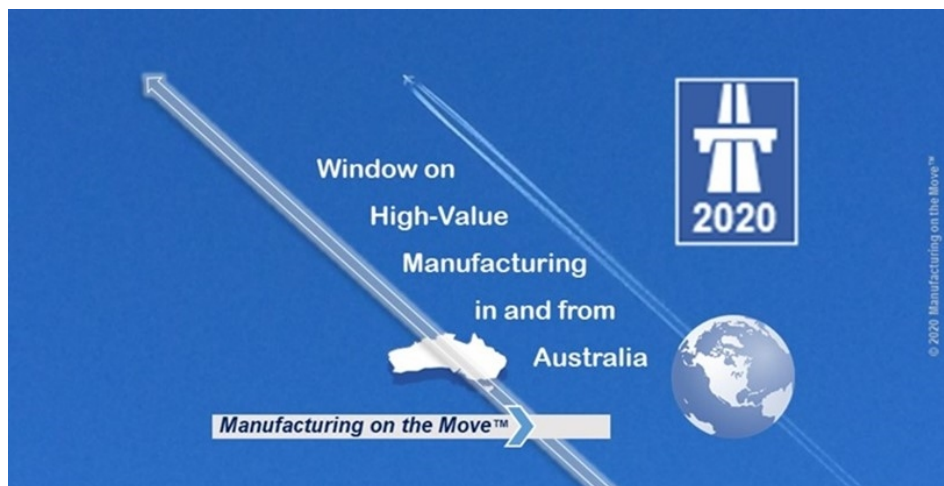




Rebuilding Australian Manufacturing in a post-Virus World

- 2020 review of key policy factors
by *Manufacturing on the Move™*



1. Introduction

- Timing
- The 2020 Trigger-and-Catalyst Effect

2. Policy Context: Progress Benchmarking for Future Formulation

- Perspectives of the Hands-On Industry Professional Kind
- Historically referenced

3. Dynamics: Policy Development Inputs to 2020

Key Issues, Drivers and Roadblocks

- Distilled from practice-based, industry-centric professional review



1. Just 6 months into the 2020s ...

... a highly constructive note from **Manufacturing on the Move™** [MotM™].

This content is an evolving work-in-progress. It's not an almanac with routine annual re-issues.

In short, **MotM™** publishes only when we have something useful to share.

The original and developed '*Crowd Sourced Australian Manufacturing Policy Outline*' [©2016, ©2020 Manufacturing on the Move™] was distilled and synthesised from hundreds of E-Media posted contributions and inputs from Australian and international manufacturers, engineers, universities, research organisations, industry groups, educators and skills providers.

A global public health crisis that has rocked economies of all sizes and geographies is imperative enough to shine the light of Australian manufacturing on challenges and opportunities after The Virus.

Addressed to whom?

To policy makers, managers of the Australian economy, industry leaders and engineering professionals.

An earlier submission was presented to the bipartisan **Parliamentary Friends of Manufacturing** group in Parliament house Canberra, Co-Chairs Independent Senators, the Hons Nick Xenophon and John Madigan presiding.

Key take-outs from this updated material – systematically evolved through several iterations – are now being made available to senior levels of Australian Government.

This 2020 review and scene-setter has the express intention of ensuring that 'manufacturing' realises its full potential to help revitalise a battered economy, drives **competitive positioning for accessible growth markets**, delivers **positive terms of trade** and – crucially – **creates long-term, qualified jobs** with focus, commitment and resourcing to maintain a 'talent pipeline' well filled with **STEM**-derived skillsets.

In summary, 'manufacturing' has significant untapped potential to help pay some big national bills post-Virus, and well beyond:

'Balance the books and pay our way'

Leadership Team, Manufacturing on the Move™
- June 2020



2. Australian Manufacturing Policy – Past, Present and ...

Manufacturing in Australia - A Strategic decision



In recent months, Australia has once again found itself reviewing manufacturing capabilities, after having been caught unprepared. This is a process that has occurred a number of times in our short history, and will no doubt happen again. Our challenge is to ensure that the magnitude of each event is less than the preceding event.

This document is not a call for the return to the days of an inward looking Australia, with inefficient manufacturers protected from imported goods by high levels of protective tariffs. These tariffs may have protected the manufacturer at the expense of the consumer, however also prevented the manufacturer from being internationally competitive.

In order to protect Australia from external threats and disruption to global supply chains, a consistent, bipartisan strategic objective for Australian Manufacturing is needed.

I would propose that a suitable high-level objective is that:

Australia will maintain a base level of manufacturing capability consistent with supporting national defence objectives without external support.

