-edge cold spray technology and solutions for our customers, changing the way manufacturing is done
- Scaling globally through joint venture partnerships with tier 1 suppliers to the defence and aerospace industries
- We seamlessly integrate TKF technology into partner supply chains, enabling customers to improve build quality and speed, all while minimising their ecological footprint<sup>1</sup>
- We deliver on our financial goals by supporting customers on their journey transitioning from the traditional to the new world of digital manufacturing

## Share Ownership



**43%**  
Balance of  
Shareholders



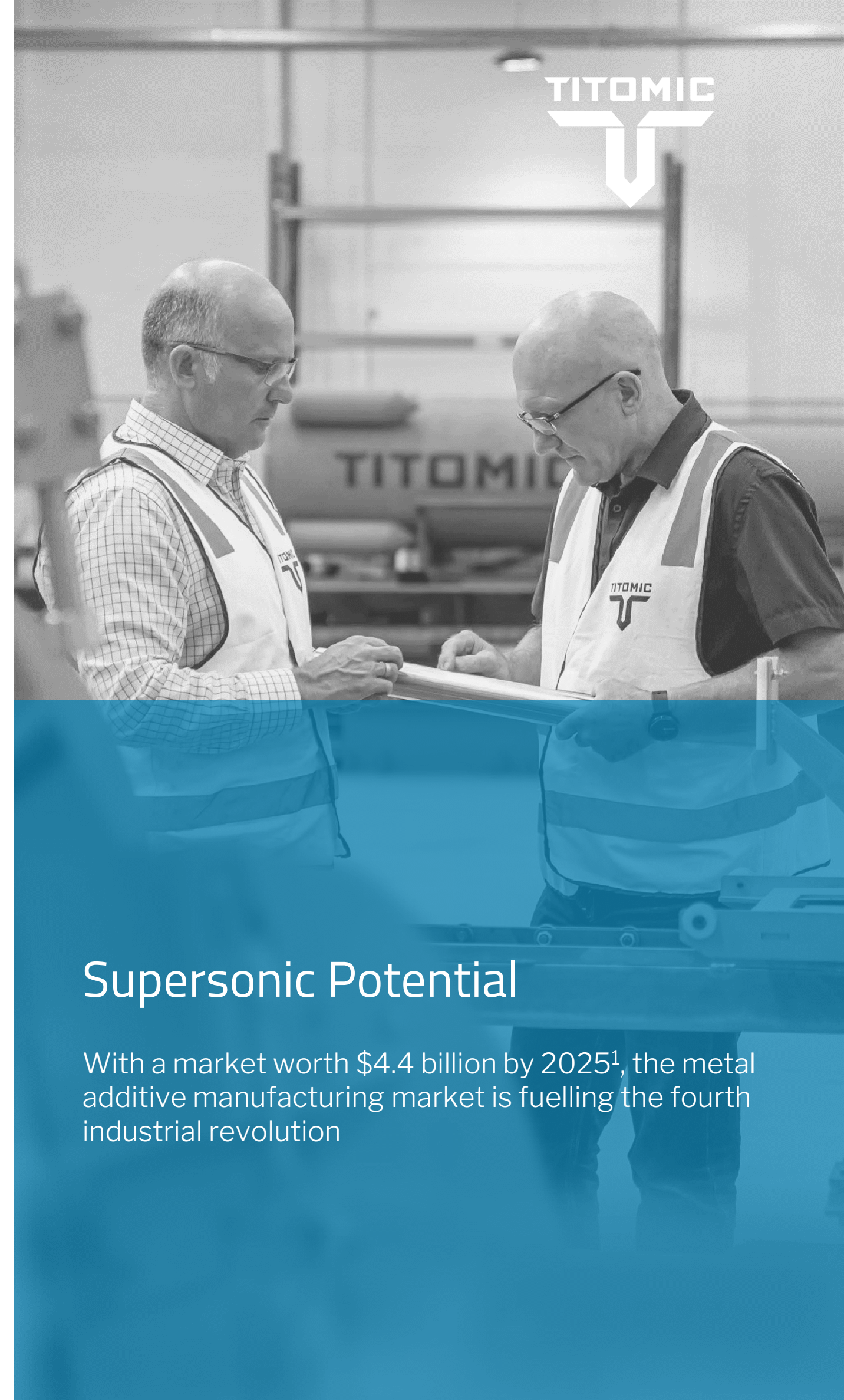
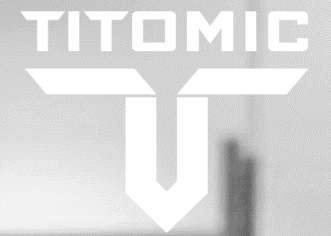
**23%**  
Founders  
& Directors

**34%**  
Remainder  
of Top 20



# Highlights

- 1 | Exceptional leadership team**  
High calibre team with belief in the potential of Titomic's unique technology and the global experience, resident in US, Europe, Australia and Middle East
- 2 | Cold spray industrialisation in less than two years**  
Titomic is well positioned to leverage the growth potential in this AM technology
- 3 | Accelerated adoption driving market growth**  
The global metal additive manufacturing market is expected to grow at a 29% CAGR from 2020 to 2025, to reach almost \$4.4 billion by 2025<sup>1</sup>
- 4 | Superior speed, size and sustainability**  
Numerous advantages over existing forms of AM, including larger build sizes, significantly faster build rates and an ability to utilise very price competitive material inputs
- 5 | Focus on specific industry sectors and applications**  
Differentiated offering to existing additive manufacturing solutions
- 6 | Defined go to market strategy**  
Prototypes rolled out to major customers, establishing trust in the technology, with the transition to Joint Venture partnerships underway



## Supersonic Potential

With a market worth \$4.4 billion by 2025<sup>1</sup>, the metal additive manufacturing market is fuelling the fourth industrial revolution



# Together, we make it possible

## Executive team



**Herbert Koeck**

Chief Executive Officer

- Previously Executive VP: go-to-market strategy of 3D Systems Corporation
- Former Managing Director of Hewlett Packard Europe



**Joanna Walker**

Chief Financial Officer

- Previous CFO roles at Total Tools, Coventry Group and Officeworks
- Non-Executive Director and Chair of Audit and Risk Committee of both Countrywide Food Service Distributors and Southern Alpine Resort Management



**Max Osborne**

Head of Engineering

- Joined Titomic in June 2021 after 14+ years at The Boeing Company in Australia and the USA
- Alumni of Boeing's global leadership program with technical background spanning R&D, design and product development
- Nine international patents in structures, materials and manufacturing.



**Dominic Parsonson**

Head of Sales

- Extensive sales and marketing management experience in Europe, Asia, Africa and Australia
- Over 10 years Additive Manufacturing experience



**Chris Healy**

Legal Counsel

- Chairman of BondAdviser (previously Managing Director)
- Formerly Legal Director & Company Secretary of Guinness Peat Group



**Jeff Lang**

Executive Director  
Chief Technology Officer

- 30 years experience in manufacturing in Australia, Europe and Asia
- Previously Managing Director of Titomic and of Force Industries



**Michael Rochford**

Head of HR & Operations

- Previously Regional Manager PACT Group, multiple full P&L responsible roles.
- Numerous Senior Ops and HR roles in the Packaging and Automotive Sectors.
- Extensive Expertise in Cultural change, currently undertaking a PhD in Organisational Growth.