Learning from History - The Failure of Competitive Advantage

Current thinking ascribes to theories of “Competitive Advantage”, where countries focus on those industries where they hold an advantage - resources, knowledge, labour or access to markets. This theory may work well where there is a level playing field, open markets and no strategic consequences to consider. In a disrupted economy, where movement of goods, capital or people is constrained then the competitive advantage of global sourcing is lost.

Prior to WW1, Australia focused on its comparative advantage as a provider of raw materials to Great Britain, who supplied Australia with manufactured goods. The outbreak of hostilities saw a sharp and immediate impact on the economy.



Cash flows dried up as British importers looked to the USA and Argentina to make best use of the limited shipping capacity available. Wartime restrictions prevented Australian exporters from selling to countries other than Britain, and later the USA.

Even where cash was available, the few Australian manufacturers were reliant on machinery or manufactured inputs from Britain - inputs that were no longer available¹. Our strategic weakness was underlined by failed attempts to manufacture munitions in each state².

Sustained and focused policy and investment built an industrial base, including the lead smelter at Port Pirie, steelworks at Port Kembla and Newcastle, and the automotive industry. These industries built capacity, developed skills and supported businesses both upstream and downstream. This focus paid off during WW2. Australian factories were producing munitions, ships, aircraft, vehicles, clothing and more, with some 66% of the workforce engaged in manufacturing vital products and equipment³.

¹"Organization of War Economies (Australia) | International" 5 Apr. 2016, https://encyclopedia.1914-1918-online.net/article/organization_of_war_economies_australia. Accessed 26 Apr. 2020.

²"The First World War: Volume I: To Arms." https://books.google.com/books?id=ChpqA02Sa10C&pg=PT1232&lpg=PT1232&dq=the+shell+crisis+australia+manufacturing&source=bl&ots=oDb-vF7dET&sig=ACfU3U3PrSxD_zs3jb6vISF8qvluzXbKFA&hl=en. Accessed 3 May. 2020

³"Organization of War Economies (Australia) | International" 5 Apr. 2016, https://encyclopedia.1914-1918-online.net/article/organization_of_war_economies_australia. Accessed 26 Apr. 2020.

Tariffs - A poisoned chalice

Following the war years, the damaged economies of Europe and Asia retooled and rebuilt with new machines and technologies. While productivity and quality improved overseas, local manufacturers benefited from the economic boost of post-war migration even as their factories atrophied behind tariff protection. As tariffs were wound back from the 1970s and onwards, Australian manufacturers were ill-placed to compete with imported products.

Rising mineral exports strengthened the Australian dollar, and competition with the mining sector saw labour costs increase. Together, these events made for a difficult time for local manufacturing. While many were unable to adapt quickly, those that remained were forced to not only compete domestically, but to look to export markets to survive.

In adapting to a new and more exposed environment, Australian manufacturers embraced the global supply chain. To manufacture complex products, manufacturers turned to imported parts, components and assemblies. This hollowed out the domestic manufacturing sector, and provided valuable intellectual property to suppliers, some of whom used the knowledge to develop competing products^{4 5}.

⁴"Samsung's Real Threat to Apple – Tech.pinions." 10 May. 2013, <https://techpinions.com/samsungs-real-threat-to-apple/16404>. Accessed 26 Apr. 2020.

⁵"How Samsung Became a Design Powerhouse." <https://hbr.org/2015/09/how-samsung-became-a-design-powerhouse>. Accessed 26 Apr. 2020



The Strategic Challenge

While the Australia of 2020 has a much more complex and advanced economy to that of 1914, many of the same problems have resurfaced. We export a great deal of unprocessed or simply processed primary products. Our primary industries invest largely in imported equipment, and the few local manufacturers of high complexity products are reliant on imported components. Our exposure to global disruption is different to 1914, however the impact on our more complex society would be the same.

To reduce the impact of supply chain disruptions - whether through conflict, pandemic or trade disputes - changes need to be made. While there may be a number of potential approaches, building a more self-reliant Australia is a cost effective and low risk option

Picking Winners

While Australian governments in recent years have shied away from direct investment in manufacturing citing a desire to avoid “picking winners”. Governments have been much less reluctant to stimulate the economy through infrastructure investments. Many of these projects provide little ongoing economic benefit⁶. The manufacturing industries of the 1900s provided benefits to the Australian economy for the better part of 100 years, and built a foundation for many of our current industries.

Our mining industry is a good example of how business can grow and a sector thrive with Government support. Mining receives support in almost every conceivable way. Billions of dollars in concessional loans; favorable legislative frameworks; tax regimes tailored to industry preference; through to government infrastructure to support specific private projects⁷. Rather than a collection of small struggling resource companies, strong government support has picked winners and provided a platform for a number of global resource corporations⁸.

With a wealth of raw materials; an educated and skilled population; and abundant (albeit overpriced) energy, Australia is well placed to be a winner in other sectors. There is a strong potential to develop new, Australian manufacturing corporations with global reach, much as South Korean government policies and support built brands such as Samsung, LG and Hyundai⁹.

⁶ "Australia gets the third-best policy on infrastructure. Here's why." 29 Sep. 2014, <https://www.theguardian.com/commentisfree/2014/sep/30/australia-gets-the-third-best-policy-on-infrastructure-heres-why>. Accessed 26 Apr. 2020.

⁷ "Mining and the Australian economy - Minister for Industry" 12 Nov. 2015, <https://www.minister.industry.gov.au/ministers/frydenberg/speeches/mining-and-australian-economy-australian-governments-priorities-mining>. Accessed 27 Apr. 2020.

⁸ "Transforming our Economy from Innovation to Collaboration - LinkedIn." <https://www.linkedin.com/pulse/transforming-our-economy-from-innovation-open-angus-m-robinson?articleId=7030597222641383121>. Accessed 3 May. 2020.

⁹ "Why Are South Korea's Chaebol Important?." 4 May. 2018, <https://www.cfr.org/background/south-koreas-chaebol-challenge>. Accessed 3 May. 2020.

Boost Manufacturing with direct investment

Just as in 1914, many Australian industries are largely reliant on imported components, either as part of their products or as spares for critical infrastructure. Precision bearings; electronic components; stainless and tool steels; valves and other controls are a few critical components that are not produced locally to my knowledge. Even simple components, once outsourced are unable to be reshored quickly. Many require complex processes, specialised feedstock or custom equipment to produce.



Boost Manufacturing with direct investment, cont'd

Without these inputs, Australian industry - not only manufacturing - would rapidly come to a halt¹⁰.

¹⁰ "Castor manufacturer Fallshaw gets Covid-19 freight cost" 8 Apr. 2020, <https://www.aumanufacturing.com.au/castor-manufacturer-fallshaw-gets-covid-19-freight-cost-relieve>. Accessed 26 Apr. 2020.

Rather than directly focus on component manufacturing, priority could be placed on establishing key manufacturing industries in new and emerging sectors. This would serve to stimulate demand, build skills, and boost confidence in Australian manufacturing.

New, large industries would serve a number of strategic purposes:

- Directly providing a base manufacturing capability.
- Providing depth and complexity to the supply chain to promote other companies to provide base manufacturing capabilities.
- Provide skills and infrastructure that could pivot rapidly to support strategic objectives.
- Creation of centres of excellence. Even in a global market, there are clear performance advantages to working physically close to suppliers and customers. Again, clustering can support supply lines and skills to build strategic capabilities.
- Vertically integrate Australian industries to fully extract value from resources and agriculture.

Potential strategic businesses could include advanced engineering businesses that impact the economy well beyond their specific fields¹¹.

Suggestions include:

- **Lithium battery manufacturing** - building on stocks of raw materials and refining projects already underway. A critical input into a range of other industries and emerging technologies.
- **Satellite manufacturing and delivery** - Requires a wide range of inputs, and easily transferable to defence projects.
- **Bearing manufacturing** - A critical input as the British discovered in WW2. Requires metallurgy and machining skills that transfer across a range of advanced sectors.
- **Electronic components** - Resistors, transistors, capacitors, IC's and more are largely sourced out of Asia. A critical input into almost all advanced products, a technology driver, and potentially leverages rare earths and minerals.
- **Large scale pharmaceuticals** - An R&D intensive industry, with high demands on supporting industries. A key asset for a self-reliant nation¹².

¹¹ "Manufacturing the future: The next era of global growth and" <https://www.mckinsey.com/business-functions/operations/our-insights/the-future-of-manufacturing>. Accessed 26 Apr. 2020.

¹² "Australia's medicine supply chain is vulnerable | The Mandarin." 17 Mar. 2020, <https://www.themandarin.com.au/127703-australias-medicine-supply-chain-is-vulnerable/>. Accessed 26 Apr. 2020.



Industrialisation Support

Research and Development funding has been proven to be an effective boost to Australia's research capacity and capabilities^{13 14}, however the ability to take full advantage of this investment through to market is poor¹⁵.

Australia lags well behind comparable nations in the business share of R&D funding.