**Colin Horman**

Head of Strategy Execution

- CFO roles at Iveco Trucks Australia & New Zealand, and ANZIIIF
- Extensive business leadership and corporate development experience, including roles at iSelect, PaperlinX and Amcor

# Together, we make it possible



## Board



**Dr Andreas Schwer**

Independent Non-Executive Chairman

- President - Europe & Middle East, Electro Optic Systems Pty Ltd.
- Previously CEO – Saudi Arabian Military Industries (SAMI)
- Previously Chairman & CEO – Rheinmetall International
- Previously VP – Design & Development at Airbus Helicopters



**Mira Ricardel**

Independent Non-Executive Director

- Principal at The Chertoff Group
- Assistant to the President of the United States and Deputy National Security Advisor
- Previously VP – International Business Development at Boeing



**Dag W.R. Stromme**

Independent Non-Executive Director

- Currently Co-Chairman of PAACS Invest
- Previously Managing Director and Co-Head Nordic Banking of Morgan Stanley



**Richard Willson**

Independent Non-Executive Director

- Non-Executive Director at Thomson Resources and PNX Metals
- Company Secretary at SILK Laser Clinics



**Humphrey Nolan**

Independent Non-Executive Director

- Chairman of The Nolan Group and Tapex Industrial



**Prof. Richard Fox**

Non-Executive Director

- Former Chair and Director of formerly listed Meditech Resources Ltd
- Inaugural Chair of the Cancer Research Centre for Cancer Therapeutics
- Co-founder of Force Industries



**Jeff Lang**

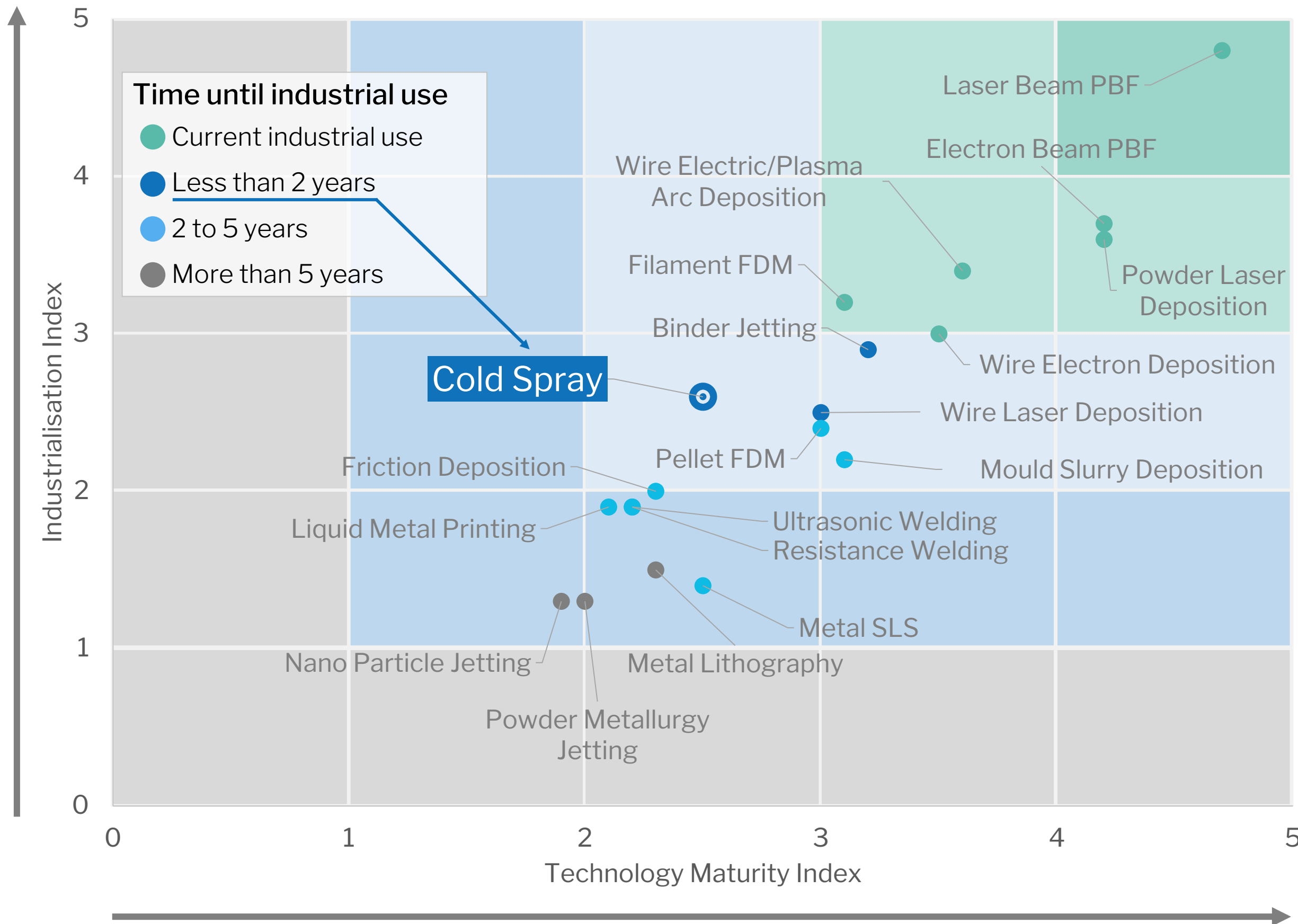
Executive Director  
Chief Technology Officer

- 30 years experience in manufacturing in Australia, Europe and Asia
- Previously Managing Director of Titomic and of Force Industries