¹³ "R&D Tax Incentive - AusBiotech." <https://www.ausbiotech.org/documents/item/606>. Accessed 26 Apr. 2020.

¹⁴ "The Additionality of R&D Tax Policy in Australia - Department" <https://www.industry.gov.au/sites/default/files/May%202018/document/extra/research-and-development-tax-incentive-review-report-rate-of-additionality-swinburne.pdf>. Accessed 26 Apr. 2020

¹⁵ "Innovation policy in the United States and Australia." 19 Dec. 2018, <https://www.ussc.edu.au/analysis/innovation-policy-in-the-united-states-and-australia>. Accessed 26 Apr. 2020.

Australian R&D funding rules set a high bar with requirements for "new knowledge" and a documented hypothesis based research program¹⁶.

Many SMEs have concepts and ideas that may not meet the criteria for new knowledge when reviewed on a global scale. They may, however, introduce new knowledge or approaches when viewed on a local scale. Rather than loosen the rules on the R&D Tax Incentive, an **Industrialisation Incentive** could promote greater industry involvement in product and process improvement.

An Industrialisation Incentive could follow similar rules and limitations to the R&D Tax Incentive, however set at a lower rate and with proportionally lower record keeping requirements.

The intent of the program would be to:

- Firstly, support the industrialisation of products and processes in Australia;
- Secondly, encourage innovation and incremental improvement in Australian businesses;
- Finally, assist Australian businesses to develop a culture of research that will progress from incremental improvement to the development of 'new knowledge'.

The idea of an entry-level industrialisation program leading to higher value R&D research is not unlike the garage band that performs covers at the local club. After a few gigs, the band may develop the skills and confidence to strike out with original music. In time, the band may stop playing covers altogether and release their own music.

As businesses get more comfortable with a formal investigation and development process, the barriers to developing new knowledge through research are lessened, and they move towards a more intensive R&D program.

¹⁶ "Research and Development Tax Incentive | business.gov.au." 16 Apr. 2020, <https://www.business.gov.au/Grants-and-Programs/Research-and-Development-Tax-Incentive>. Accessed 26 Apr. 2020.



Advanced Manufacturing

“Advanced Manufacturing” is not an accurate descriptor of any business or sector. It makes for good press, while misrepresenting the depth and complexity of many supposedly less worthy manufacturing processes.

While governments of both persuasions talk up the “innovation revolution” and look for “high value niche industries”, the strategic weakness of our supply chain is ignored¹⁷.

“**Value Added Manufacturing**” may be a better way to describe our desired manufacturing profile. This term incorporates a more holistic view of manufacturing, including upstream and downstream activities such as R&D, logistics, maintenance and integration services¹⁸.

A strategic and self-reliant manufacturing sector is not in conflict with a desire for a highly innovative manufacturing sector¹⁹. It may require additional focus areas around developing key industries for critical components to reduce reliance on vulnerable supply chains. In turn, this will fill out our hollow supply chain and develop a depth of grassroots skills and experience. Given these conditions, local value-added manufacturing will develop and expand to take advantage of local and international opportunities.

Changes to Productivity Commission Guidelines

Policy decisions involving industry support are routinely referred to the Productivity Commission to investigate. These reviews are intended to be impartial, evidence-based economic assessments of the proposal. The omission of strategic considerations from the general policy guidelines²⁰ leads to a best case bias, and ignores real world market distortions that adversely impact Australian industries.

Very few, if any, industry sectors have benefitted from the attention of the Productivity Commission over the years²¹.

The reliance of local manufacturers on imported components and feedstock is evidence of policy failure caused, in part, by guidance from flawed investigations supporting an ideological preference for economic rationalism.

¹⁷ "Global shutdown could spark Australian manufacturing revival." 22 Apr. 2020, <https://indaily.com.au/news/business/2020/04/22/global-shutdown-could-spark-australian-manufacturing-revival/>. Accessed 3 May. 2020.

¹⁸ "Advanced Manufacturing - Beyond Assembling - LinkedIn." <https://www.linkedin.com/pulse/advanced-manufacturing-beyond-assembling-angus-m-robinson>. Accessed 3 May. 2020.

¹⁹ "Australia 2030: Prosperity through innovation - Department of" https://www.industry.gov.au/sites/default/files/May%202018/document/pdf/australia-2030-prosperity-through-innovation-full-report.pdf?acsf_files_redirect. Accessed 26 Apr. 2020.

²⁰ "Productivity Commission Act 1998 - Federal Register of" <https://www.legislation.gov.au/Details/C2004A05326>. Accessed 26 Apr. 2020.