Global industry expertise

# Cold Spray industrialisation in less than two years

## Metal additive manufacturing maturity index

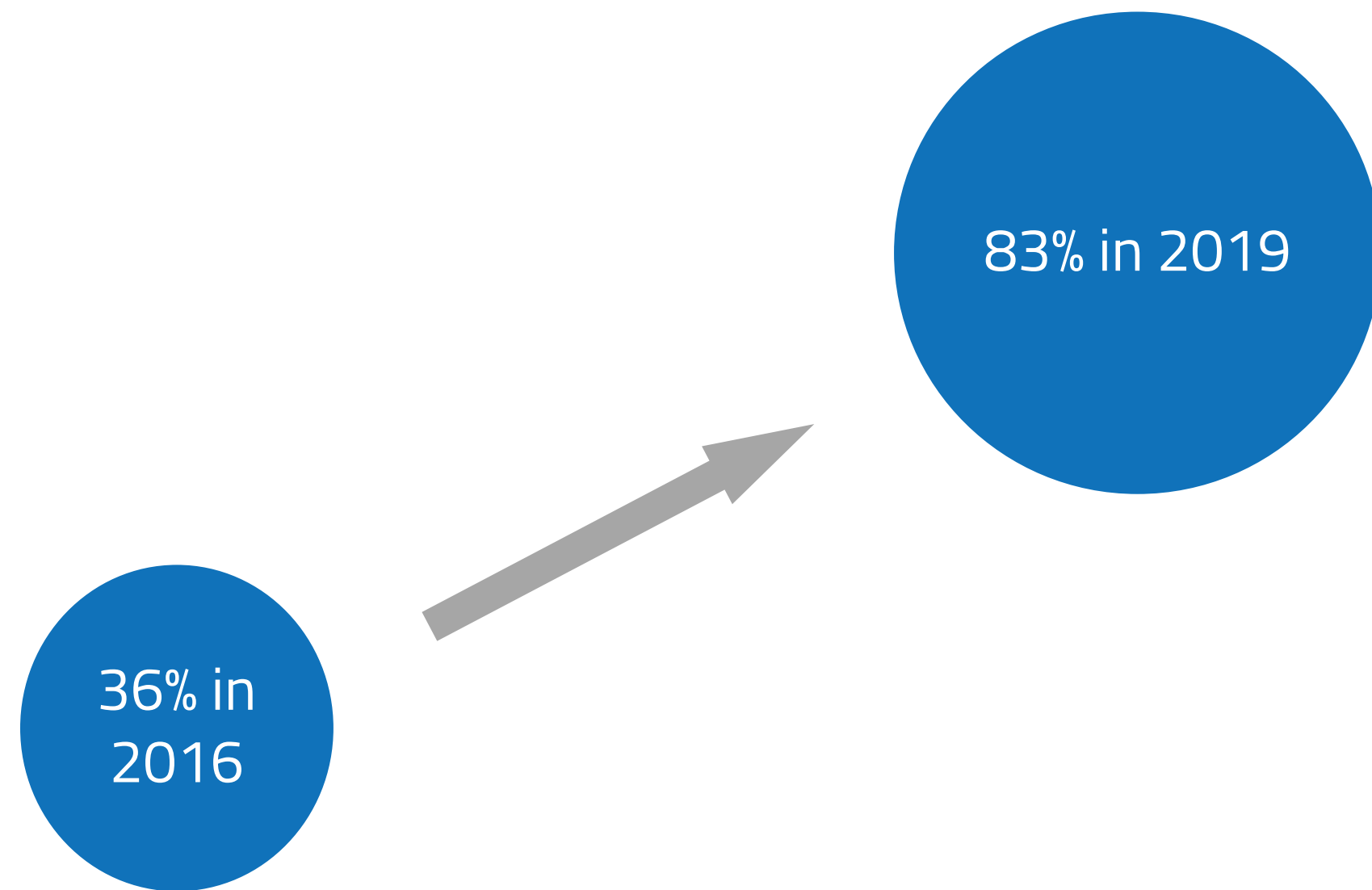


Titomic is on track to commercialise Cold Spray as an AM technology

# Accelerated adoption driving growth

## Adoption is accelerating in key manufacturing industries

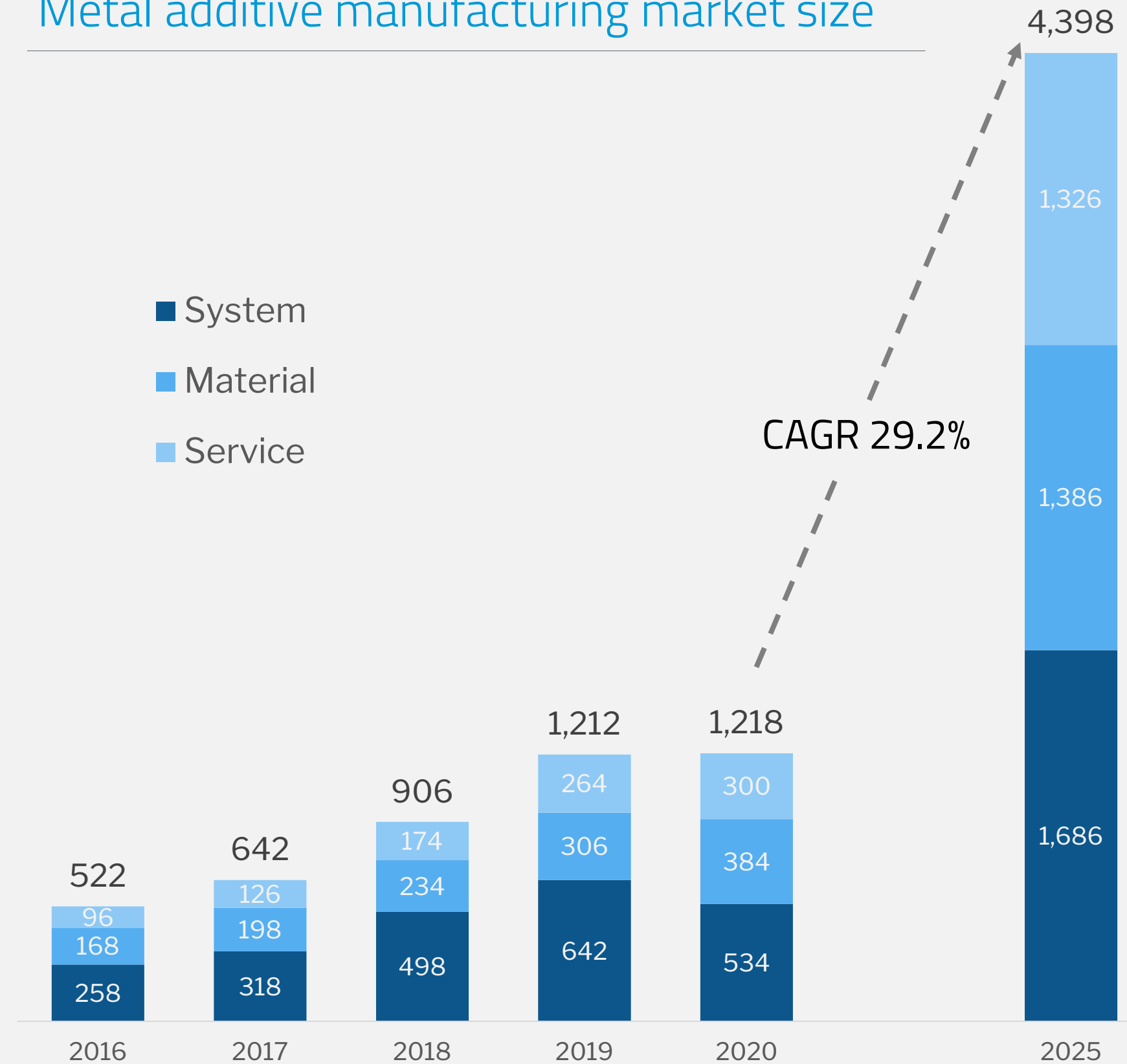
The percentage of businesses in key industries who either already apply or are considering applying AM technology increased from 36% in 2016 to 83% in 2019<sup>1</sup>



1. Based on an EY survey of 900 small, medium and large businesses in the aerospace, automotive, chemicals, construction, consumer packaged goods, electronics, industrial, life sciences, logistics and transportation industries (Source: 3D printing: hype or game changer? A Global EY Report 2019)



## Metal additive manufacturing market size



Source: AMPower 2021 Report  
All figures in millions of AUD

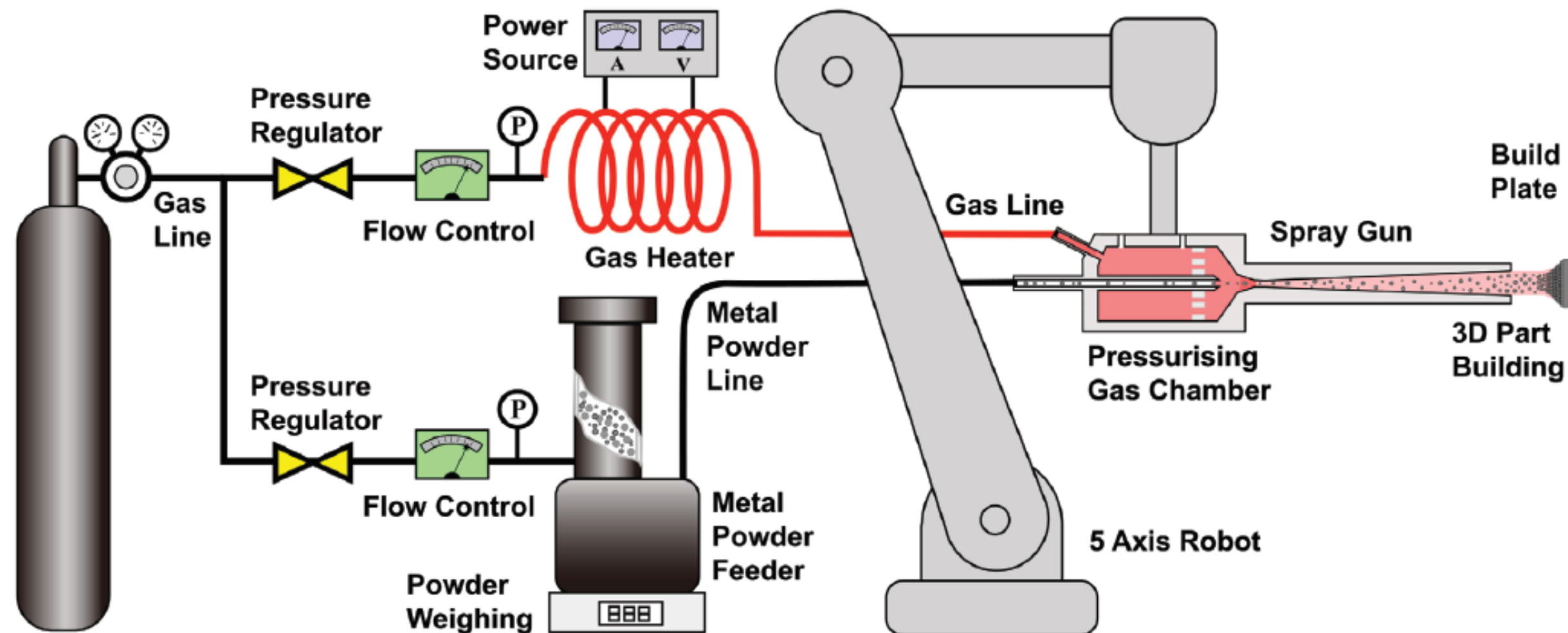


# Superior speed, size and sustainability

## Titomic Kinetic Fusion (TKF)

- Exclusive rights to commercialise a new form of cold spray additive manufacturing developed with CSIRO
- This process, called Titomic Kinetic Fusion (TKF), employs cold spray technology using compressed gas to accelerate metal powder particles at supersonic speed, which bond together to form a layer upon impact

## The TKF Process



## Key Attributes of the TKF Process

### Speed

- Up to 3x faster than other AM processes

### Size

- Up to 9m x 3m x 1.5m

### Sustainable

- Less energy use<sup>1</sup> and material waste

### Cost effective

- Ability to use wide range of metal powders
- Cost competitive grade metal powders of dissimilar particle sizes and irregular shapes

### Multiple Metals

- Build with almost any metal in a powder form
- Unique ability to combine different materials in a single part

<sup>1</sup> CSIRO study of Cold Spray vs Electroplating



# TKF Systems are operating today



TKF1000



TKF9000



## Titomic's TKF Systems

### TKF1000

- Modular industrial-scale AM system
- Designed for prototyping and low volume production tasks
- Build volume of 1m<sup>3</sup>

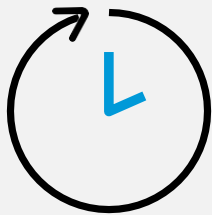
### TKF9000

- Located in Titomic's Melbourne Bureau
- Demonstration of Titomic's ability to engineer and construct bespoke AM systems
- Build volume of 40.5m<sup>3</sup>

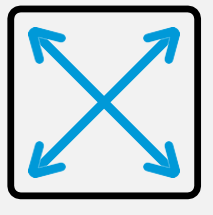


# The Titomic difference


Our cutting-edge custom TKF systems unlock the potential to manufacture high-performance multi-metal parts on demand, to near-net shape.




**Faster output**



**Any size**



**Scalable systems**



**Stronger materials**



**Less waste**



**Cost competitive**

## Unmatched value, certainty and confidence

### Aerospace



Less welding and forming



Less material than billet



Better buy-to-fly ratio



Minimal machining

### Defence



Lighter and faster manufacturing



Large single piece geometries



Minimal fabrication



For multiple threat levels

### Oil and Gas



Faster manufacturing



Less machining than stock bars and rods



Better performance than castings



High strength at high temperatures

# Manufacturing made sustainable

Titomic is evolving metals manufacturing for the better. The green process uses less energy and fewer resources.

- Cuts carbon emissions by up to **60%**<sup>1</sup> with no metal melting
- Completely electrified and can run on 100% renewable energy
- Reduces waste by up to **80%** with near-net shape parts production<sup>2</sup>
- Very high material utilisation resulting in low levels of material waste
- Combines multiple materials into one part
- Can perform both manufacturing and repair of parts
- No oxidation or need for protective environment
- Onshore, on-demand manufacturing

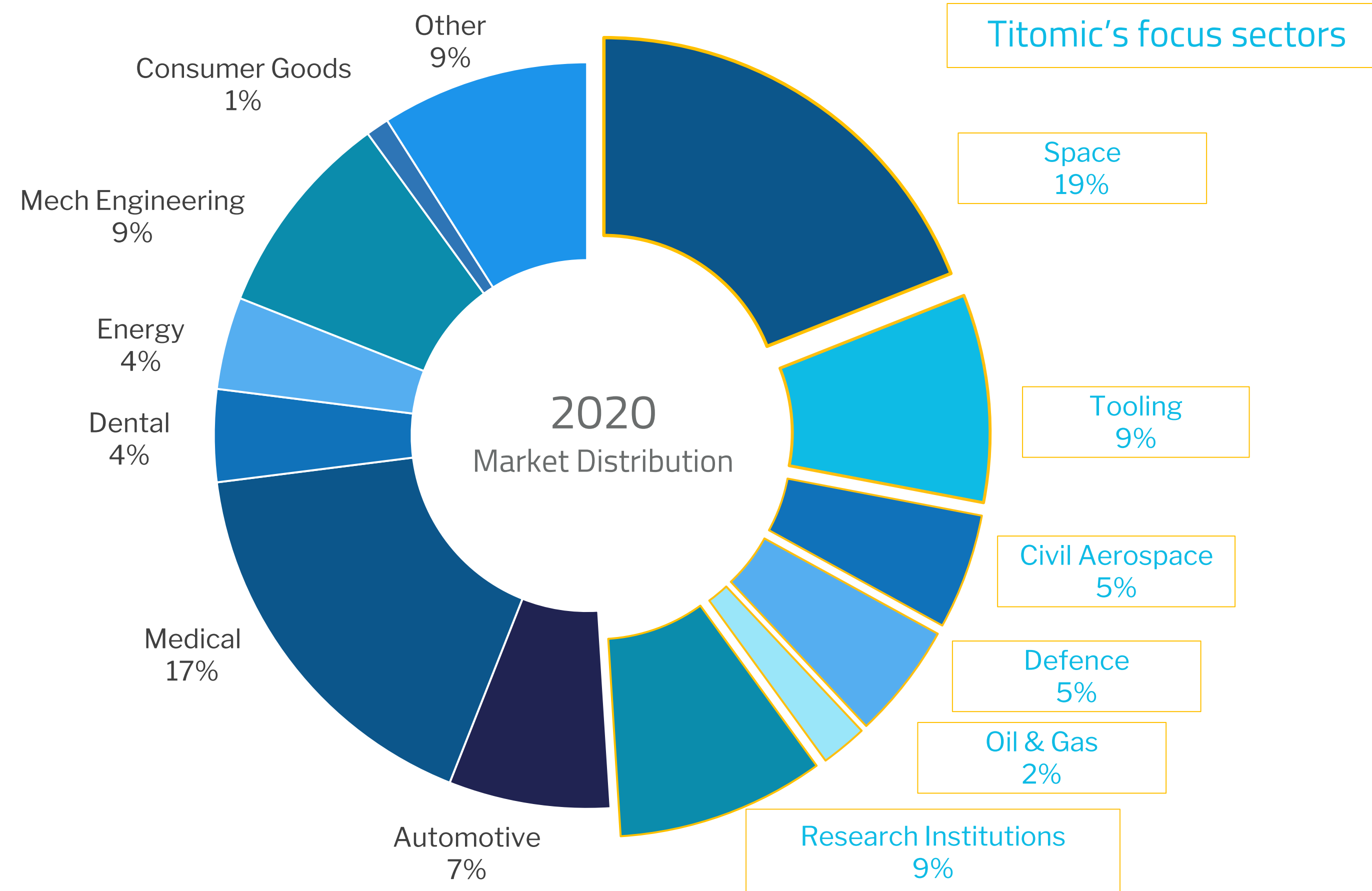
<sup>1</sup> CSIRO study of Cold Spray vs Electroplating

<sup>2</sup> Internal modelling, as compared to machining from billet





# Titomic's focus sectors make up 49% of AM machine sales



Total market expected to be \$1.7 billion by 2025

Titomic targeting 49% of this addressable market

# Focus sectors and applications

We are targeting partnerships in high-value markets – from Primes to research institutes and Tier 1 and 2 suppliers

Defence	Aerospace & Space	Other Applications
Weapon Barrels	Composite Mould Tooling	Pipes & Tubes
Ballistic Protection	Functional Coatings	Structural Repairs
Armoured Structures	Titanium Frames	Anti-Corrosion Coatings
Lightweight Structures	Superalloy Structures	Wear Resistant Coatings
In-Field Repairs	Component Repairs	Heat Exchangers
Panels & Doors	Space Vehicle Components	Component Re-Surfacing

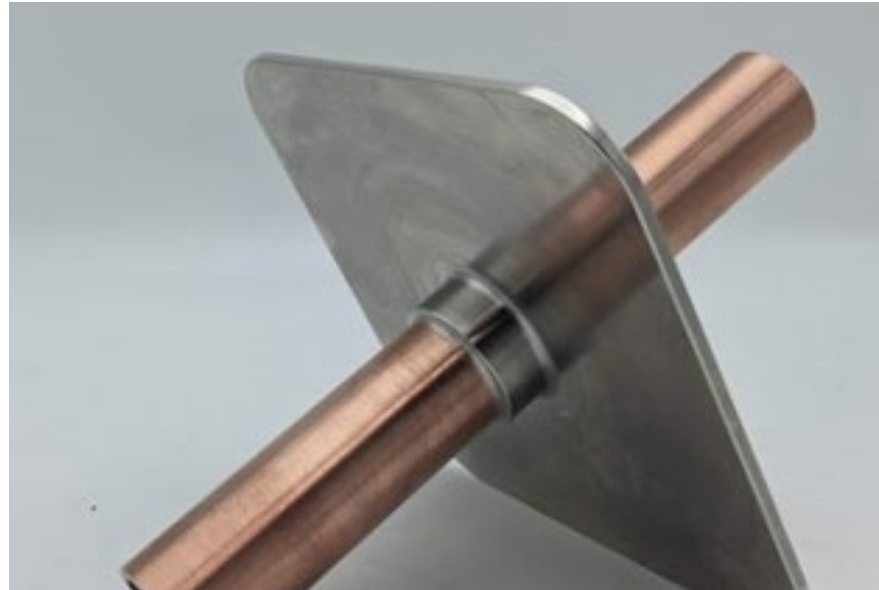


## Space applications

Titomic is partnering with Inovor Technologies, Australia's only sovereign commercial satellite manufacturer, on radiation coating solutions.