²¹ "The government is backing the wrong industries, as our" <https://theconversation.com/the-government-is-backing-the-wrong-industries-as-our-economy-changes-productivity-commission-81703>. Accessed 26 Apr. 2020.

To provide a more balanced view, Productivity Commission Guidelines should be revised to:

- Include strategic and risk considerations.
- Provide for a minority report, or contrarian view to the economic rationalist paradigm.

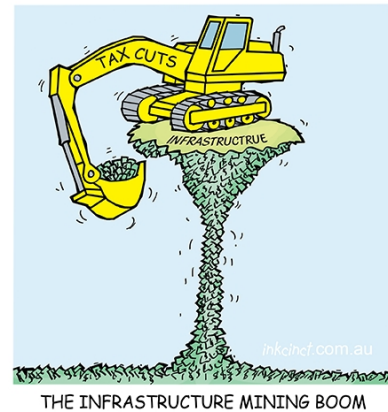


How to pay for a Competitive Manufacturing Sector

In the medium to long term, a strong manufacturing sector is not only self-supporting, but a financial and strategic asset to the nation. In the short term, however, considerable investment - both private and public - will be needed to build capabilities and capacity.

- **A national fund**

While the benefits of a strong mining sector are evident, successive governments' myopic views on the magic pudding of mining revenue have seen it both waste the benefits, and maximise the downsides of the mining boom. We are a textbook case of Dutch Disease²². While other industries have borne the burden of high interest rates and unfavorable terms of trade, miners benefit from the discount sale of our natural resources^{23 24 25 26}. Charging a market rate for resources, and investing this money into strategic capacity building would provide for long term sustainability. It would also provide funding and access to capital that hinders the growth of small businesses and start-ups²⁷.



- **Use of Government Purchasing**²⁸- Rather than building overseas capabilities on the back of Australian taxation, priority should be given to local industry. Contracts, procurement practices and policies should mandate a minimum proportion of local value added content. On major contracts, consideration should be given to both strategic capacity building; and the cash flow of company, income and GST taxes back to the State.
- **Protection** - "a free trade regime that does not rein in or seek to regulate artificial subventions will likely help trigger its own demise"²⁹. Dumping and competition with loss-making state entities is a recognised issue, however processes are difficult to access and provide limited protection³⁰.

The loss of otherwise efficient local industries compromises our local strategic capability³¹.

²² "Sustainable Development and the Australian Minerals Sector"

https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/rp0001/01RP24. Accessed 27 Apr. 2020.

²³ "If Australia's resources were taxed the way Norway's are, we" 23 Feb. 2020, <https://www.theguardian.com/commentisfree/2020/feb/24/if-australias-resources-were-taxed-the-way-norways-are-we-could-secure-the-future-of-our-schools>. Accessed 27 Apr. 2020

²⁴ "What Australia could have learnt from Norway's sovereign" 31 Aug. 2016, <https://www.abc.net.au/radionational/programs/latenightlive/what-australia-could-have-learnt-from-norway-sovereign-wealth/7797560>. Accessed 27 Apr. 2020.

²⁵ "Australia needs a sovereign wealth fund like Norway for the" 7 Feb. 2020, <https://www.michaelwest.com.au/australia-needs-a-sovereign-wealth-fund-like-norway-for-the-next-boom-electrification/>. Accessed 27 Apr. 2020.

²⁶ "The role of sovereign wealth funds in managing resource" 23 Feb. 2012, <https://treasury.gov.au/speech/the-role-of-sovereign-wealth-funds-in-managing-resource-booms-a-comparison-of-australia-and-norway>. Accessed 27 Apr. 2020.

²⁷ "Access to Small Business Finance - Reserve Bank of Australia." 20 Sep. 2018, <https://www.rba.gov.au/publications/bulletin/2018/sep/access-to-small-business-finance.html>. Accessed 26 Apr. 2020.



²⁸ "Australia 2030: Prosperity through innovation - Department of"

https://www.industry.gov.au/sites/default/files/May%202018/document/pdf/australia-2030-prosperity-through-innovation-full-report.pdf?acsf_files_redirect. Accessed 26 Apr. 2020

²⁹ "Anti-Dumping Reforms: Renewed Focus in the Australian" 26 May. 2014,

<http://www.internationalaffairs.org.au/news-item/anti-dumping-reforms-renewed-focus-in-the-australian-economy/>. Accessed 3 May. 2020.