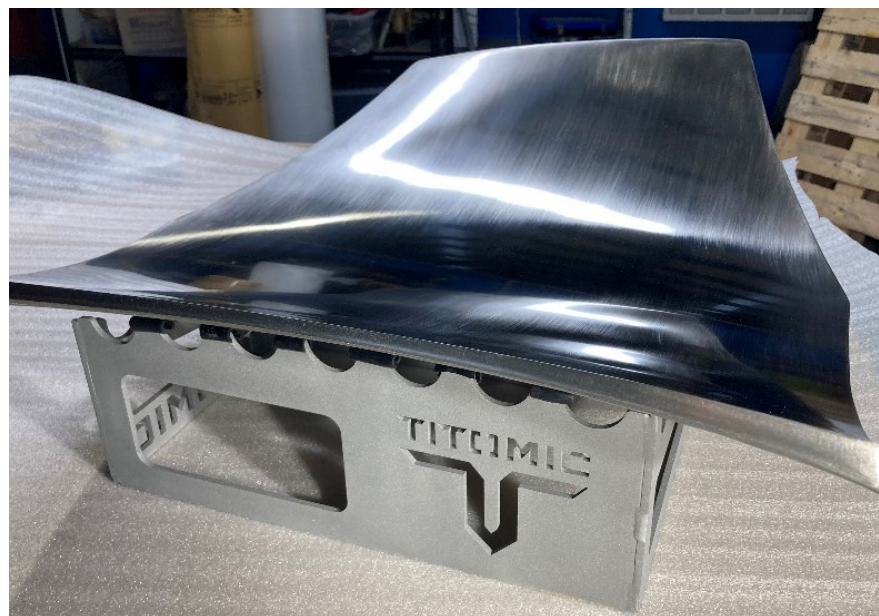


# Titomic parts



## Bulkhead penetrator

- Naval vessel application
- Copper pipe can be passed through a steel bulkhead without any need to weld dissimilar metals
- **Multiple materials** combined in a truly mechanically fused design
- **Near net shape** build in single build
- **No welding** required
- **Reducing** fabrication time



## Aerospace composite moulding tool

- Fabrication of Invar36 face sheets for high dimensional stability
- “Powder to preform” in days with minimal final machining delivering a **reduction in lead time from months to weeks**
- **Single piece face sheets** offering reduced porosity (increased vacuum integrity), reducing fabrication time, and **increasing speed to market.**
- Addresses a significant challenge in aerospace tooling, tools can be **repaired**, or have shape changed at a later stage.



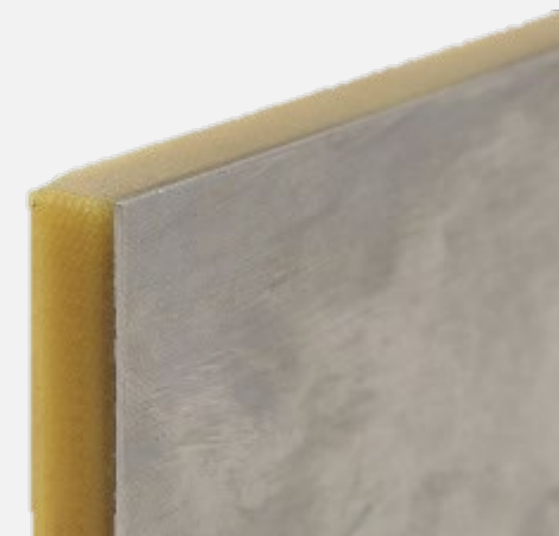
## Titanium Mounting Panel

- Part built as **one piece** to near net shape.
- **No welding or forming** required
- **Reduction in material wastage** of 40% as compared to machining from solid billet
- **Up to 45% lighter** than steel alternative



## Rifle Barrel

- **Novel process** for barrel fabrication, mixed metal designs for **performance and cost** benefits
- Hybrid manufacturing and processing methods incorporating both cold spray with traditional rifling techniques



## Polymer Metallisation

- **Structural/functional metal coating** of polymers and composites
- Enables **unique designs** and architectures

# Company Technical Comparisons

## US Companies

## Australian Companies

Company							
Ownership	Public	Public	Private	Private	Private	Public	Public
3D Print type	Kinetic Fusion	Binder Jet	Wire Direct Deposition	Digital Light Synthesis	Cold Spray Additive Manufacturing	Powder Bed Fusion	Wire Arc Additive Manufacturing
Metal Parts	Yes	Yes	Yes	No	Yes	Yes	Yes
Part Build Size	X-Large	Small	Large	Small	Medium	Small	Large
Part Build Speed <i>Per print head</i>	Up to 15kg/hr	Up to 2.9kg/Hr <sup>1</sup>	Up to 2.9kg/Hr <sup>2</sup>	Up to 3.1kg/Hr <sup>3</sup>	Up to 6 kg/h <sup>4</sup>	Up to 0.2 kg/h <sup>5</sup>	??

<sup>1</sup> [www.desktopmetal.com](http://www.desktopmetal.com)

<sup>2</sup> [www.sciaky.com/additive-manufacturing/wire-vs-powder](http://www.sciaky.com/additive-manufacturing/wire-vs-powder)

<sup>3</sup> Based on PU density of 100Kg/M<sup>3</sup> @ build rate of 3120cm<sup>3</sup> p/hr [www.3dprint.com/53286/gizmo-3d-printers-fastest/](http://www.3dprint.com/53286/gizmo-3d-printers-fastest/)

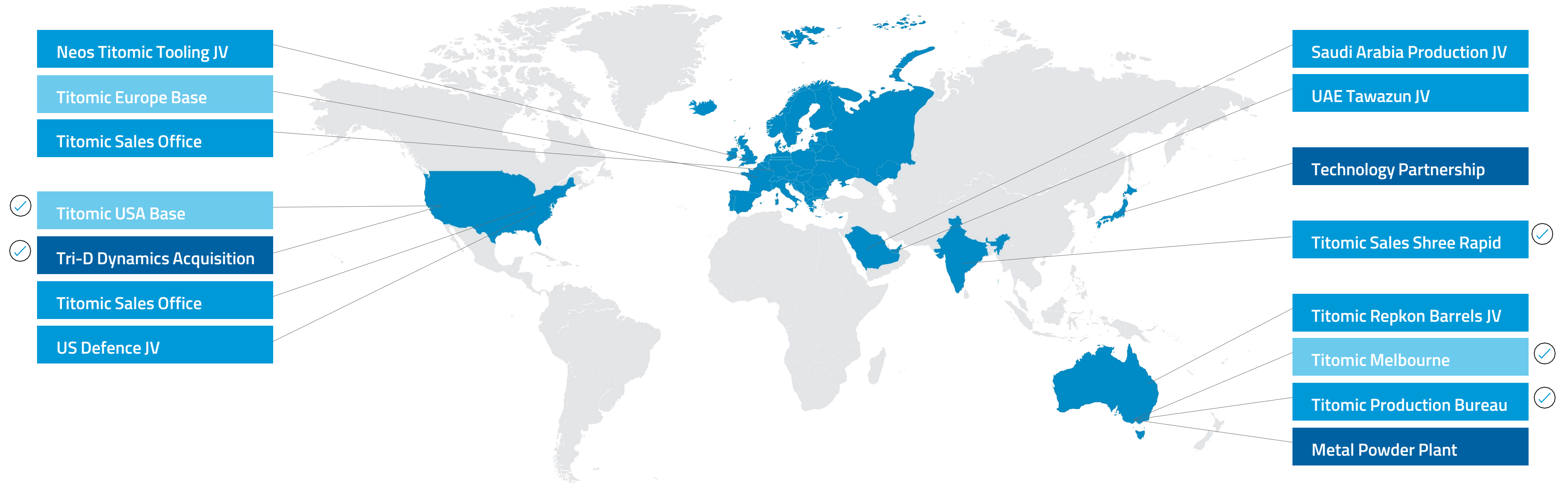
<sup>4</sup> [www.spee3d.com](http://www.spee3d.com)

<sup>5</sup> Amaero SP 500 SLM Brochure, [www.amaero.com](http://www.amaero.com), kg/h calculation based on metal density of 4g/cc



# Taking our technology to the world

We're on track to expand across Australia, Europe, North America and beyond.



■ Main Place of Business   
 ■ Bureaus JV / Cooperation   
 ■ Acquisitions / Investment

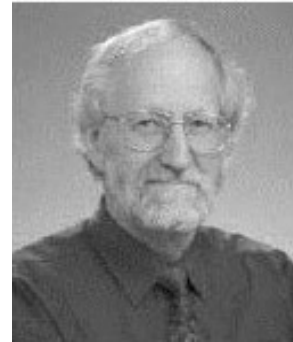
⊙ Completed

# Technical Advisory Committee



**Professor Rhys Jones AC**

- Previously Research Leader (Aircraft Structures) in the Australian Defence Science and Technology Organisation
- Former Chair Professor of Mechanical Engineering at Monash University
- Internationally renowned for his pioneering work in extending the operational life of aircraft



**Dr Richard Hannink**

- Honorary Fellow at CSIRO Manufacturing
- Member of the Victorian Committee of the Australian Academy of Technology and Engineering
- Extensive expertise in characterising microstructure-property relationships of metals and their relationship to industrial applications and performance



**Dr Airlie Chapman**

- PhD degree from the William E. Boeing Aeronautics and Astronautics Department at the University of Washington
- Lecturer in the Department of Mechanical Engineering at the University of Melbourne
- Research across multiple disciplines with applications to robotics and aerospace systems



**Prof Ivan Cole**

- Enabling Capability Director for Advanced Manufacturing and Fabrication at RMIT
- Previously Acting Chief CSIRO Manufacturing and Materials Technology
- Internationally recognised leader in the field of life prediction, prognostics and design and fabrication of engineered structures



**Professor Raman Singh**

- Professor at Monash University in the Department of Mechanical and Aerospace Engineering
- Primary research expertise is in corrosion and corrosion mitigation of steels and light alloys



**Professor Emad Gad**

- Dean of Engineering, Swinburne University of Technology
- Extensive experience in structural dynamics, structural connections, experimental techniques and finite element modelling

## Leading technical expertise

The Technical Advisory Committee comprises subject matter experts from Australia's most prolific research institutes and commercial organisations.

The TAC considers innovative solutions for Titomic through thought leadership and maintaining a focus on the delivery and adoption of research in line with Titomic's strategic requirements

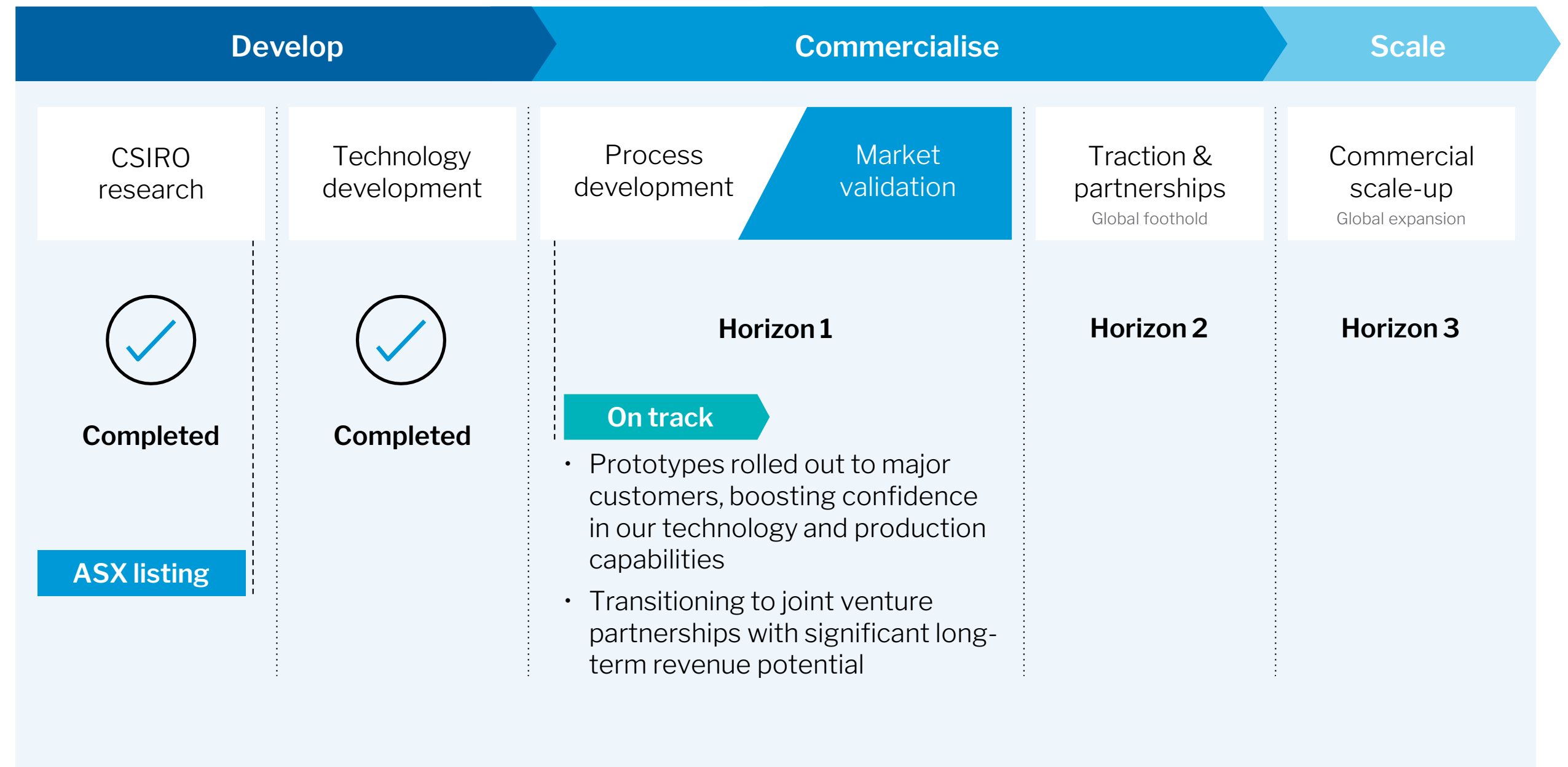
The TAC and key members of Titomic's management team meet frequently to discuss strategic priorities



# Commercialisation progress

In 2021 we:

- Have increased our focus on joint ventures with key customers to create continuous manufacturing and revenue streams, and share risk and reward
- Expanded our footprint into North America via Tri-D Dynamics acquisition
- Hired a new CEO
- Increased capability of key personnel
- Realigned our objectives to accelerate our commercialisation path