³⁰ "Evaluation of Streamlining Australia's Anti-Dumping Systems." 16 Dec. 2016,

https://www.industry.gov.au/sites/g/files/net3906/f/May%202018/document/pdf/evaluation_of_streamlining_australias_anti-dumping_system.pdf. Accessed 3 May. 2020

³¹ "Achieving Competitive Neutrality in China | PIIE." 1 Oct. 2019,

<https://www.piie.com/commentary/speeches-papers/achieving-competitive-neutrality-china>.

Accessed 26 Apr. 2020

Conclusion

The objective of **strategic manufacturing** is not to replace all inputs with locally sourced products. Rather, the objective is to ensure that in the event of a disrupted supply chain, critical industries can maintain production to support Defense, Health, and other sectors needed to maintain and protect our society. History has shown that in times of trouble, we can rely on other major powers only when it is in their best interest to help us.

Reviewing and rebuilding our manufacturing capabilities with this point in mind will build a **stronger, more resilient economy**, better placed to both compete in a global marketplace and manage unforeseen disruptions and challenges that will inevitably arise again.

Warwick Carter

Managing Director at Signtalk Quality Signmakers

Lead author and Industry Member at *Manufacturing on the Move™*

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Background to 2016 stage gate

Members of the ***Manufacturing on the Move™*** [MotM™] Leadership Team collaborated on the compilation of a submission (commencing January 2014) in response to the invitation and 'call to arms' on the industry by the Australian Government – as originally anchored in media releases issued in December 2013.

'*Securing Australia's Manufacturing Future*' was compiled against the backdrop of 'Re-energising Industry and Economy'. Much of the 2014 content is still valid, such that we are republishing and adding this summary note on '2016 significant factors':

- Rise of Additive Manufacturing
- Push to expand Australia's FTA arrangements
- Realignment of trading blocks and economic / political associations, plus the emergence of potential new markets, e.g. the UK as a result of the BREXIT decision
- FOREX / AUD changes
- The Australian Government's National Science & Innovation Agenda, released in December 2015, and emergence of a new 'start-up' culture
- Development of the Australian Government's Industry Growth Centres
- Moves by various state governments to better manage the transition away from mining to other industries
- Announcement of Sydney's second airport, and a renewed focus on creating advanced manufacturing opportunities in Greater Western Sydney
- Comparison with the UK Catapult centres and other incubator / accelerator models
- Development of Industry-Research / University engagement and collaboration, e.g. Industry Advisory Network of UNSW Mechanical and Manufacturing Engineering
- Emergence of Automation, robotics and actuation, and IOT technologies, and digitalisation of manufacturing generally
- Changes brought about by the escalating 'new energy' revolution
- Emergence of the Innovative Manufacturing CRC
- Onshoring / reshoring realignments
- Changes to VET, STEM, skillsets and talent pipelines
- Aerospace & Defence cross-pollination / trickle down / spill over
- Announcement of the DCNS [later, Naval Group] submarine contract



INDUSTRY-LED INITIATIVE – the 2014 Submission

This is an industry-driven initiative, developed as a result of discussions in and via the membership base of **Manufacturing on the Move™** [MotM™] – a specialist, practice-based networking group with international reach, comprising highly-engaged professionals and leaders with a strong focus on Australian High-Value Manufacturing.

This proposal outlines key issues informing Australia's competitive future with recommendations for a viable course of action for government - industry collaboration.

Our goal is to also establish a **'Virtual Network'** channel for constructive, ongoing, industry-led dialogue towards **securing the competitive future of Australia's manufacturing industry** and collaboration-driven, future prosperity for Australia.

1. WHY?

It is an imperative for Australia to build a diversified, sustainable, thriving economy based on our strengths and competitive advantages to allow us to become globally competitive, and to take a leading role in the developed and developing world in terms of future economic opportunities.

Key factors contributing to the current situation include:

- 1.1 Rapidly advancing global technologies:** not easily accessible to smaller, non-multinational manufacturers and other producers in Australia. These technologies are developing and impacting our lives faster than we can keep up - certainly faster than economic planning or policy settings.
- 1.2 Declining Manufacturing Sector:** generally decreased attractiveness and competitiveness due in part to the high Australian dollar, associated with inadequate focus on markets, customers and innovation – resulting in and further impacted by the demise of the traditional automotive sector.
- 1.3 Innovation Culture:** lack of innovation strategy to create and leverage resources and stable political and social climate.
- 1.4 Inclement Business Environment:** high cost of energy and finance, counter-productive company tax, over-regulation and unfavourable R&D regimes compared to competing economies.
- 1.5 Productivity:** apparent decline in national economic competitiveness (rank 21 out of 148 countries).
- 1.6 Cross-Sector & Cross-Border Collaboration:** weak connectivity and level of collaboration at the Australian and State/Territory Government-Industry-Universities-Research Institutions-Business interface.
- 1.7 Skills & Training:** skills training system increasingly lacking relevance and sophistication required to meet evolving needs of advanced manufacturing and other industries.
- 1.8 Trade Agreements:** Disadvantageous trade agreements – or lack of (including dumping and unfair pricing for Australia).
- 1.9 Vision for the Country ['Australia Brand']:** lack of substantial and visionary planning to build synergies among complementing industries, e.g. food, tourism, digital and creative industries etc.