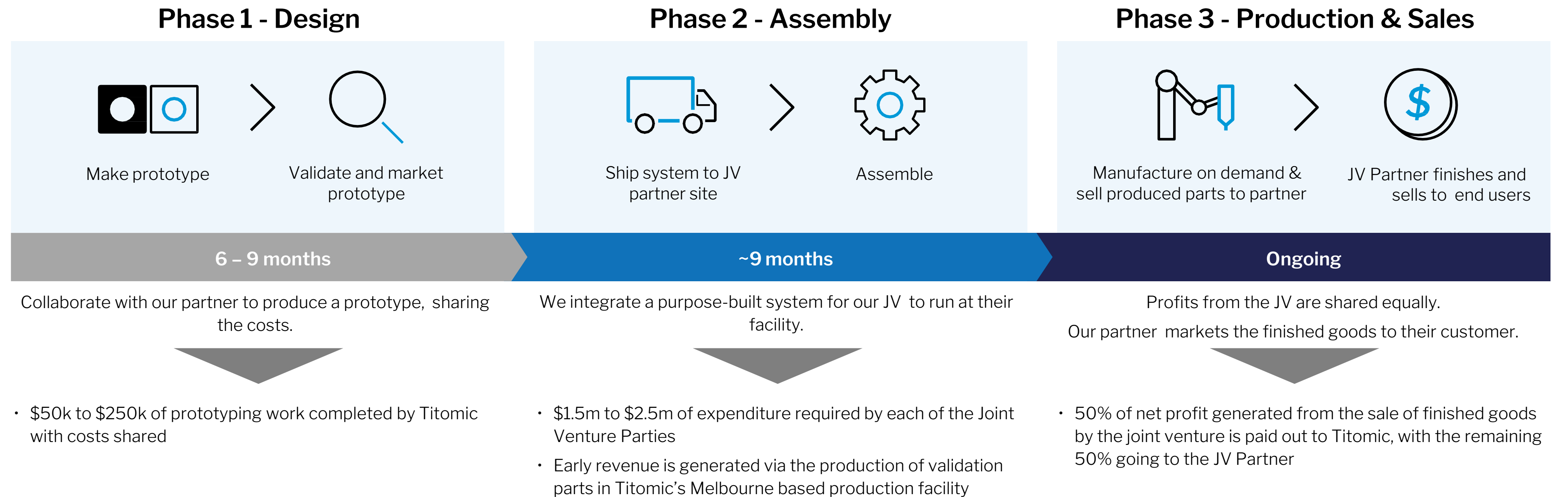
# 5 distinct revenue streams

1 Direct TKF Machine Sales	2 JV Partnerships	3 Powder Production/Sales	4 Consumables & Service
<ul style="list-style-type: none"> <li>Each machine sale will lead to recurring revenue from powder sales (3) and, consumable &amp; service requirements (4)</li> <li>Titomic will continue to produce parts for machine customers as needed</li> </ul>	<ul style="list-style-type: none"> <li>Titomic receives share of net profit of the JV Company</li> <li>Ongoing supply of powders, service, maintenance and consumables to the JV Company by Titomic</li> <li>Titomic will continue to manufacture parts during scale up of JV operations</li> </ul>	<ul style="list-style-type: none"> <li>Recurring revenue stream following on from the transactional sale of TKF machines</li> <li>A medium-term priority of Titomic is to establish a powder production plant in Australia reducing reliance on foreign suppliers, and increasing margins on powder sales</li> </ul>	<ul style="list-style-type: none"> <li>Users of Titomic's TKF systems require ongoing provision of consumables, servicing and maintenance, supplied by Titomic</li> </ul>
<p><b>Commercialisation status</b></p> <p>Currently marketing TKF systems to research organisations</p>	<p><b>Commercialisation status</b></p> <p>Multiple agreements entered during FY21 to enter JVs to design and manufacture defence and aerospace products using TKF systems</p>	<p><b>Commercialisation status</b></p> <p>Existing capability to on sell third party powder. Longer term goal to produce powder in-house at Titomic</p>	<p><b>Commercialisation status</b></p> <p>Titomic is onboarding more engineering talent to allow the expansion of this service</p>
			<p><b>5 Design &amp; Engineering Consulting</b></p>
			<ul style="list-style-type: none"> <li>Titomic offers design &amp; consulting services to customers looking for a TKF solution</li> </ul>



# Joint venture partnerships – more than a machine

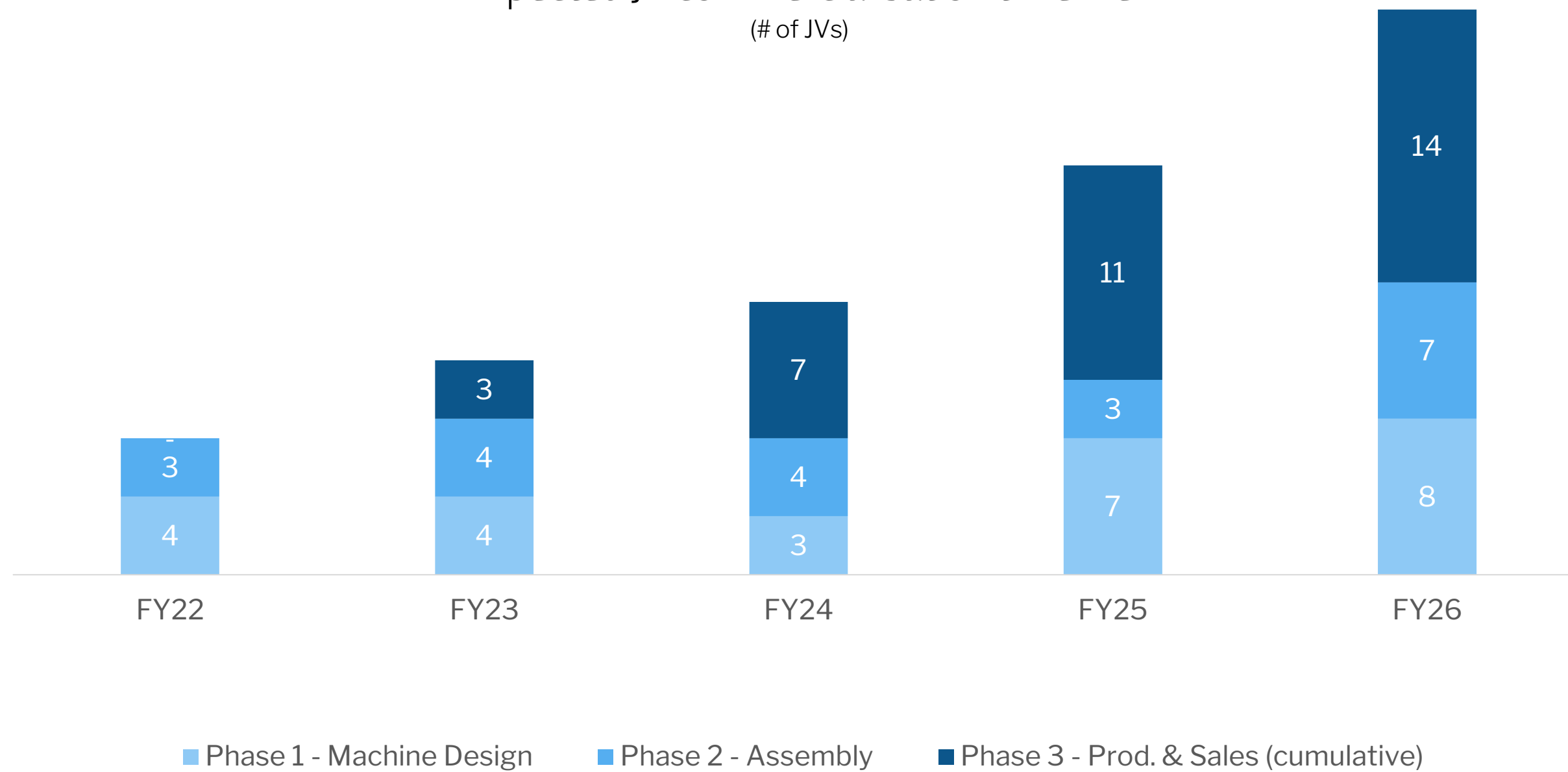
Joint ventures allow both parties to share the risks and rewards.  
 Titomic brings everything to the partner’s door: patented process, technology and custom system.



# Joint venture partnerships

A key commercialisation vehicle

Expected JV commercialisation timeline  
(# of JVs)



## JV progress

- Multiple joint venture partnerships planned as at the end of FY21
- Prototype design work has already commenced on two of these signed partnerships
- First product expected to be sold in mid 2022 under existing partnerships
- Additional JV agreements expected to be onboarded based on current early-stage discussions with international defence and aerospace suppliers



# Why our partners are on board

By integrating a custom TKF system, supply chains become more local, responsive, resilient, agile and sustainable.

Why more companies are choosing additive manufacturing (AM) bureau services rather than buying their own system:

**81%**

don't want to invest in their own systems

**48%**

don't have experience in additive manufacturing processes and production standards

**38%**

don't have experience in AM design

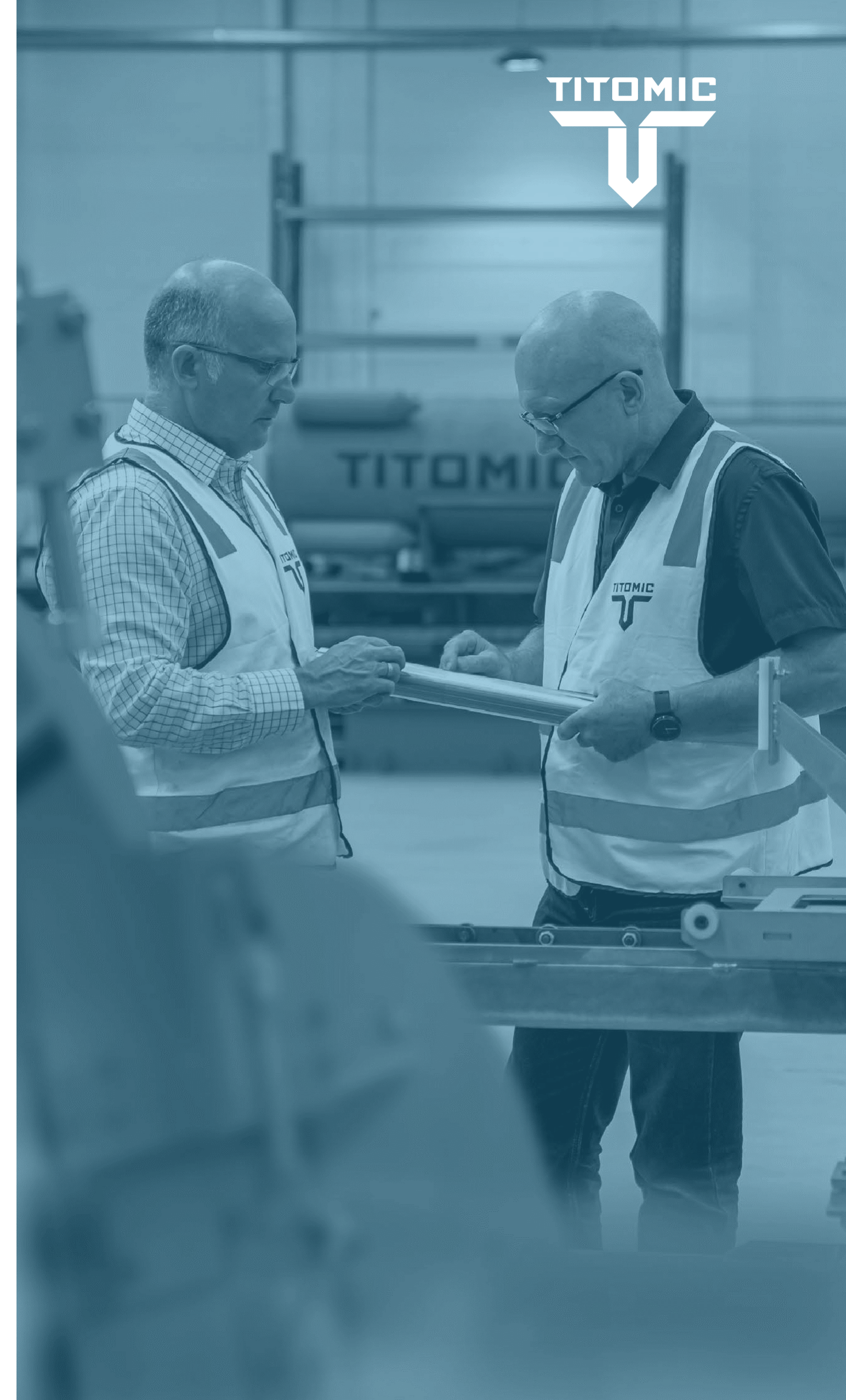
**31%**

use external AM service providers that are closer to the end customer

**11%**

use external AM service providers for small production

Source: A Global EY Report 2019 - 3D printing: hype or game changer?





# Our trusted customer base



## Aerospace



Tooling and Structures



Tooling Joint Venture



Tooling



Aerospace

## Defence



Tooling and Aerospace



Light weighting of Vessels



Prototyping Barrels & Ballistics



Barrels Partner

## Other



TKF Machine Customer



Research  
Industrialisation Partner



Reseller



MMI Grant Partner



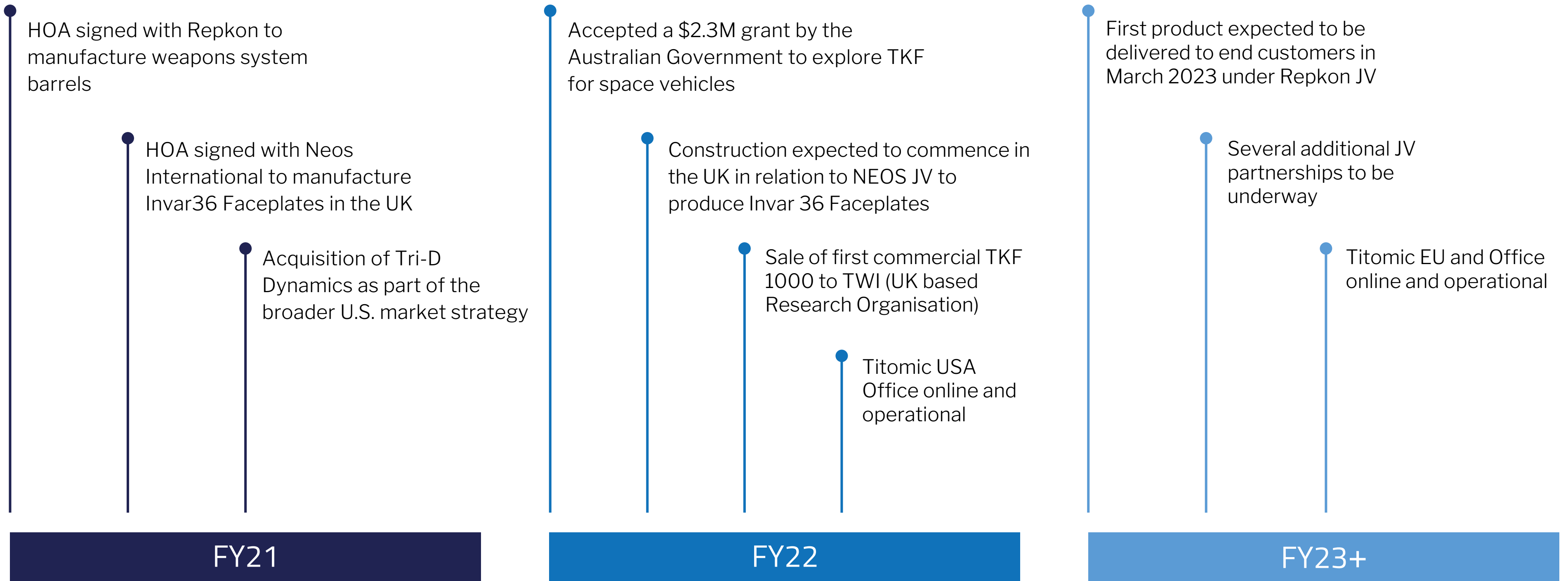
MMI Grant Partner



Reseller



# Catalysts and milestones





# Unlocking unprecedented potential

## Large & expanding market

- Strong tailwind with additive manufacturing market set to **grow by 29% to 2025<sup>1</sup>**
- Buoyed by rapid prototyping, faster turnaround, less waste and lower emissions<sup>2</sup>
- Reduced costs and risks **fuelling fourth industrial revolution**

## Global foothold

- Transitioning to formal **joint venture partnerships** with shared risks and rewards
- **Set to scale globally** across aerospace, defence and other high-value markets
- Expansion underway with signed agreements in the US, Europe, Middle East and Australia

## Unparalleled expertise

- New board of directors and management team with **strong industry, government and capital markets experience**
- **Deep scientific pedigree** including Technical Advisory Committee with **world-renowned scientists**

## Proven process & industry leading technology platform

- **Pioneering patented technology** co-developed with the CSIRO, Australia's national science agency
- Strong cost advantage within Titanium alloys with patent protection
- **Overcomes challenges** like long lead times, limited scalability and excess waste seen in traditional manufacturing

## Compelling business model with attractive financial business profile

- Partnership manufacturing model with clients to deliver attractive unit economics with added benefit of sale of consumables and services
- Unique powder supply to reduce risk as well as cost of titanium parts while **boosting performance**
- **Operating leverage** will drive profitability







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