- 1.10 Immediate Crisis:** urgent need to re-focus and re-deploy talent and expertise from the declining 'old automotive' sector, in conjunction with state-of-the-art materials and processing, to advanced design engineering to create unique new-generation technology components, assemblies and systems.

2. WHAT?

Australia needs a decisive manufacturing strategy and an assertive action plan, based on implementation of an identified set of strategic priorities that will strengthen and diversify the economy by creating synergies and leverages for all 'producing' industry sectors.

Priority strategic options available to Government include:

- 2.1 Economic planning** to grow our economy by engagement and linkage to rapidly advancing global technologies; identifying long-term strategic, competitive direction for Australia's unique opportunities; aggressively pursuing resulting early windows of opportunity, with carefully targeted investment in advanced manufacturing, science and infrastructure as the best catalyst for sustainable growth and long-term wealth creation.
- 2.2** Identifying initiatives to **drive the 'value-add'** in the natural resources sectors (mining and energy production, agriculture, forestry, advanced materials etc.).
- 2.3** Developing leadership in water storage and management and associated transferable technologies; and in secure renewable and alternative energy sources, energy storage and smart energy distribution systems (e.g. micro-grids), whilst also driving energy efficiency leadership across all industry and public sectors.
- 2.4** A plan to encourage the **development and rapid adoption of the next generation, 'game changing' manufacturing technologies** to deliver positive commercial outcomes by employing, e.g. advanced composites and lightweight materials, large format and developing hybrid additive manufacturing, seamless processing robotics and software developments – all of which underpin the 'Industrial Revolution Gen 4' already evident in leading advanced manufacturing economies.
- 2.5 Build a presence in rapidly expanding markets for 'near zero emissions vehicles'** within our global geography. Australia has 'whole-of-vehicle' capabilities in advanced hybrid electric vehicles, underpinned by, e.g. cutting-edge 'light-weighting' such as composites or advanced high-strength steels and titanium (plus the all-important design tools and methodologies to go rapidly to market); high-performance drive-trains built around CSIRO-derived ultra-high-efficiency 'E-motors' and a range of 'clean energy' technologies that can deliver commercial volumes in harmony with definitive action on carbon mitigation.
- 2.6** Development of a **National Skills Strategy and Action Plan** which recognises the need for new structured career pathways that can drive innovation – particularly solutions-oriented technologists who combine high-level technical and analytical process with hands-on practicality.



- 2.7** Developing an **Australian Business Model** that supports business niche specialisation and excellence based on quality and customisation and clear market needs orientation, rather than on price and volume. This includes providing guidelines and incentives to implement appropriate model elements from economies that lead in advanced manufacturing.
- 2.8** Consolidate 1-7 [above] into the 'DNA' of the brand-in-the-making 'Made in Australia'. It is vital that this becomes much more than a slogan or eye-catching graphics, i.e. is synonymous with the intended '**Australia Brand**' **core values** – product integrity, fitness for purpose, value-not-price leadership, enviro-deliverables, delivery performance, high quality assurance, etc.

Inputs into policy settings to build a stronger, more balanced economy:

- 2.9** Manufacturing **Industry engagement with fast-developing advanced material and process technologies** that will drive economic growth.
- 2.10** Explore the opportunity to integrate and **facilitate Australian-developed enabling technologies** (ICTs, advanced and new materials and processes, energy saving, plus associated hybrid developments) into established international industry verticals.
- 2.11** **Energy security and energy reform** - to support competitiveness of the Australian manufacturing sector through the implementation of cost efficiency measures underpinned by access to emerging energy enhancement technologies.
- 2.12** Refreshed guidelines plus **incentives for investment in the manufacturing industry** – beyond R&D, innovative business acceleration solutions and local new venture capital options.
- 2.13** **A National Skills Strategy** to build a smart nation – creating new positive career perceptions and interest, and attracting our brightest talent to structured STEM vocational and professional career pathways.
- 2.14** **Creating 'value adding' partnerships and strategic alliances** involving **industry, business, government and research institutions** which achieve new industrialisation outcomes. **Facilitate new connections** across the Australian innovation system through the establishment of '**innovation centres of excellence**' reflecting various forms of industry engagement and collaboration, including manufacturing hubs, product realisation centres and supply-chain accelerators.
- 2.15** **Recasting analysis about the future of existing manufacturing industry sectors** such as 'old automotive' from a focus on outdated business models to embracing new, market-facing models underpinned by the rapidly evolving 'clean energy', advanced materials and digital technology platforms.
- 2.16** Creating a supportive business climate through tax reform, flow of investment, de-regulation and a commitment towards transparent and equitable trade agreements enhance by the appeal of '**Made in Australia**' as a **destination-of-choice for offshore potential investor/sponsors and alliance partners**.



- 2.17 Develop a national public sector IP commercialisation strategy** to provide more focus on market-driven R&D which will result in maximising ROI gains from IP for Australia.

3. HOW?

- 3.1** Development of a recommended **national advanced manufacturing industry plan for Australia** that should include a comprehensive and cohesive set of **economic and strategic priorities** with policy recommendations towards the creation of a new stronger more balanced and diversified manufacturing sector.
- 3.2** The establishment of a broad-based and representative **‘Prime Minister’s Industry Advisory Council’** – perhaps based on the PMSEIC model – to assist the Government with input towards the implementation of the plan. This must be highly collaborative and mandate the active involvement of, and support from, the Council of Australian Governments (COAG) and key manufacturing industry groups, as an imperative to the overall success of the plan.
- 3.3** Effective communication by the Government of these strategic imperatives and direction as an **ongoing drive to build a competitive ‘Australia Brand’**, and engagement from the industry, will generate good-will and engagement by other key stakeholders.
- 3.4** Appointment of an **‘Industry Champion’** as a national catalyst to connect all groups and stakeholders in strategic collaboration and to assist and advise the Minister for Industry. It is submitted that this person need not have a technical background, but must have affinity with manufacturing, innovation, marketing strategy and above all, outstanding communication skills and the proven ability to mobilise cross-functional teams towards achieving strategic outcomes.

4. FURTHER CONSULTATION

Members of **Manufacturing on the Move™** [MotM™] are available to provide further input about ideas for advancement of the manufacturing industry with, for example, specific reference to:

- The automotive manufacturing sector
- Creating collaborative cross-industry, cross-border, Australasian networks and engagement
- Establishing the culture that needs to underpin the ‘Australia Brand’ business model
- Assisting Australian manufacturers with implementing more effective business models and processes
- Mentoring the industry

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5. PEOPLE BEHIND THE INITIATIVE

The initiative draws on a shared passion for a prosperous future for Australia as a highly competitive, diverse economy, and the need for agile Australian enterprises to operate in a dynamic local and exposed international business environment.

The collective voice of this industry-led, E-media-generated initiative has been captured, mapped and amplified by a group of dedicated professionals and business people, with extensive experience in the manufacturing sector and broader industry experience, and based on specific inputs by Founder/Managers of **Manufacturing on the Move™**:

- **Jon Bradshaw** <https://www.linkedin.com/in/jon-bradshaw-a45b6823>
- **Richard Jefferies** <https://www.linkedin.com/in/rgj2015>
- **Angus M Robinson** <https://au.linkedin.com/in/angusmrobinson>
- **Eduardo Sifontes** <https://www.linkedin.com/in/eduardosifontes>

This initiative is endorsed by the Founder/Patron of **Manufacturing on the Move™**, Bruce Grey.



Also via:





6. RATIONALE & SUPPORTING RESOURCES

This introductory outline is both directional and specific, and supported by extensive research papers and references recent industry material from quality Australian and international sources.

These resources include but are not limited to:

- Deloitte: Australian Productivity Report [2013]
- Dow Chemical Company: Advanced Manufacturing Plan for Australia [2013]
- The Australian CEO Survey [Dec. 2013]
- Trade In Primary and Manufactured Products Australia 2012-2013 report
- Manufacturing workforce issues paper [Oct 2013]
- Global Competitiveness Report 2013-2014
- Relevant international business models and initiatives:
 - ❖ Germany: Mittelstand
 - ❖ Industry 4.0 is evolving in Germany:
(<https://www.deutschland.de/en/topic/business/innovation-technology/networking-the-world>)
 - ❖ USA: Advanced Manufacturing Partnership – Capturing Domestic Competitive Advantage

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